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Implementation of WOAH standards: the Observatory Annual Report

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World Organisation for Animal Health
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Implementation of WOAH standards: the Observatory Annual Report

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Foreword

The World Organisation for Animal Health (WOAH) regularly updates its international standards in accordance with new scientific information and technological advances. These standards contribute to improving animal health, animal welfare and veterinary public health, and facilitate the safe trade of animals and animal products. However, many WOAH Members face challenges in implementing them.

It is important for WOAH to understand to what extent our standards are being implemented, and identify the barriers to their implementation. This knowledge will help us improve the standard-setting process and better support our Members in the future.

In May 2018, WOAH Members adopted Resolution 36 which recommended WOAH develop an Observatory to monitor the implementation of its international standards. Since that time, the Organisation has been developing the Observatory to be a systematic mechanism for gathering and analysing information about the global implementation of its standards. The Observatory has been conceived in alignment with the *Compendium of International Organisations' Practices: Working Towards More Effective International Instruments* and adheres to recognised best practices in international rule-making.

The establishment of the Observatory as a consolidated programme in WOAH is not only important to improve the development of WOAH standards and their implementation worldwide, but also to continue to drive WOAH's digital transformation plan. Embedded within the recently created Data Integration Department, the Observatory will support the continual improvement of data management within the Organisation.

The publication of a prototype report on African swine fever in May 2022 was an exciting milestone for the Observatory. This marked the completion of the pilot phase of the Observatory and finalisation of the conceptual design underpinning the programme.

This first Annual Report of the Observatory raises awareness of some of the existing gaps in the implementation of standards. Additionally, it offers a number of recommendations for both WOAH departments, including WOAH capacity building programmes, as well as national Veterinary Services; I hereby encourage all parties to give them due consideration. This document can aid Members to advocate for the improved integration of WOAH standards into national legislative frameworks and their full implementation.

I look forward to receiving your feedback on this first Annual Report of the Observatory, and to your ongoing involvement with WOAH's data collection activities. Both will enable us to improve our understanding of the global implementation of WOAH standards, our support for Members and the future work of the Observatory.

Dr Monique Eloit,
Director General,
World Organisation for Animal Health

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Abbreviations, acronyms and terms

AHS	African horse sickness
AI	Avian influenza
AMR	Antimicrobial resistance
AMR&VP	Antimicrobial Resistance and Veterinary Products
AMR-NAP	Antimicrobial Resistance - National Action Plan
AMU	Antimicrobial use
ANIMUSE	ANImal antiMicrobial USE
Aquatic Code	WOAH *Aquatic Animal Health Code*
Aquatic Manual	WOAH *Manual of Diagnostic Tests for Aquatic Animals*
ASF	African swine fever
BSE	Bovine spongiform encephalopathy
CBPP	Contagious bovine pleuropneumonia
CC	Critical Competency
Codes	WOAH *Terrestrial Animal Health Code* and WOAH *Aquatic Animal Health Code*
COVID-19	COronaVIrus Disease appeared in 2019
CSF	Classical swine fever
FAO	Food and Agriculture Organization of the United Nations
FMD	Foot and mouth disease
GBADs	Global Burden of Animal Diseases
GDP	Gross Domestic Product
Guidelines for WAHIS six-monthly reports	2022 notification procedure for completing six-monthly reports on WOAH-listed diseases
IHR	International Health Regulations
IZSAM	Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise Giuseppe Caporale
LoA	Level of Advancement
M&E	Monitoring and evaluation
OECD	Organisation for Economic Co-operation and Development
PPR	Peste des petits ruminants
PVS	Performance of Veterinary Services
PVS Tool	WOAH Tool for the Evaluation of Performance of Veterinary Services
PVS Tool: Aquatic	WOAH Tool for the Evaluation of Performance of Aquatic Animal Services
Quadripartite	Quadripartite Collaboration for One Health, made up of WOAH, FAO, WHO and UNEP
SAM Tool	Self-assessment and monitoring tool
SARS-CoV2	Severe acute respiratory syndrome coronavirus 2
SimEx	Simulation exercise
SPS	Sanitary and Phytosanitary
SPS Agreement	WTO Agreement on the Application of Sanitary and Phytosanitary Measures
Terrestrial Code	WOAH *Terrestrial Animal Health Code*
Terrestrial Manual	WOAH *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*
TrACSS	Annual AMR country self-assessment survey
UNEP	United Nations Environment Programme
VCIA	Veterinary Critically Important Antimicrobial Agents
VLSP	Veterinary Legislation Support Programme
VLU	Veterinary Livestock Unit
VSB	Veterinary Statutory Body
WAHIS	World Animal Health Information System
WHO	World Health Organization
WOAH	World Organisation for Animal Health (founded as OIE)
WTO	World Trade Organization

Introduction to the Annual Report of the WOAH Observatory

The World Organisation for Animal Health (WOAH, founded as OIE) develops and regularly updates international standards for veterinary public health, animal health and welfare, and safe trade based on the latest scientific knowledge and technological advances. Members of WOAH are encouraged to participate in the standard-setting process that culminates with the adoption of standards by the World Assembly of WOAH Delegates. After adoption, these standards are published in the updated volumes of the *Aquatic* and *Terrestrial Animal Health Codes*, the *Manual of Diagnostic Tests for Aquatic Animals*, and the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.

The standards are not intended to provide ready-made, fit-for-all solutions and measures to prevent and control animal diseases. Rather, they outline principles to follow when combating transmissible animal diseases. Members are expected to put these international standards into practice by adapting them based on their own epidemiological situation and on other factors, such as available resources.

This approach is echoed by the World Trade Organization (WTO), whose Members are encouraged to base their sanitary measures on international standards, guidelines and recommendations where they exist. The WTO Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) designates WOAH as the WTO's reference organisation for standards relating to animal health and zoonoses.

During its 86th General Session in 2018, the WOAH World Assembly of Delegates identified the need 'to monitor the implementation of its international standards, to increase transparency and to identify constraints and difficulties faced by Members'. The assembly adopted Resolution No. 36, which recommended the development of an Observatory to meet this need.

Consequently, the WOAH Observatory was created with the intention to monitor, in a regular and systematic manner, the extent to which WOAH's standards are put into practice by its Members. To do so, WOAH decided to publish, among other outputs, an annual report by the Observatory presenting a general overview of Members' implementation of some WOAH standards. However, as the *Terrestrial Code* and *Aquatic Code* each contain a vast number of standards, it is not possible to annually report on all of them.

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This document is the first Annual Report produced by the Observatory. It was developed using the lessons learnt throughout the pilot phase of the Observatory, particularly the feedback received from the ASF prototype.

The report contains 12 sections, which can be read independently, covering the following topics:

01. Governance and Performance of Veterinary Services

02. Veterinary Services' workforce and resources

03. World Trade Organization (WTO) notifications

04. Disease detection, surveillance and diagnosis

05. Transparency of Veterinary Services

06. Self-declarations of animal health status

07. Movement control inside countries/territories and precautions at borders

08. Zoning and compartmentalisation

09. Emergency preparedness

10. Antimicrobial use and antimicrobial resistance

11. Implementation of the One Health approach

12. Animal welfare

These 12 sections share the following common structure:

1. Introduction (providing context and the WOAH standards relevant to the topic)

2. List of indicators about the implementation of standards

3. Data, data sources and the advantages and limitations of the data used

4. Descriptive analysis of each indicator

5. Conclusions and recommendations for improvement

In addition to the main manuscript, each section of the WOAH Observatory Annual Report is accompanied by:

a) **An interactive dashboard** offering an array of options for dynamic information analysis for a desired region, disease, group of diseases or time period. The figures presented in the body of the report are static snapshots of these dashboards that use examples to illustrate specific ideas or indicators. Therefore, it is recommended to use the dashboards to access all available information.

b) **An executive summary**.

Moreover, also available are:

c) **The indicator matrix** (describing in a standardised manner the indicators and capturing how they are measurable, realistic and purposeful).

d) **The data catalogue**, an organised record of data assets.

All additional files referenced above are available on WOAH's website.

Readers should note the following when interpreting the conclusions presented in this report:

- The Annual Report of the Observatory provides an overview of the regional and global uptake of international standards by WOAH Members and does not report on the level of uptake by individual Members.
- It was not realistic to look at all WOAH-listed diseases for this report. Particular focus has been given to the diseases for which WOAH recognises official animal health status or endorses official control programmes: African horse sickness (AHS), bovine spongiform encephalopathy (BSE), contagious bovine pleuropneumonia (CBPP), classical swine fever (CSF), foot and mouth disease (FMD), peste des petits ruminants (PPR) and dog-mediated rabies. Focus was also given to African swine fever (ASF) and avian influenza because WOAH has global strategies or initiatives in place for these diseases. The aquatic diseases most reported by Members for fish, crustaceans, molluscs and amphibians were also selected: infections with Koi herpes virus, white spot syndrome virus (WSSV), *Bonamia ostreae* and *Batrachochytrium dendrobatidis*.
- To produce this report, the Observatory analysed data from various work streams in WOAH and from various partner organisations such as the World Bank, the WTO and the Food and Agriculture Organization of the United Nations (FAO). These data were not collected for the purpose of measuring the implementation of WOAH standards, and the Observatory did not collect additional data specific to its objectives. As such, there is great variability in the data referenced in the different sections, and this may impact the conclusions drawn.
- More generally, all the data used in the production of this report have advantages and limitations that are described in each of the sections. This report is not intended to be a scientific report, and in some instances the limitations of the data prevent firm conclusions from being drawn. However, WOAH believes that the report provides valuable information about the current situation, trends and availability of data, as well as directions for improvement and future activities.

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01 Governance and Performance of Veterinary Services

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To access the interactive dashboard and executive summary of this section click here

1. Introduction

The World Organisation for Animal Health has established international standards on the quality of national Veterinary Services, which are detailed in Section 3 of the WOAH *Terrestrial Animal Health Code* (*Terrestrial Code*). Similarly, international standards on the quality of Aquatic Animal Health Services are included in Section 3 of the WOAH *Aquatic Animal Health Code* (*Aquatic Code*).

In parallel, the WOAH Tool for the Evaluation of Performance of Veterinary Services (PVS Tool) supports Members in evaluating performance against the WOAH international standards. The 2019 Seventh Edition of the PVS Tool includes 45 Critical Competencies, which are systematically evaluated against five semi-qualitative Levels of Advancement. The PVS Tool: Aquatic, published in 2013, has been developed to specifically evaluate the services responsible for aquatic animal health; a Second Edition was published in 2021. Both Tools are included in a broader programme supporting the strengthening of the Veterinary Services, called the PVS Pathway.

Regarding terrestrial animal health activities, since the launch of the PVS Pathway in 2006, 136 Members have embarked on at least one PVS Evaluation mission. Aquatic Animal Health Services, unfortunately, have engaged much less in the PVS Pathway (13 Members to date).

The PVS reports, which evaluate performance of Veterinary Services and Aquatic Animal Health Services against the WOAH international standards, offer a wealth of information. The objective of this section is to present a selection of PVS Pathway data that can contribute to a better understanding of the inputs involved in the governance of the Veterinary Services and Aquatic Animal Health Services of WOAH Members.

2. List of monitored indicators

The following indicators have been monitored:

Members' engagement in the PVS Pathway

- Number of Members that have received a PVS mission;[1]
- Percentage of Members that have engaged in PVS Activities (at least one Activity), in each WOAH region;
- Number of requests received for PVS Activities (already undertaken or planned);
- Number of PVS Activities undertaken.

Members' continued engagement in the PVS Pathway

- Number and percentage of Members that have had a PVS Evaluation/Follow-up mission between 2016 and 2021;
- Number and percentage of Members that had their last PVS Evaluation/Follow-up mission before 2016 (and could consider the need for a Follow-up mission);
- Number and percentage of Members that have had only one PVS Evaluation (and no further PVS engagement) between 2006 and 2021.

Members' performance – Levels of Advancement

- Distribution of the Levels of Advancement for each Critical Competency;
- Average Levels of Advancement for each Critical Competency;
- Percentage of Members that have a Level of Advancement of 3 or more for a given Critical Competency.

Given the validity period of the PVS findings and recommendations, only missions carried out between 2016 and 2021 are considered for the three indicators on Members' performance.

In addition, in other sections of this annual report, a selection of Critical Competencies is considered and crossed with other data concerning specific topics (e.g. surveillance, emergency preparedness, zoning).

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[1] For the purposes of the Observatory, showing the 'number of Members that have undertaken any PVS Pathway mission', even in an aggregated format as proposed, does not lead to an insightful analysis or meaningful conclusions. However, it can be considered an indicator of the interest in the PVS Pathway itself and therefore of Members' commitment to better comply with international standards.

3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- Members' engagement in the PVS Pathway: official requests received from Members and missions undertaken, as indicated in the PVS Mission dataset managed by the Capacity Building Department, WOAH between 2006 and 2021;
- Performance of Veterinary Services: Levels of Advancement of the Critical Competencies (from the PVS Tool). The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. Only reports of PVS Evaluation/Follow-up /Aquatic missions conducted between 2016 and 2021 were used because of the limited duration of validity of this information. Within this period of time, two editions of the PVS Tool were used: the Sixth Edition (2013) and the Seventh Edition (2019). Similarly, for the PVS Aquatic Tool, the First Edition (2013) was used until 2021, at which point the Second Edition was adopted. For easy reference (and except specified otherwise), the identifying numbers of the Critical Competencies used in this report are based on the Sixth Edition of the PVS Tool (2013)[2] and the First Edition of the PVS Aquatic Tool (2013).

	Members' engagement in the PVS Pathway	
Advantages	• Standardised and updated dataset managed by the PVS team • Voluntary missions driven by official Members' requests (improved ability and greater interest in implementing recommendations)	• The ability to take action or to choose what action to take • Data usability for several purposes and from several stakeholders (e.g. Members, WOAH, donors, developing partners)
Limitations	• Voluntary missions not undertaken by all WOAH Members. The dataset is affected by selection bias in accordance with the factors that might have driven participation; for example, developing Members' higher likelihood of requesting evaluations due to their quality improvement focus, availability of funding (WOAH funding partners often target specific regions, countries or territories for funding eligibility), project from a development partner	• Impossibility to conduct missions in some countries/territories despite receiving a request (e.g. owing to political instability or unavailability of funding), or during certain periods (e.g. COVID-19), outside of WOAH's control • Lack of understanding of the tool and benefits of using it

[2] Each Critical Competency is attributed a reference. However, there have been changes over the different editions. For example, the Critical Competency related to "Quarantine and border security" is referred to as II-4 in the Sixth Edition of the PVS Tool (2013) and as II-3 in the Seventh Edition (2019). The identifying reference numbers used in this report are based on the Sixth Edition.

Levels of Advancement for PVS Critical Competencies		
Advantages	• Standardised tool and methodology • Assessment performed by external experts and validated by the Member • Wide coverage among WOAH Members • Comprehensive and detailed information • Wealth of qualitative information	• Some semi-qualitative information easy to understand and use • Evaluation of performance against the WOAH international standards • Linked to evidence and recommendations and therefore a starting point for capacity improvement and measurement
Limitations	• Voluntary missions with selection bias, as mentioned in the PVS engagement limitations above • Relatively few Members undertake PVS missions in any given year. Thus, the dataset evolves slowly and the associated indicators that can be derived from the data are not highly dynamic • Qualitative data are not yet available in a structured dataset, making them more challenging to analyse. As a result, analysis is limited to the Level of Advancement of each Critical Competency • Semi-qualitative data are yet not automated for real-time consultation • Taking a sample of PVS missions on the basis of time, such as 'last six years', potentially increases selection bias • As a consequence of the above, assessment of performance in a given period may not represent the global picture	• The findings and recommendations of the assessment are valid for a limited period of time. This is commonly considered to be five years but depends on the country/territory. For this report, analysis of the assessed situation will only include data from missions carried out since between 2016 and 2021 to ensure their relevance. This six-year period was chosen rather than a five-year period, due to the decreased number of missions carried out in 2020 and 2021 associated with the COVID-19 pandemic • Regular updates to the PVS Tool (the current edition is the Seventh) with some changes in the definition, inclusion and deletion of Critical Competencies, and in the definition of the Levels of Advancement, impact the standardisation of the information • Updates to the *Terrestrial* and *Aquatic Codes* are frequent and dynamic, thus making the PVS Tool update process less stable with regard to analysis and trends

Additional remarks:

- To preserve the confidentiality of the Member to which a PVS report refers, as well as the Levels of Advancement, analyses are only shown at global level.
- In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. While there may be variations from one Critical Competency to another, for the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.
- The closure of international borders related to the COVID-19 pandemic has prevented the conventional approach to conducting PVS Pathway missions. Despite adjustment of tools/methodologies, a limited number of PVS Evaluation/Follow-up/Aquatic missions were able to be conducted in 2020–2021; as such, only limited PVS reports and data are available for this period.
- The current analysis is based on the Levels of Advancement from the PVS Evaluation/Follow-up/Aquatic mission reports between 2016 and 2021. The abundant qualitative information contained in PVS Evaluation reports could not be included in the report. Inclusion of this information will only be feasible once a PVS Evaluation Database is developed.

4. Descriptive analysis

a) Number of Members having received a PVS mission

Figure 1 illustrates the number of WOAH Members engaged in the PVS Pathway and their geographical distribution, between 2006 and 2021. A total of 136 Members undertook at least one PVS Activity (a PVS Evaluation mission is the first activity for a Member), most of which took place in Africa (38%), Asia Pacific (20%) and the Americas (19%).

b) Percentage of Members that engaged in at least one PVS Activity, in each WOAH region

Members' engagement in the PVS Pathway, since it started in 2006, through to 2021, has been regionally heterogeneous. As **Figure 2** shows, 96% of African Members have engaged in the PVS Pathway, while only 40% of European Members have. In the three other WOAH regions (Americas, Asia Pacific and Middle East), 83% to 84% of the Members engaged.

c) Number of requests received for PVS Activities (already undertaken or planned)

The World Organisation for Animal Health has received 519 requests between 2006 and 2021 for all types of PVS Activities, from PVS Evaluation to Veterinary Legislation Support Programme (VLSP) Identification missions.[3] Of those requests, 448 (86%) have already been undertaken (**Fig. 3**) (data from 31 December 2021).

Requests from some Members are still pending for diverse reasons, such as lack of resources, receipt of requests for several activities that must be undertaken progressively, or lack of reply following contact from WOAH.

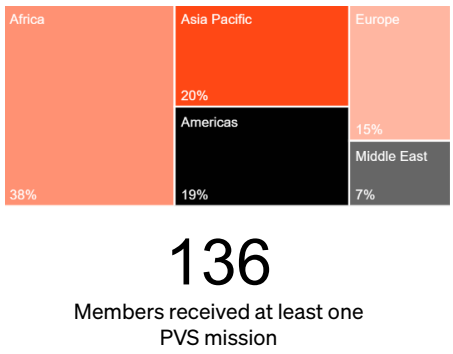

Figure 1. Number of Members having received at least one PVS mission from 2006 to 2021 (bottom), shown as percentage by WOAH region (top)

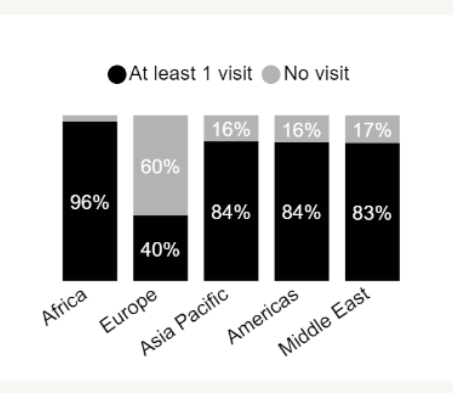

Figure 2. Percentage of Members that have engaged in PVS Activities in each WOAH region from 2006 to 2021

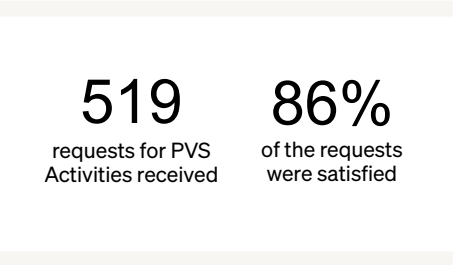

Figure 3. Number of requests for PVS Activities received by WOAH from 2006 to 2021 (left) and percentage of PVS Activities undertaken so far (right)

[3] Excludes VLSP Agreement procedure

d) Number of PVS Activities undertaken

Figure 4 displays the number of PVS Activities undertaken from 2006 to 2021, aggregated according to different criteria (i.e. region, World Bank income level, share of agriculture in in Gross Domestic Product [GDP], PVS Activity per year).

Selecting different filters in the interactive dashboard allows a more in-depth description of the situation. For example, when considering the evolution of the number of PVS Evaluation, Follow-up, and Gap Analysis missions over time (**Fig. 5**), one might expect that their number would stay stable or present a cyclic trend owing to the PVS Pathway's cyclical nature. However, the evolution of PVS Activities over time shows that the number of PVS Evaluation missions reached its highest level at the beginning of the PVS Pathway, and four years later, there was a peak in PVS Gap Analysis missions. This lag between the two is to be expected considering the sequential approach of the PVS Pathway. However, the number of PVS Evaluation and Follow-up missions has decreased and the PVS Gap Analysis visits have not been repeated. PVS Aquatic Gap Analysis missions are not represented as there was only one mission conducted, in 2016.

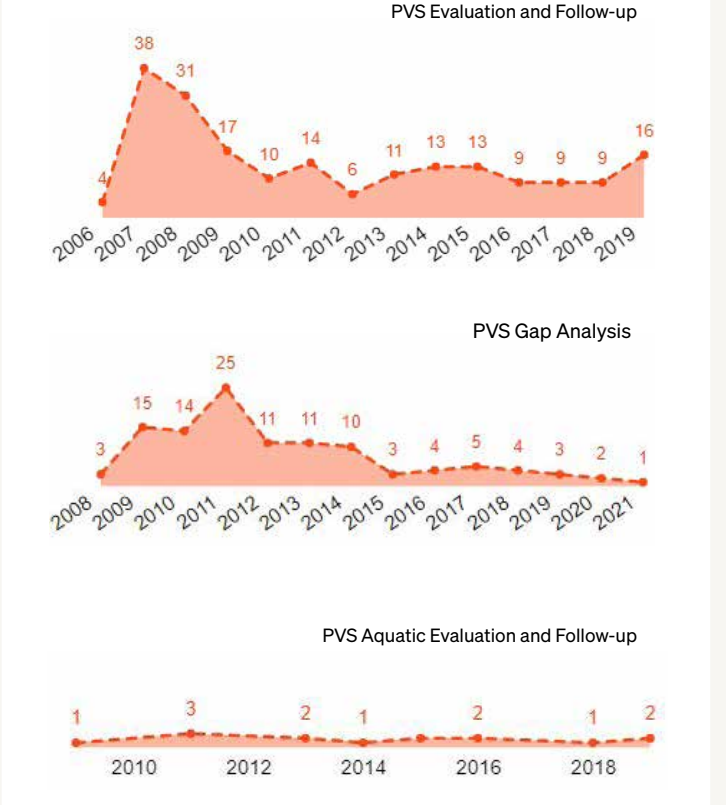

Figure 5. Evolution over time of the number of PVS Evaluation and Follow-up (top), PVS Gap Analysis (middle), and PVS Aquatic Evaluation and Follow-up (bottom) missions from 2006 to 2021

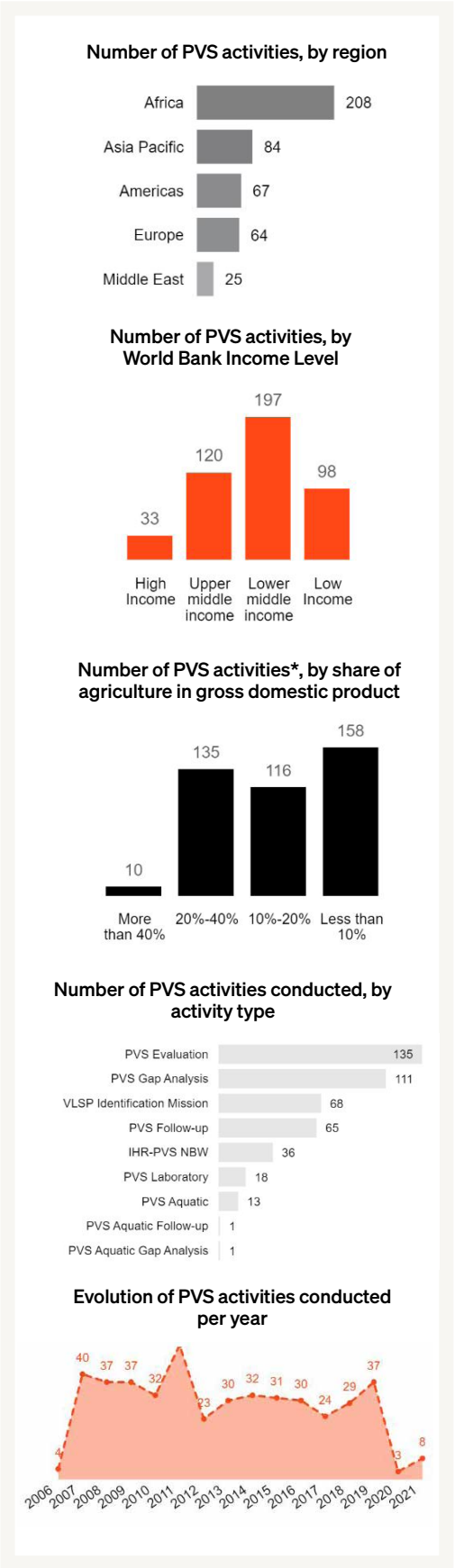

Figure 4. Number of PVS Activities undertaken from 2006 to 2021, aggregated by region, World Bank income level, share of agriculture in GDP, activity type and year
* from Members with available 2019 data on AgriGDP

e) Number and percentage of Members that have had a PVS Evaluation/Follow-up mission between 2016 and 2021

As identified in the limitations of PVS Pathway data, one challenge of using PVS Evaluation/Follow-up data is the limited duration of assessment validity, which is generally considered to be five years. After that time, Members are invited to request a PVS Follow-up mission to assess the progress made and the gaps to address in line with international standards. It is therefore important to identify the Members that have had a recent PVS Evaluation or Follow-up report between 2016 and 2021.

As **Figure 6** indicates, 32% of WOAH Members that have engaged with the PVS Pathway between 2006 and 2021 had a PVS Evaluation or Follow-up mission between 2016 and 2021. The information from those reports is therefore considered up-to-date and may be included in more detailed analyses on the performance of Veterinary Services.

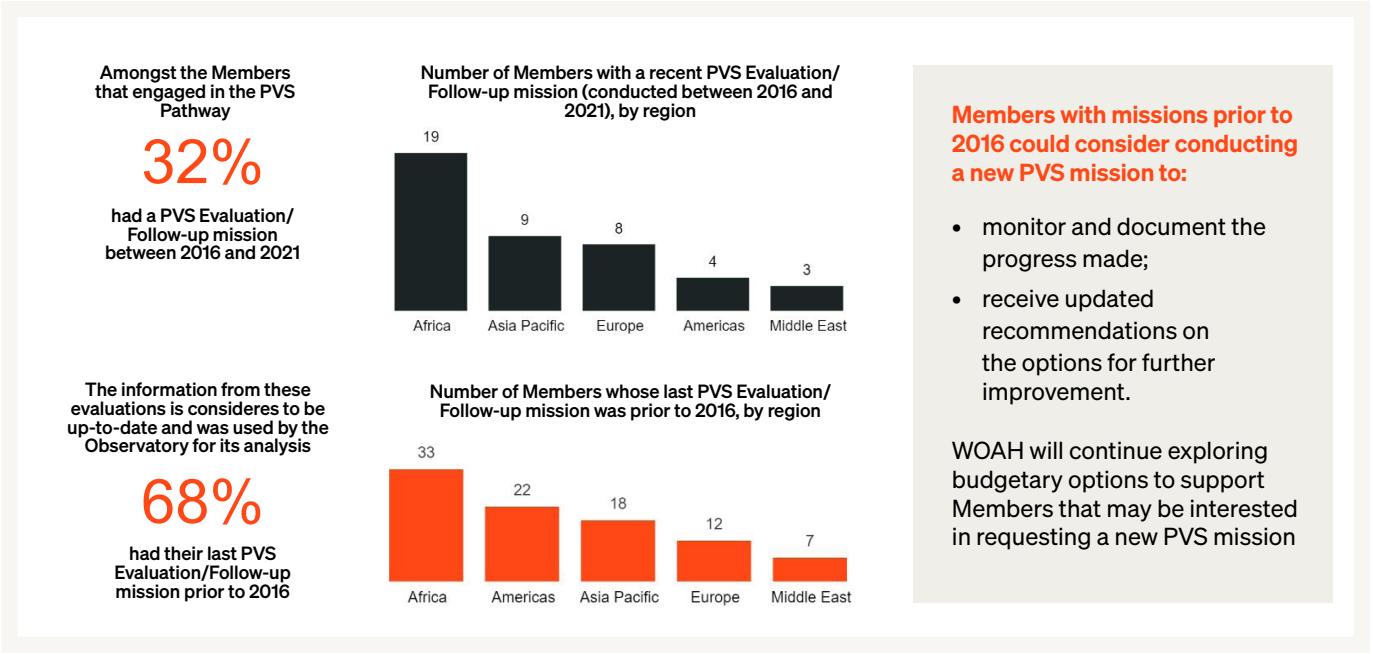

Figure 6. Situation with regard to the last PVS Evaluation/Follow-up missions undertaken by WOAH Members
In black on top: Members that conducted a PVS Evaluation or Follow-up mission between 2016 and 2021 (and whose findings are thus still considered valid)
In orange: Members whose last PVS Evaluation/Follow-up mission was before 2016 (and that may be interested in requesting a new PVS Follow-up mission)

f) Number and percentage of Members whose last PVS Evaluation/Follow-up mission was before 2016 (and that could consider the need for a new PVS Follow-up mission)

Turning to those Members not discussed in subsection (e), 68% of WOAH Members that have engaged in the PVS Pathway between 2006 and 2021 had their last PVS Evaluation/Follow-up before 2016 (**Fig. 6**). As previously mentioned, because the information from those reports may not be up-to-date, it has been excluded from further in-depth analysis in this report. These Members should be invited to consider requesting a PVS Follow-up mission to monitor their progress and receive updated recommendations to further improve the performance of their Veterinary Services.


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g) Number and percentage of Members that have had only one PVS Evaluation (and no further PVS engagement)

Almost a quarter of the 136 WOAH Members that have engaged in the PVS Pathway between 2006 and 2021 (**Fig. 7**) have only conducted one PVS Activity, without further engaging in other PVS activities. Investigations could be conducted to determine why those Members have not continued along the PVS Pathway. An understanding of these reasons would help improve the Pathway to ensure it meets Members' needs.

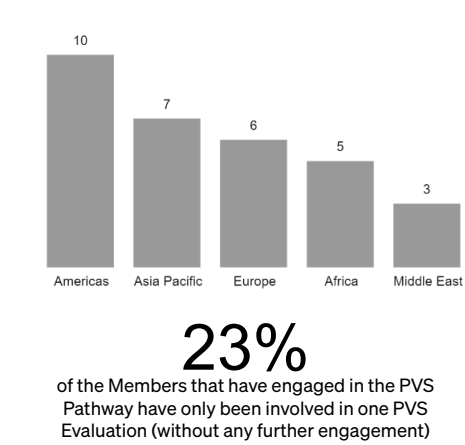

Figure 7. Number of Members per WOAH region (top) and percentage of Members that engaged in the PVS Pathway that have undertaken only one PVS activity, without requesting any subsequent activities from the PVS Pathway (bottom) from 2006 to 2021

h) Level of Advancement for each Critical Competency

The Level of Advancement for each Critical Competency has been taken as an indicator for the performance of Veterinary Services. For illustrative purposes, only Critical Competency II-6 on Emergency response has been chosen here, but on the interactive dashboard, any Critical Competency can be selected.

Figure 8 presents the Levels of Advancement for Critical Competency II-6 as assessed in 43 WOAH Members during the PVS Evaluation and Follow-up missions undertaken between 2016 and 2021.

i) Average Level of Advancement for each PVS Critical Competency

Figure 9 displays the average Level of Advancement for each Critical Competency among all WOAH Members that have undertaken a PVS Evaluation/Follow-up/Aquatic mission between 2016 and 2021. It is sorted in descending order, such that the Critical Competencies with higher versus lower average levels can be easily identified and potentially taken into account in decision-making.

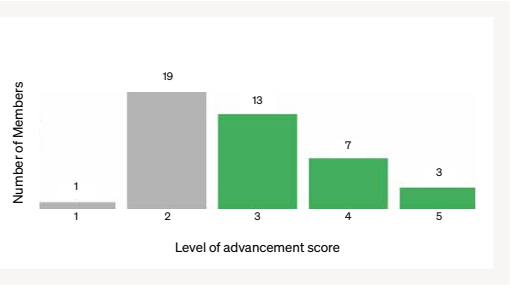

Figure 8. Distribution of the Levels of Advancement (LoAs) for Critical Competency II-6 Emergency response, in 43 Members that received a PVS Evaluation/Follow-up mission between 2016 and 2021

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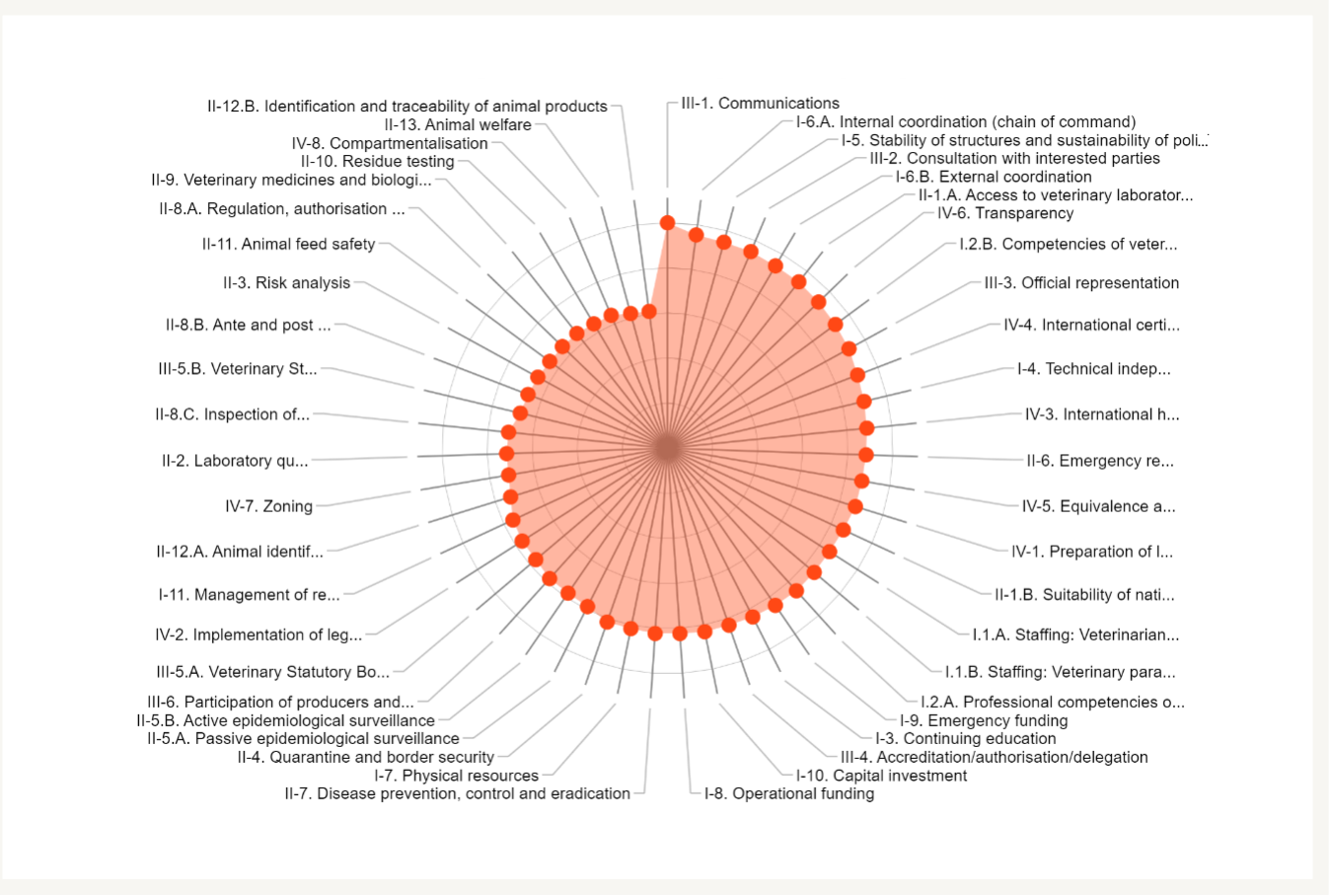

Figure 9. Average Level of Advancement for each Critical Competency, in 43 WOAH Members that undertook a PVS mission between 2016 and 2021

j) Percentage of Members with a Level of Advancement of 3 or more for a given Critical Competency (for PVS Evaluation and Follow-up missions conducted between 2016 and 2021)

As previously stated, for the purposes of this analysis, a Member with a Level of Advancement of 3 or above will be considered as having minimal capacity with respect to a given Critical Competency. The dashboard presents the percentage of Members that are considered to have minimal capacity or above for a selected Critical Competency. **Figure 10** displays, as an example, the percentage of Members that have been assessed as having minimal capacity or above with respect to Critical Competency II-6 on Emergency response, of the 43 WOAH Members that had a PVS Evaluation/Follow-up mission between 2016 and 2021.

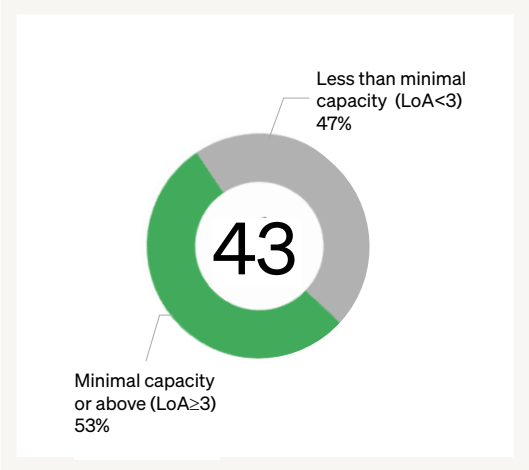

Figure 10. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for the Critical Competency II-6 Emergency response as assessed in PVS missions between 2016 and 2021

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

Some conclusions and recommendations were already mentioned in the prototype of the WOAH Observatory on African swine fever (ASF). Recognising the time needed to explore options and implement changes, they are briefly reiterated here, with some updates.

- Data concerning Levels of Advancement are collected and updated manually from the PVS Pathway reports. This data gathering has been feasible because it has been limited to the missions carried out between 2016 to 2021; however, it has not covered qualitative information. Inclusion of elements from qualitative data contained in PVS reports, including strengths, weaknesses and recommendations, will only be possible when the PVS Evaluation Database and Information System is developed. The World Organisation for Animal Health has acquired resources and expertise to develop the PVS Evaluation Database to structure qualitative data for easier analysis and dashboard development.
- Despite the lack of qualitative information, the spiral graph showing the mean Level of Advancement for each Critical Competency provides valuable information that could inform the development of training for Focal Points. Important Critical Competencies with recurrent weaknesses could also be targeted with specific capacity building activities.
- When developing the PVS Evaluation Database and Information System, WOAH will consider the data needed and collection frequency. In fact, some of the information required to prepare a PVS mission may already be available at WOAH (e.g. the World Animal Health Information System [WAHIS] Annual Report for animal population; workforce capacity; laboratories present in the country/territory; data on the structure of the Veterinary Services collected by WOAH Regional Representations). Frequency of data collection and updating should be considered to rationalise data collection and leverage the analytical value of data. In addition, some information collected by PVS Experts may be highly relevant for other WOAH departments or the to-be-developed 'Country Profile'.
- The COVID-19 situation aside (as it prevented mission deployment for 2020 and 2021), the number of Members undertaking PVS Activities seems to be decreasing. Given the PVS Pathway's sequential and cyclical nature, it was expected that Members engaging in the Pathway would undertake several of the proposed missions/activities. Thus, it is recommended to explore the reasons why some Members have not maintained their engagement with the PVS Pathway. The PVS External Evaluation has provided some recommendations to be followed up, potentially by planning bilateral discussions and interviews with the Delegates of the relevant Members.
- In addition to the recommendations of the PVS External Evaluation, there may be value in discussing these points with Members that have not continued along the PVS Pathway. Some reasons have been identified, such as lack of funding, slow communication and political changes in countries/territories. It may be interesting to cross this information with funding availability, national GDP or partners' support and, as a result, identify some constructive changes to the PVS Tool and Pathway.

- Members are also encouraged to perform PVS self-evaluations to monitor their progress over time. A new targeted support programme for self-evaluation was developed in 2021 to strengthen Members' capacities to use the PVS Tool and improve their competencies.
- A communication and marketing strategy for the PVS Pathway is needed. One of the main objectives would be to increase Members' engagement with PVS and ensure appropriate resources to manage the expected programme growth.
- Following the COVID-19 pandemic, the PVS Team had to adjust to the closure of international borders. Five tools (Orientation, Gap Analysis, Sustainable Laboratories, Legislation Identification, PVS Self-Evaluation) have been adapted to remote delivery modalities, each with advantages and disadvantages. Blended PVS Evaluation missions are being considered, and three 'adapted' delivery modalities have been piloted: PVS Sustainable Laboratory Support and PVS Pathway VLSP Identification missions in March 2021 and Gap Analysis in August 2021. A total of four missions, including these pilots, have been carried out since March 2021. The PVS Pathway tools are comprehensive, robust and rigorous, and adapting them to the new global context has required considerable time and effort. Learning from them will inform next steps.

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02 Veterinary Services' workforce and resources

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1. Introduction, **p. 31**

2. List of monitored indicators, **p. 32**

3. Data, data sources, and advantages/ limitations of the data used, **p. 33**

4. Descriptive analysis, **p. 35**

5. Conclusions and recommendations for improvement, **p. 38**

To access the interactive dashboard and executive summary of this section click here

1. Introduction

This section begins with the hypothesis that compliance with international standards is better achieved in countries/territories where Veterinary Services and Aquatic Animal Health Services have a stronger capacity, in terms of human and financial resources, to carry out their activities.

Sections 3 of the *Terrestrial Code* and *Aquatic Code* provide the standards to assist Veterinary Services in strengthening their capacity.

In Chapter 3.2. of the *Terrestrial Code* on Quality of Veterinary Services, Article 3.2.4. on personnel and resources specifies that 'Veterinary Services should be appropriately staffed, (...) and should comprise a core of full-time civil service employees including qualified and sufficient veterinarians and veterinary paraprofessionals'. The article recommends that Veterinary Services 'have functional and well-maintained physical resources, adequate operational resources for their ongoing and planned activities, and access to extraordinary resources to respond effectively to emergency situations or new emerging issues'. This should include 'access to suitable physical resources (...) [and] to sufficient operational resources'.

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Article 3.1.2. of Chapter 3.1. of the *Aquatic Code* recommends that 'Responsible authorities should ensure that adequate resources are made available to implement effectively the above activities'. Article 3.1.5. also recommends the WOAH established procedure for the evaluation of Aquatic Animal Health Services 'using the WOAH Performance of Veterinary Services and/or Aquatic Animal Health Services (WOAH PVS Tool: Aquatic)'.

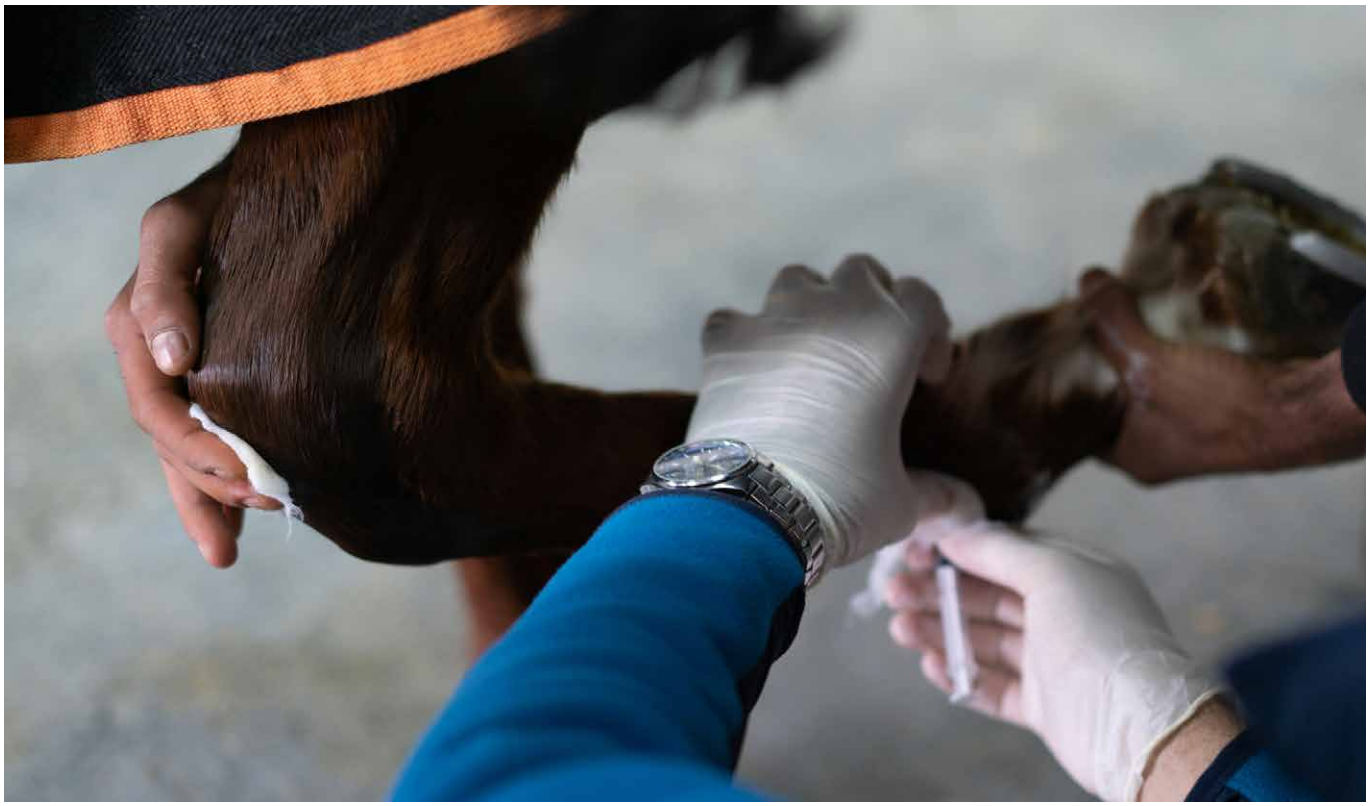
This workforce is in itself a requirement of the WOAH *Terrestrial* and *Aquatic Codes*. In addition, it is a necessary condition for Members to be able to successfully implement the rest of the standards of the *Codes*. It is therefore an input worth measuring, since the level of development of the workforce is likely to be directly related to the level of implementation of the standards.

The objective of this section is to assess to what degree the standards related to workforce and resources are implemented or adhered to by WOAH Members.

2. List of monitored indicators

The following indicators have been monitored:

- Total number of veterinarians and veterinary paraprofessionals (including community animal health workers). Combined, these are called the workforce;
- Ratio of workforce reported against veterinary livestock units (VLUs);
- Ratio of workforce reported against animal biomass;
- Performance of Veterinary Services regarding workforce and other resources, as assessed by the PVS Tool during PVS missions. For this indicator, nine Critical Competencies were considered:
  - **I-1.A**: Professional and technical staffing of the Veterinary Services – Veterinary and other professionals (university qualified)
  - **I-1.B**: Professional and technical staffing of the Veterinary Services – Veterinary paraprofessionals
  - **I-2.A**: Competency and education of veterinarians and veterinary paraprofessionals – Veterinarians
  - **I-2.B**: Competency and education of veterinarians and veterinary paraprofessionals – Veterinary paraprofessionals
  - **I-7**: Physical resources and capital investment
  - **I-8**: Operational funding
  - **I-9**: Emergency funding
  - **III-5.A**: Veterinary Statutory Body Authority
  - **III-5.B**: Veterinary Statutory Body Capacity.



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3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- Number of veterinarians/veterinary paraprofessionals: data extracted from the 2019 WAHIS annual reports, submitted by WOAH Members.
- Veterinary livestock units: calculated from the animal population dataset, extracted from the 2019 WAHIS annual reports, submitted by WOAH Members. The formula used to calculate the VLUs is the one used in the PVS Gap Analysis.[1]
- Animal biomass: information obtained from the database developed by the Antimicrobial Resistance and Veterinary Products (AMR&VP) Department, WOAH, to estimate the animal biomass per country/ territory and per species. The biomass of terrestrial animals (excluding bees, dogs and cats) was considered. This report used the 2019 estimation. The animal biomass was calculated using WOAH's methodology for animal biomass.[2,3]
- Countries' income level: World Bank country classifications by income level: 2021–2022, extracted on 4 May 2022 from http://databank.worldbank.org/data/download/site-content/CLASS.xlsx.
- Countries'/territories' agriculture, forestry and fishing value added (as % of GDP) for 2020: World Bank national accounts data and Organisation for Economic Co-operation and Development (OECD) National Accounts data files, extracted on 4 May 2022 from worldbank.org.
- Performance of Veterinary Services on workforce and resources: Levels of Advancement of nine Critical Competencies of the PVS Tool[4] (I-1.A, I-1.B, I-2.A, I-2.B, I-7, I-8, I-9, III-5.A and III-5.B). The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/Follow-up missions conducted between 2016 and 2021 were taken into account.

These data sources have advantages and limitations, as described in the table below.

	Number of veterinarians/veterinary paraprofessionals	
Advantages	• Standardised categories • Collected once a year • Requested of all WOAH Members	• Official data provided under the supervision of the WOAH Delegate • Already organised in a database
Limitations	• Data not collected these past years owing to the lack of the annual report module in the new WAHIS • Probably not regularly updated by countries/ territories • Indicator of the size of the animal health workforce, not of its capacity	• No distinction between professionals working with pets *versus* production animals or between professionals working with different production species. Interpretation of these figures should consider these details when relying on the data for animal-specific disease analysis

[1] Equivalent to the number of cattle + 0.1 x the number of small ruminants + 0.5 x the number of horses and dromedaries + 0.3 x the number of donkeys + 0.2 x the number of pigs + 0.01 x the number of poultry

[2] Methodology presentation of the WOAH Animal Biomass, Morgan Jeannin, WOAH Sub-Regional Workshop on the database on antimicrobial agents intended for use in animals in Eastern and Southern Africa, Kenya, 2019

[3] Bulut E. & Ivanek R. (2022). – Comparison of different biomass methodologies to adjust sales data on veterinary antimicrobials in the USA. *J. Antimicrob. Chemother.*, **77** (3), 827–842. https://doi.org/10.1093/jac/dkab441

[4] Reference of Critical Competencies, from the Sixth Edition of the PVS Tool, in 2013

	Veterinary livestock units	
Advantages	• Based on animal population data from the WAHIS annual report • Calculated using a formula used in PVS Gap Analysis reports • Limited bias linked to the size/value of the animals	• Commonly used to capture not only the varying sizes of different species of interest, but also the differing effort involved in delivering veterinary services to the different species
Limitations	• Last year available: 2019	• Several formulas exist to estimate veterinary livestock units. For consistency with other WOAH reports, the one used here was obtained from the PVS Gap Analysis reports
	Animal biomass	
Advantages	• Based on animal population data from the WAHIS annual report; calculated by the AMR&VP Department for its purposes • Recognised[5] methodology for antimicrobial use	• Limited bias linked to the size/value of the animals • Already developed internally and revised every year • Available by species and country/territory • Can be aggregated as needed
Limitations	• Last year available: 2019	• Country/territory biomass not yet validated by Members even if already used for the annual Antimicrobial Agents Intended for Use in Animals report
	Countries'/territories' income level and agriculture GDP	
Adv.	• Well-recognised and reliable source	• Easy to download
Lim.	• Need to rely on regular extraction, but direct connection – such as an application programming interface (API) into the World Bank databases – might be explored in the future	
	PVS Critical Competencies: (I-1.A&B, I-2.A&B, I-7, I-8, I-9, and III-5.A&B)	
Adv.	• See Section 01 on Governance and PVS	
Lim.	• See Section 01 on Governance and PVS	

Other limitations include the fact that the calculation of ratios (animal biomass to workforce or VLUs to workforce) does not necessarily correlate with the availability of or access to services as there are many other variables that need to be taken into account.

[5] Bulut E. & Ivanek R. (2022). – Comparison of different biomass methodologies to adjust sales data on veterinary antimicrobials in the USA. *J. Antimicrob. Chemother.*, **77** (3), 827–842, https://doi.org/10.1093/jac/dkab441

4. Descriptive analysis

a) Number of veterinarians and veterinary paraprofessionals (including community animal health workers) which combined are called workforce

Figure 1 describes human resources in the Veterinary Services. It does not provide insight into the capacity of the Veterinary Services. As mentioned above, the workforce data have limitations, including that they are not collected by sector and do not differentiate professionals based on their focus on production animals, aquatic animals, pets, One Health or other veterinary areas.

Figure 1 also reports, in black, 19 million people working as veterinarians and veterinary paraprofessionals (including community animal health workers), as reported in WAHIS annual reports in 2019. It also provides an estimate, in orange, of the total number of VLUs (49,147 million), and in blue, the total global animal biomass (1,018 million tonnes).

b) Ratio of reported workforce to VLUs

The centre of **Figure 1**, in orange, displays the ratio of workforce to VLUs. It indicates the number of VLUs that an individual veterinarian or veterinary paraprofessional has to take care of. On average, an individual is in charge of 2,611 VLUs.

c) Ratio of reported workforce to animal population (animal biomass)

The ratio of workforce to animal biomass can be found at the bottom of **Figure 1**, in blue. This row indicates the animal biomass (in tonnes) that an individual veterinarian or veterinary paraprofessional has to take care of. On average, an individual is in charge of 55 tonnes of animal biomass.

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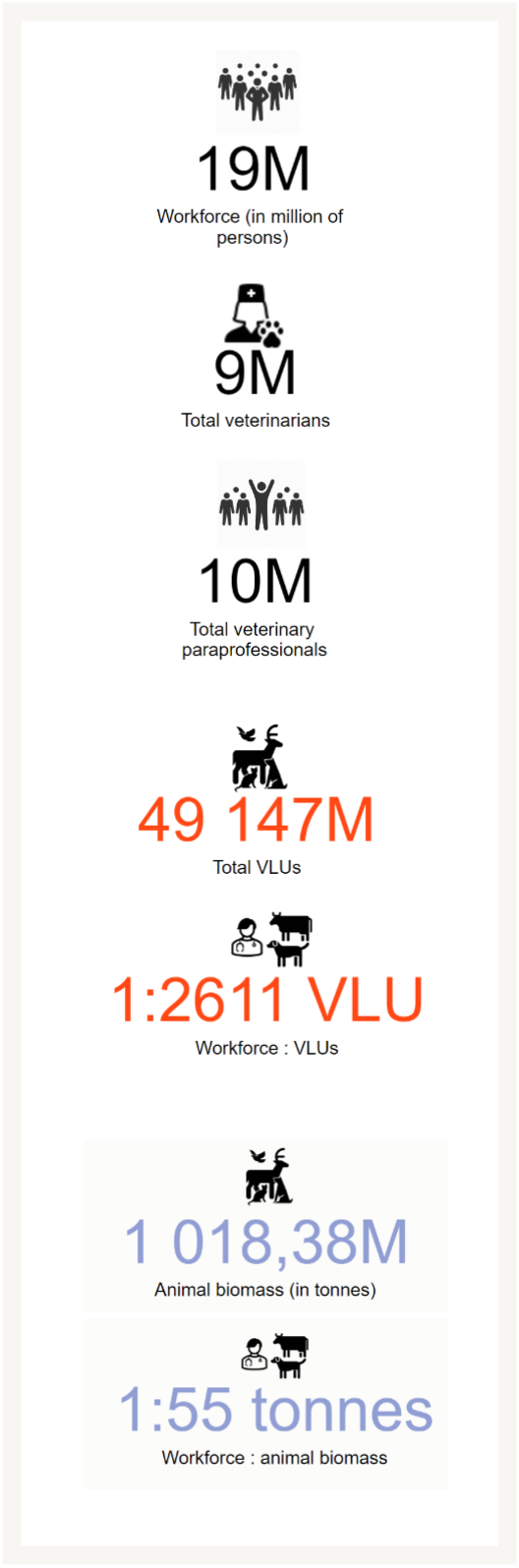

Figure 1. Workforce of WOAH Members (number of veterinarians and paraprofessionals) (black); total VLUs and ratio of VLUs by workforce (orange); estimated animal biomass and ratio of animal biomass by workforce (blue) (2019 data)

Figure 2 describes how these two ratios are distributed by region. Other graphs in the dashboard show distribution based on different parameters, such as agriculture GDP and level of income.

Regional distribution reveals that in Africa, there is one veterinarian or veterinary paraprofessional for 3,530 VLUs or 112 tonnes of animal biomass, while in Europe there is one individual for 612 VLUs or 25 tonnes of animal biomass.

d) Performance of Veterinary Services regarding workforce and resources, as assessed by the PVS Tool

Between 2016 and 2021, 43 WOAH Members undertook a PVS Evaluation or Follow-up mission. Here, the focus is on nine Critical Competencies that are directly relevant to workforce and other resources of the Veterinary Services:

- **Critical Competency I-1.A**: Professional and technical staffing of the Veterinary Services – Veterinary and other professionals (university qualified)
- **Critical Competency I-1.B**: Professional and technical staffing of the Veterinary Services – Veterinary paraprofessionals
- **Critical Competency I-2.A**: Competency and education of veterinarians and veterinary paraprofessionals – Veterinarians
- **Critical Competency I-2.B**: Competency and education of veterinarians and veterinary paraprofessionals – Veterinary paraprofessionals
- **Critical Competency I-7**: Physical resources and capital investment
- **Critical Competency I-8**: Operational funding
- **Critical Competency I-9**: Emergency funding
- **Critical Competency III-5.A**: Veterinary Statutory Body Authority
- **Critical Competency III-5.B**: Veterinary Statutory Body Capacity.

In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

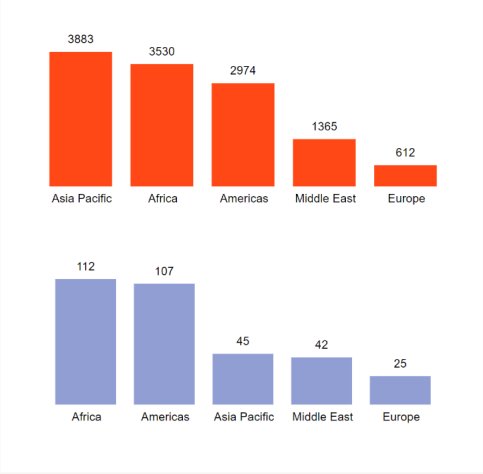

Figure 2. Workforce ratios aggregated by WOAH regions (2019 data). Ratio of VLUs per workforce (total VLUs in a region divided by the total workforce for the same region) (top); ratio of animal biomass to workforce (total animal biomass in a region divided by the total workforce in the same region) (bottom)

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Figure 3 represents the distribution of Levels of Advancement for each Critical Competency relevant to workforce.

Around half of Members were found to meet or exceed minimal expectations in relation to staffing levels of veterinarians and other professionals. Regarding competencies of veterinary paraprofessionals, 67% were given a score of 3 or above. It is interesting to note that nearly half of the concerned Members did not meet minimal capacity regarding competencies of veterinarians (Critical Competency I-2.A), even when they met or exceeded minimal capacity relating to staffing levels (Critical Competency I-1.A).

On a less positive side, for physical resources and operational and emergency funding, between 51% and 58% of Members that engaged in a PVS mission were assessed as not reaching minimal capacity. With regard to Veterinary Statutory Body (VSB) Authority, 47% of the Members were assessed as having minimal capacity or above, while only 16% were considered to have minimal VSB capacity or above.

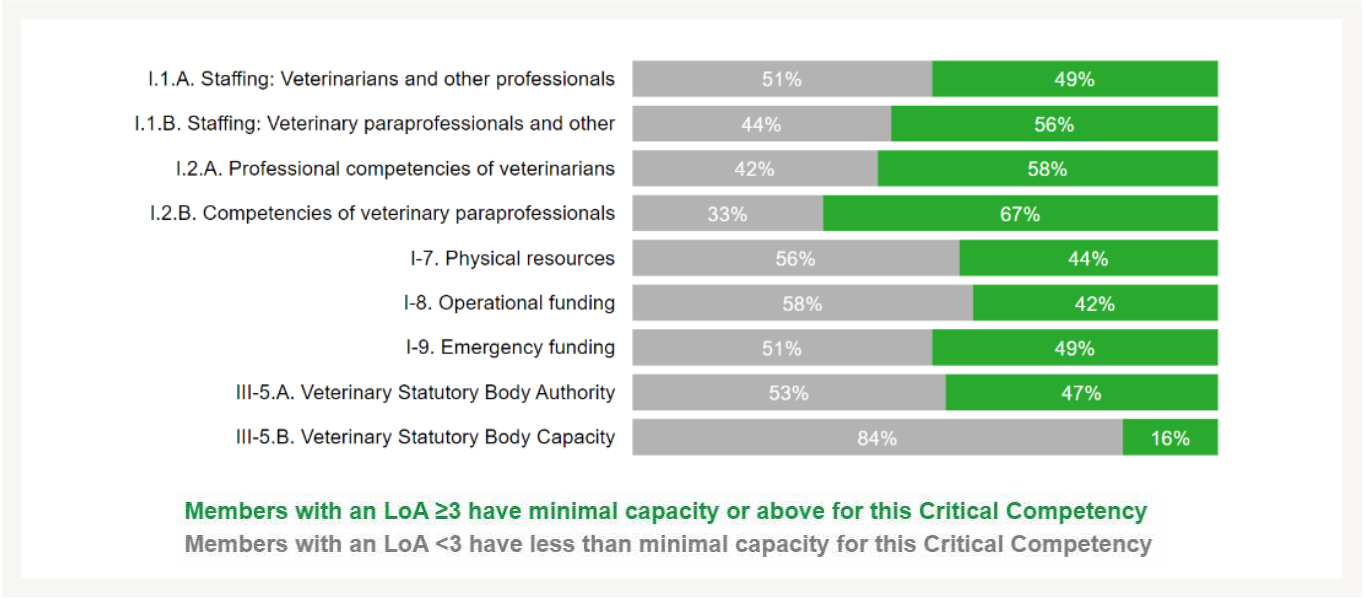

Figure 3. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for each of the nine Critical Competencies related to workforce and resources as assessed in PVS missions between 2016 and 2021

As **Figure 4** indicates, 7% of Members that have undertaken a PVS Evaluation or Follow-up mission between 2016 and 2021 were considered to meet or exceed minimum capacity, meaning that they reached a Level of Advancement of 3 or more for all of the selected Critical Competencies relevant to workforce and resources.

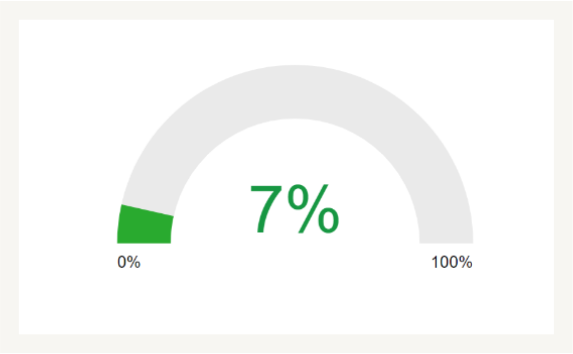

Figure 4. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for all nine Critical Competencies related to workforce and resources as assessed in missions between 2016 and 2021

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

- Selected indicators show major variability between regions in terms of the inputs provided to the Veterinary Services. The geographical distribution of PVS missions should be taken into account when interpreting these results, as some WOAH regions undertook a limited number of PVS missions.
- A limited percentage of WOAH Members (7%) have access to sufficient resources. This is a concerning finding which highlights that strengthening national Veterinary Services is critical and should be better considered in national policies. WOAH should increase its advocacy for appropriate resources of national Veterinary Services, which are considered a Global Public Good. Data from the Observatory could be used to sensitise decision makers.
- Capacity building strategies should differentiate WOAH Members that have enough staff (Critical Competencies I-1.A&B) but insufficient competencies (Critical Competencies I-2.A&B) from those that do not even have enough staff. While all should have access to capacity building activities, some specific activities could be considered for Members whose workforce is not numerous enough to implement their national programmes. Advocacy to decision makers could highlight the benefits of hiring more professionals or encouraging the maintenance for a few years of trained staff in the position for which they have been trained. In addition, WOAH may consider the need to further develop the PVS targeted support programme related to workforce. This would provide additional support to Members on assessing their workforce needs and developing accurate workforce development plans.
- Until now, the workforce has not been collected by category of animals (terrestrial *versus* aquatic or species specific), production systems or diseases. For this reason, careful attention should be given to the interpretation of these figures when using them, for example, for disease-specific analysis or aquatic *versus* terrestrial animal health systems. In addition, the need to distinguish the workforce dedicated to pets as opposed to production animals, and to reflect these differences in WAHIS data collection, should be considered. This issue will be included as part of the overall discussion of the WAHIS annual report (planned for the end of 2022 or early 2023), aimed at determining what kind of information WOAH should collect from Members *via* the WAHIS annual report.

- In the future, the correlation between the human resources indicated in WAHIS and the Level of Advancement for Critical Competencies I-1.A&B could be examined. Potentially, an indicative benchmark could be identified depending on Members' profiles.
- Other interesting data are collected during PVS Evaluation, Follow-up, and Gap Analysis missions, such as the annual budget allocated to Veterinary Services. This is among the critical information that the PVS Evaluation System should collect and store in a way that allows further analysis. Such an analysis should ensure that confidentiality is respected. Indicative benchmarking could then be explored. Similarly, existing tools developed for the PVS Gap Analysis to assess workforce gaps against specific work requirements of the national Veterinary Services may enrich this analysis in the future.
- The lack of minimal VSB capacity in 84% of the Members raises important concerns:
  - First, it may impact the counting of veterinarians and veterinary paraprofessionals, especially those in the private sector, and therefore bias the above indicators using WAHIS information on workforce.
  - Then, VSBs should be responsible for the approval of veterinarians' and veterinary paraprofessionals' training qualifications and for setting the requirements for continuing education; the presence of a properly functioning and fully mandated VSB can potentially contribute to raising the assessment levels for Critical Competencies I-2.A&B.
  - Establishing or strengthening VSB authority and capacity should be a top priority. In the *Terrestrial Code*, Article 3.4.6. of Chapter 3.4. on Veterinary Legislation provides recommendations on that matter.
  - In addition, WOAH has established a VSB Twinning Programme that offers the possibility for a 'beneficiary' VSB wishing to improve its performance to link with a 'parent' VSB. While the Twinning Programme is currently being reviewed, it may be replaced or supplemented in the future with alternative approaches for improving the performance of VSBs.

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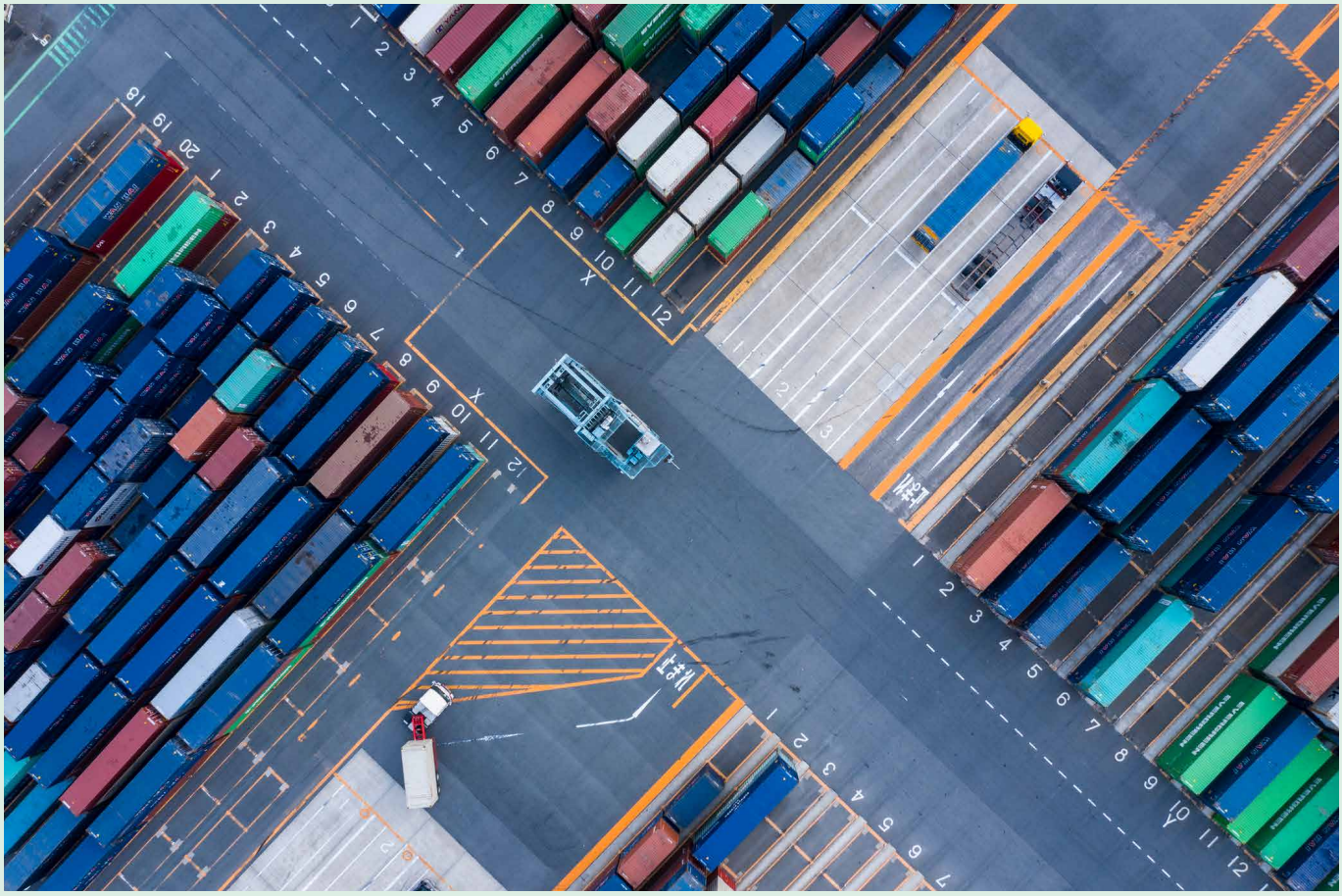
03 World Trade Organization (WTO) notifications



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1. Introduction

The World Trade Organization (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement) defines the basic rules for the application of food safety and animal and plant health measures in international trade. The WTO's Members are encouraged to use international standards, guidelines and recommendations where they exist.

The SPS Agreement recognises WOAH as the reference organisation for international standards concerning animal health and zoonoses.

The WTO routinely collects and publishes information that could be used as indicators of the level of uptake of the WOAH *Aquatic* and *Terrestrial Codes*, particularly given that the vast majority of WTO Members are WOAH Members and *vice versa*.

- **WTO SPS notifications:** Under Article 7 and Annex B of the SPS Agreement, WTO Members are required to notify the WTO of new or modified sanitary legislation that may have a significant effect on the trade of other WTO Members when:

  - an international standard, guideline or recommendation does not exist;

  - the content of proposed sanitary legislation differs from the content of an international standard, guideline or recommendation.

  Members are also encouraged to notify the WTO of all new or modified legislation that is based on, conforms to, or is substantially similar to an international standard, guideline or recommendation, if it is expected to have an effect on the trade of other Members.

  These notifications are subsequently recorded by the WTO and available on the ePing SPS&TBT Platform.

- **WTO dispute settlement mechanism**: Another activity of the WTO is to resolve trade disputes when a WTO Member believes that another Member is violating an agreement or a commitment that it has made with the WTO. Disputes are compiled in a database, including those related to the SPS Agreement and involving animal health issues.

Notifications filed with the WTO, as well as WTO Members' disputes concerning animal health, and performance of Veterinary Services on Critical Competencies related to market access and interaction with stakeholders were examined. The objective of this section is to assess to what degree trade-related standards are implemented or adhered to by WOAH Members, by analysing information collected by the WTO.

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2. List of monitored indicators

The following indicators have been monitored:

- Number of WTO notifications having an effect on trade that involve animal diseases;
- Number of animal health-related disputes filed with the WTO;
- Performance of Veterinary Services regarding access to trade and interaction with stakeholders, including the WTO, as assessed by the PVS Tool (WOAH).

3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- Notifications of legislation filed with the WTO that may have an effect on trade. These were extracted from the ePing SPS&TBT Platform by selecting 'regular' and 'emergency' notifications from 1 January 2005 to 31 December 2021 and by selecting 'OIE'[1] under 'International Standard, guideline or recommendation'.
  - The information on regionalisation (whether notification affected an entire Member or part of it) was manually added to the data extracted.
  - To obtain data related to aquatic animals, the above process was followed with the exception of adding 'aquatic' in the 'description of the content' box.
- Disputes under the SPS Agreement can be found on the WTO website. Those affecting animal diseases or that had WOAH involvement, from 1995 to 1 July 2022, were selected manually.
- Performance of Veterinary Services on access to trade and interaction with stakeholders: Levels of Advancement of Critical Competencies III-3, IV-2, IV-3, IV-4 and IV-6 of the PVS Tool.[2] The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/Follow-up missions conducted between 2016 and 2021 were taken into account. There were 43 reports, but only 40 have been considered as the rest correspond to WOAH Members that are not WTO Members.

[1] WTO Platform still refers to OIE standards
[2] Reference of Critical Competencies, from the Sixth Edition of the PVS Tool, in 2013

These data sources have advantages and limitations as described in the table below.

	Notification of sanitary measures that have an effect on trade	
Advantages	• The vast majority of WOAH Members are also WTO Members • Standardised format	• The notification template makes a specific reference to the OIE/WOAH standards • Claims of compliance/non-compliance with OIE/WOAH standards are made
Limitations	• The information is self-declared by WTO Members; WTO validation of these notifications is limited to the completeness of all sections and to the identification of keywords • Notifications to the WTO are required when a standard does not exist or when the legislation proposed deviates from it; if compliant, the notifications are only encouraged • The variation in number of notifications amongst WTO Members is significant	• Some WTO Members file one single notification that affects multiple countries, whereas others file a notification for each of the countries that are affected by it. This uneven way of reporting requires significant cleaning of the data to limit biases in the data analysis • Notifications may affect entire countries or regions within them. To see whether notifications apply 'regionalisation', the documents must be individually checked and information added manually

	WTO disputes	
Advantages	• Information publicly available on the WTO website	• The nature of the disputes is well documented
Limitations	• Selection of the disputes related to animal health from all disputes under the SPS Agreement must be done manually	• Not all the issues encountered by WTO Members are subject to the WTO dispute settlement process

	PVS Critical Competencies (III-3, IV-2, IV-3, IV-4 and IV-6)
Adv.	• See Section 01 on Governance and PVS
Lim.	• See Section 01 on Governance and PVS

4. Descriptive analysis

a) WTO notifications having an effect on trade that involve animal diseases

Initially, and to ensure that looking into WTO notifications was relevant for WOAH, the level of correspondence between WOAH and WTO Members was assessed. It was found that 90% of the 182 WOAH Members are also WTO Members and 93% of the 164 WTO Members are also WOAH Members (**Fig. 1**).

As presented in **Figure 2**, there were 2,594 notifications filed with the WTO between January 2005 and December 2021 that explicitly reported being related to existing WOAH standards. These notifications originated from 77 WTO Members (47%), meaning that 53% of WTO Members did not submit any notification during the period examined. A total of 172 countries and territories were affected by these notifications.

To contextualise the WOAH-related notifications to the WTO, the 2,594 notifications account for only approximately 6% of all SPS notifications filed with the WTO during the same period.

The numbers shown in **Figure 2** must be read carefully as not all 77 WTO Members that submitted notifications did so in equal share; ten Members were responsible for 1,588 (60%) of the notifications.

Figure 3 displays the distribution of the number of notifications per year and indicates an increasing tendency to submit notifications among WTO members.

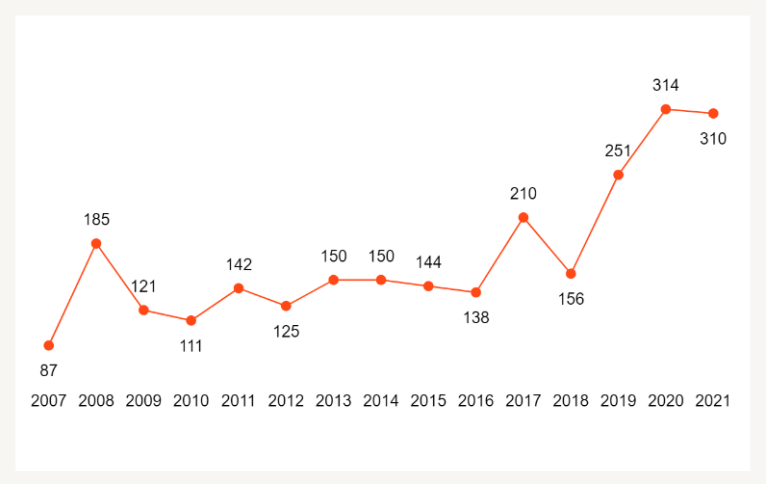


Figure 3. Number of WTO notifications submitted per year, 2007–2021

Figure 1. Comparison between WTO and WOAH Members

Figure 2. Number of WTO notifications, number of Members they originate from and number of countries and territories they affect

Figures 4 breaks down the number of WTO notifications using different criteria, such as animal diseases, conformity with WOAH standards and whether they impact a region or an entire country.

Avian influenza, FMD, ASF, BSE and CSF were selected as they were the diseases most commonly reported in notifications to the WTO.

It is worth mentioning that most of the notifications (83%) claimed that the new or amended legislation that could affect trade complied with WOAH standards. This statement of conformity to the WOAH *Codes* is a self-assessment made by the notifying Member that has not undergone any validation process by the WTO Secretariat. Still, it suggests that most WOAH Members reporting to the WTO do take into account the WOAH *Codes* when they amend their legislative framework or introduce new legislation with regard to animal diseases.

In terms of 'regionalisation', 22% of these notifications indicated targeting a specific region (or a zone, in WOAH terminology) within a country, whereas 47% affected entire countries/territories. The rest were intended for all trading partners **(Fig. 4)**.

The analysis also shows that avian influenza triggered nearly a third (31%) of all the notifications, thus documenting the impact that this disease has on trade of animals and products of animal origin.

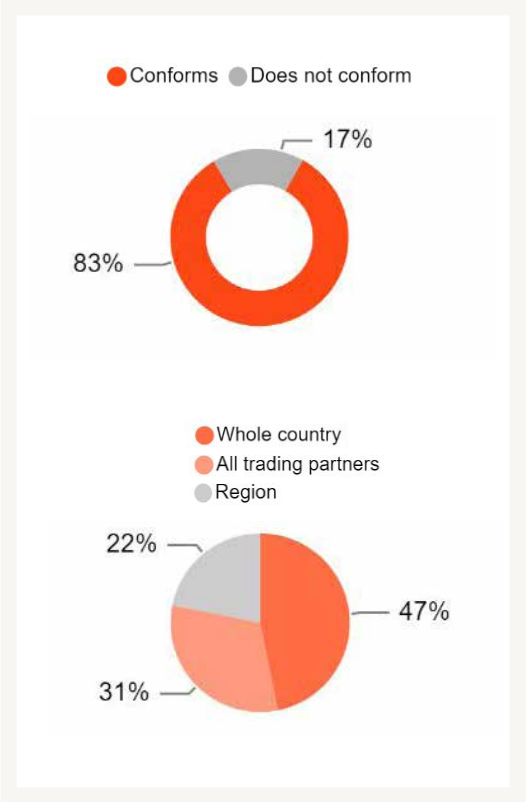
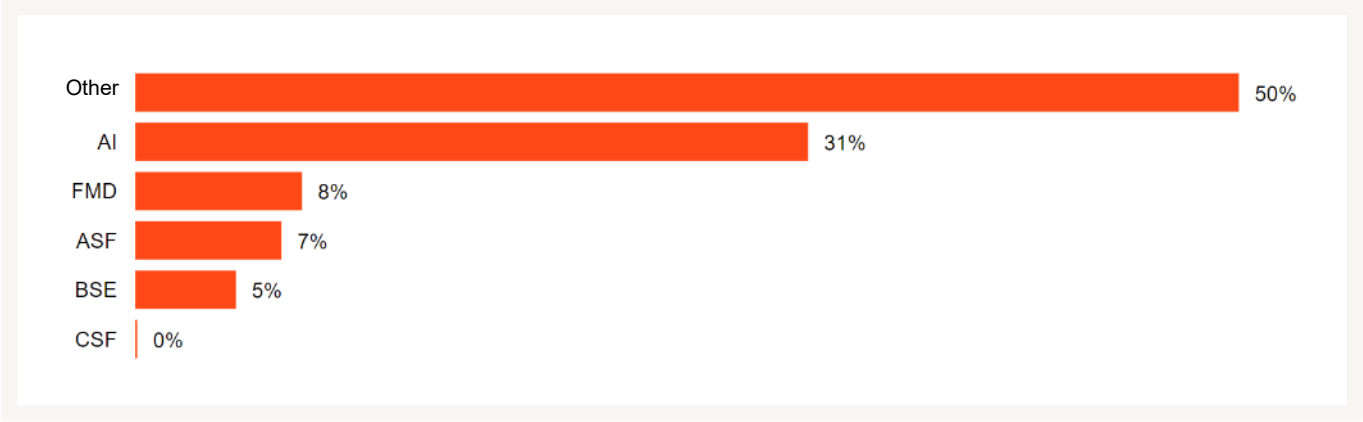


Figure 4. Percentage breakdown of WTO notifications under different criteria: conformity with WOAH standards (first from the top), affecting entire countries/territories or regions (second from the top) and by WOAH disease (bottom).



The vast majority of the animal health-related notifications filed with the WTO refer to terrestrial animal diseases (97%). There is also a significant disparity in the number of notifications to the WTO between WOAH regions, as shown in **Figure 5**. It would be worth exploring why the diseases affecting aquatic animals are not as visible in this forum, especially given that Asia Pacific, where fisheries are particularly relevant, is the region submitting the highest number of notifications on both terrestrial and aquatic animal health (bottom of **Fig. 5**).

b) Number of animal health-related disputes filed with the WTO

According to the WTO dispute settlement database, 612 disputes were brought to the WTO and over 350 rulings were issued from 1995 to 1 July 2022. Of these disputes, 52 referred to the SPS Agreement, and 8 of those (15%) involved animal diseases (**Fig. 6**). Whilst there are many elements to consider when analysing WTO disputes, these low figures indicate that animal diseases are not a major source of 'conflict' triggering the WTO dispute settlement process. However, there is not enough information to conclude that this is the result of high adherence to WOAH standards by WTO Members. The number of disputes involving specific animal diseases is reported in **Figure 6**.

c) Performance of Veterinary Services regarding access to trade and interaction with stakeholders, including the WTO, as assessed by the PVS Tool (WOAH)

Between 2016 and 2021, 40 PVS reports were produced for Members of both WOAH and the WTO. Of these reports, 23 originated from Members that had filed notifications with the WTO and 17 corresponded to Members that had not submitted any notification.

The Levels of Advancement in relevant Critical Competencies, listed below, were compared between the Members that notified new or amended legislation to the WTO and those that did not.

The Critical Competencies taken into account were:

- **III-3:** Official representation
- **IV-2:** Implementation of legislation and regulations and compliance thereof
- **IV-3:** International harmonisation
- **IV-4:** International certification
- **IV-6:** Transparency

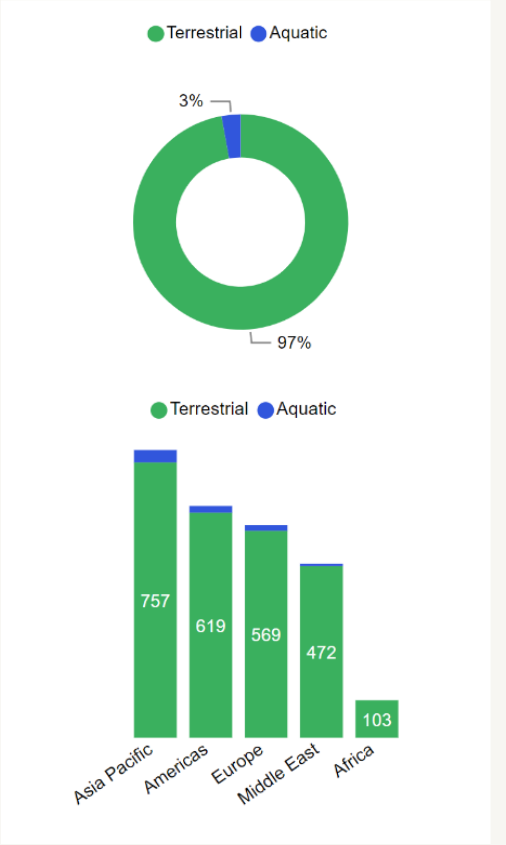


Figure 5. Percentage of WTO notifications that affect aquatic and terrestrial animals (top); number of notifications related to aquatic *versus* terrestrial animals aggregated by region (bottom)

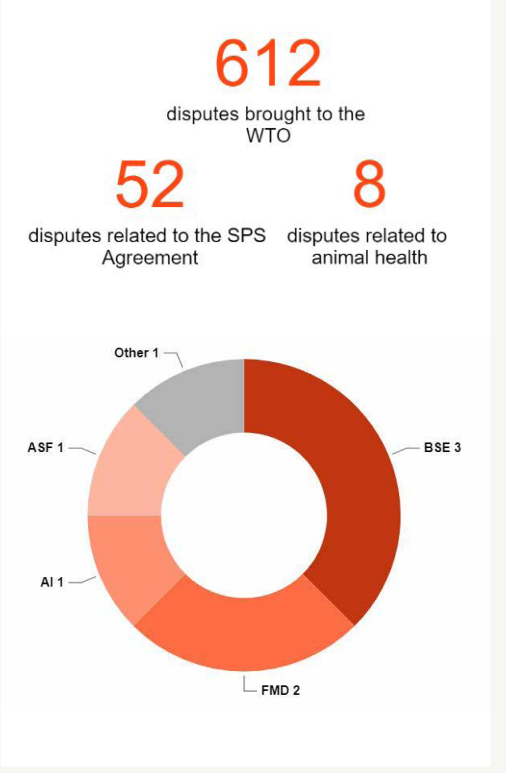


Figure 6. WTO disputes that related to animal diseases

In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

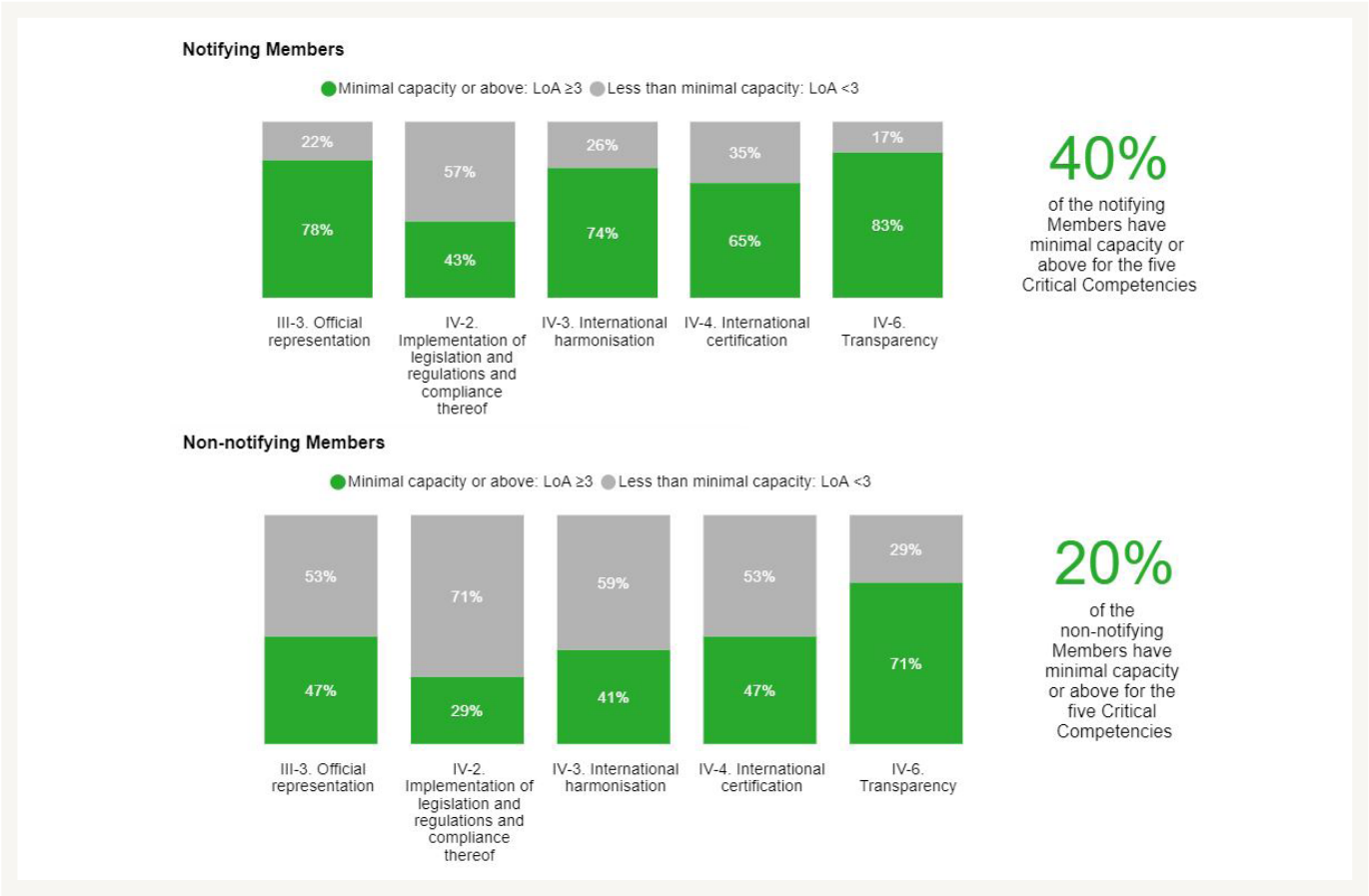


Figure 7. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for each of the five Critical Competencies related to trade as assessed in PVS missions between 2016 and 2021, in two groups of Members: Members that have submitted at least one notification to the WTO (top) and Members that did not submit any notification to the WTO (bottom)

An in-depth statistical analysis has not been carried out. However, as **Figure 7** shows, WOAH Members that engage with the WTO by submitting notifications tend to score higher in the relevant PVS Critical Competencies. **Figure 7** reinforces this idea by revealing that the percentage of Members that comply with all five selected Critical Competencies is doubled among those that have notified to the WTO.

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5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

The Members of the WTO and WOAH are largely the same, which makes data extracted from the WTO a reasonable source of information in terms of monitoring the uptake of WOAH standards. An important limiting factor of the WTO notifications is that they do not derive proportionally from all WTO Members. More than half of Members never reported on animal health issues during the period studied; in contrast, 60% of the notifications were submitted by ten Members, which introduces a bias in the analysis of the data.

WTO information is gathered from databases that, in many instances, contain PDFs or other formats that do not permit the automation of information processing. Some WTO Members recently began a discussion about the need to modify the WTO notification template to facilitate the capturing of information and ease data analysis; however, for the time being this initiative has not received enough support.

The low percentage of notifications that relate to aquatic animal diseases is remarkable. It begs the question of whether aquatic animal diseases are poorly regulated or whether regulation in this regard has little effect on trade. Another explanation could be that since there is one SPS Focal Point per country, aquatic-related matters would be underreported if this Focal Point has limited awareness of the aquatic sector. This is an area that should be explored in the future.

Finally, WTO notifications tend to be overly broad and do not restrict their impact to a specific area within a WTO Member; for example, slightly more than one-fifth of the notifications target regions, whereas the rest affect entire countries/territories. The format of the template does not allow the selection of a specific region within a country/territory when declaring the target of the notification. Areas affected by these notifications can only be specified in the body of the document. In any case, the concept of 'regionalisation' does not appear to be fully utilised by Members, as outlined by other sections of this annual report such as 'Zoning and compartmentalisation'. This should prompt a deep reflection to identify reasons for this situation.

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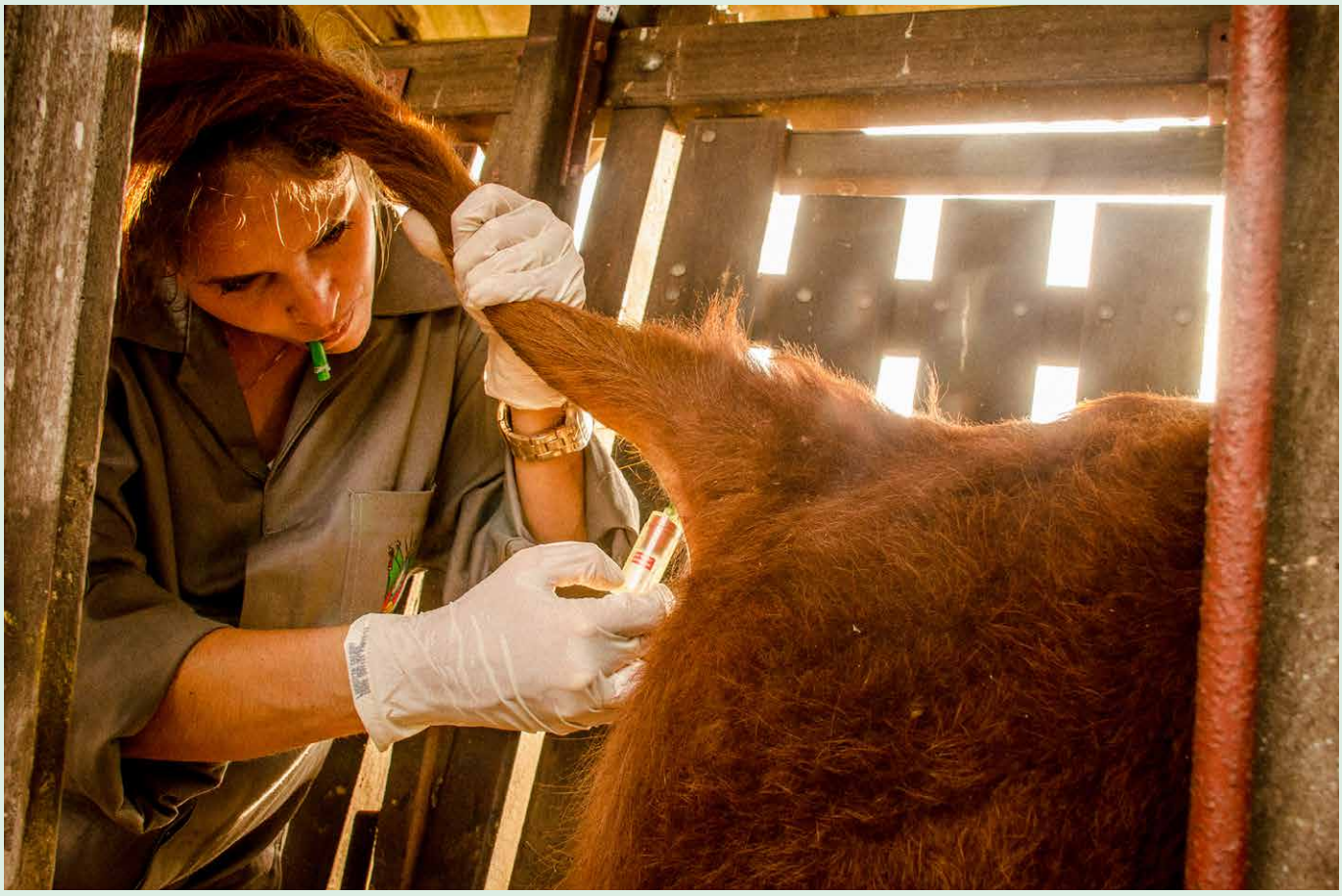
04 Disease detection, surveillance and diagnosis



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To access the interactive dashboard and executive summary of this section click here

1. Introduction

Animal diseases negatively impact livestock health and productivity, as quantified by the Global Burden of Animal Diseases (GBADs) programme. Veterinary Services and Aquatic Animal Health Services need access to early-stage, timely information about disease outbreaks to take appropriate actions that limit disease spread and its negative impacts.

Standards related to animal health surveillance are covered in Chapter 1.4. of the *Terrestrial Code*, which states, 'In general, surveillance is aimed at demonstrating the absence of infection or infestation, determining the presence or distribution of infection or infestation or detecting as early as possible exotic diseases or emerging diseases.' Surveillance is similarly addressed in Chapter 1.4. of the *Aquatic Code*. In addition, disease-specific surveillance recommendations can be found in some disease-specific chapters of the *Codes*, such as in Articles 8.8.40. to 8.8.42. of the chapter on FMD.

According to Chapter 1.1. of the *Terrestrial Code* and *Aquatic Code*, WOAH Members have the obligation to notify WOAH of the presence of all listed diseases (as well as emerging diseases, as defined in the glossaries of the *Codes*). To do so, they must notify any exceptional event within 24 hours and provide information about all WOAH-listed diseases in six-monthly reports. The diseases concerned by these notification rules are listed in Chapter 1.3. of the *Terrestrial Code*, and *Aquatic Code*.

Undertaking surveillance for listed and emerging diseases and having robust diagnostic capability is therefore critical to enable Members to meet their notification obligations. However, many WOAH Members do not prioritise the surveillance and diagnosis of all these diseases equally: depending on their epidemiology, national resources and capacity, Members may decide to limit their activities to priority diseases. There is no obligation for Members to make all WOAH-listed diseases notifiable at national level. However, legislation requiring all WOAH-listed diseases to be notifiable is presumed to facilitate Members' ability to comply with their reporting obligations for these diseases under the *Codes*.

This section considers only the diseases listed in Chapter 1.3. and whether WOAH Members report them as being notifiable by law at the national level.

The objective of this section is to assess to what degree the surveillance-related standards are implemented or adhered to by WOAH Members.

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2. List of monitored indicators

The following indicators have been monitored:

- Number of diseases that are notifiable at national level per country, amongst WOAH-listed diseases;
- Percentage of WOAH Members for which a given disease is notifiable by law at national level;
- Percentage of WOAH Members for which a given disease is notifiable by law at national level and that have a surveillance system in place for that disease;
- Percentage of WOAH Members for which a given disease is notifiable by law at national level and that have a surveillance system in place and that have reported a National Reference Laboratory for that disease;
- Performance of Veterinary Services regarding surveillance, as assessed by the PVS Tool. For this indicator, six Critical Competencies were considered:
  - **II-1.A**: Access to veterinary laboratory diagnosis
  - **II-1.B**: Sustainability of national laboratory infrastructures
  - **II-2**: Laboratory quality assurance
  - **II-5.A**: Passive epidemiological surveillance
  - **II-5.B**: Active epidemiological surveillance
  - **II-8.B**: *Ante*- and *post-mortem* inspection.

3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- Control measures as submitted in the WAHIS six-monthly reports (data collected and presented correspond to the two semesters of 2019). Focus has been given to:
  - WOAH Members reporting diseases as notifiable in their national legislation;
  - Control measures related to disease surveillance. For the purpose of this analysis, Members are considered as reporting surveillance for a given disease when they have reported at least one of the following measures: general surveillance, targeted surveillance, monitoring or screening.
- Presence of a National Reference Laboratory for a given disease. This information was collected from the last available WAHIS annual report, which is from 2019. For this analysis, focus will be on the reporting of the laboratory, without consideration of diagnostic test availability.
- Performance of Veterinary Services on surveillance: Levels of Advancement of the six Critical Competencies directly related to surveillance of the PVS Tool[1] (II-1.A&B, II-2, II-5.A&B, II-8.B). The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/Follow-up missions conducted from 2016 to 2021 were taken into account.

[1] Reference of Critical Competencies from the Sixth Edition of the PVS Tool (2013)

These data sources have advantages and limitations as described in the table below.

	Control measures as submitted in WAHIS six-monthly reports	
Advantages	• Standardised information • Collected for all WOAH-listed diseases • Requested of all WOAH Members	• Official data provided under the supervision of the WOAH Delegate • Already organised in a database
Limitations	• Self-declaration from the country/territory that is impossible to validate systematically • Automatic processing of the control measures data in WAHIS from one semester to the next; as a result, some Members may not regularly revise and update the control measures reported to WOAH or may stop reporting measures that are no longer implemented	• Acknowledging the time for Members to submit their six-monthly reports and for WOAH to validate them, there are still a limited number of validated reports for 2020 and 2021
	Presence of National Reference Laboratories	
Advantages	• Standardised information • Collected once a year for all WOAH-listed diseases • Requested of all WOAH Members	• Official data provided under the supervision of the WOAH Delegate • Already organised in a database
Limitations	• Outdated information (2019), as annual reports have not been requested since the launch of the new WAHIS • Automatic processing of the laboratory-related information in WAHIS from one year to the next means that some Members may not revise it regularly	• Known gaps in the quality of laboratory data collected through WAHIS, inherent to the reporting process (e.g. Focal Points entering the data may not be the most knowledgeable people on this topic in their country) • No information about the participation of these laboratories in proficiency tests or compliance with WOAH standards
	PVS Critical Competencies related to Surveillance (II-1.A, II-1.B, II-2, II-5.A, II-5.B and II-8.B)	
Adv.	• See Section 01 on Governance and PVS	
Lim.	• See Section 01 on Governance and PVS	

Additional limitations:

- PVS Evaluation/Follow-up missions assess the capacity of Veterinary Services to implement WOAH international standards relevant to surveillance without directly assessing the level of implementation of surveillance measures reported in WAHIS for specific diseases. Still, PVS data are considered a good proxy to indicate the general capacity of Members in implementing these measures. This caveat should be considered when interpreting the results.
- PVS data are transversal, while control measures data from WAHIS are reported by disease and species. In addition, only the PVS reports from 2016 to 2021 were considered, whereas the information on control measures comes from 2019 WAHIS six-monthly reports. These different dates and scopes should be considered when interpreting the results.

4. Descriptive analysis

a) Number of diseases that are notifiable at national level per Member, amongst WOAH-listed diseases

Figure 1 displays the total number terrestrial and aquatic WOAH-listed diseases in 2019, as per Chapter 1.3. of the *Codes*.

The number of WOAH-listed animal diseases reported by Members as notifiable at national level in 2019 was examined. **Figure 2** represents the distribution of WOAH Members depending on the number of terrestrial (left, in green) and aquatic (right, in blue) animal diseases reported as notifiable at national level in 2019. For terrestrial animal diseases, 52 Members reported having between 81 and 90 of those diseases notifiable at national level. This accounts for a third of the Members that submitted information (154).

Figure 1. Total number of WOAH-listed diseases in 2019 (orange), split into terrestrial (green) and aquatic (blue) diseases

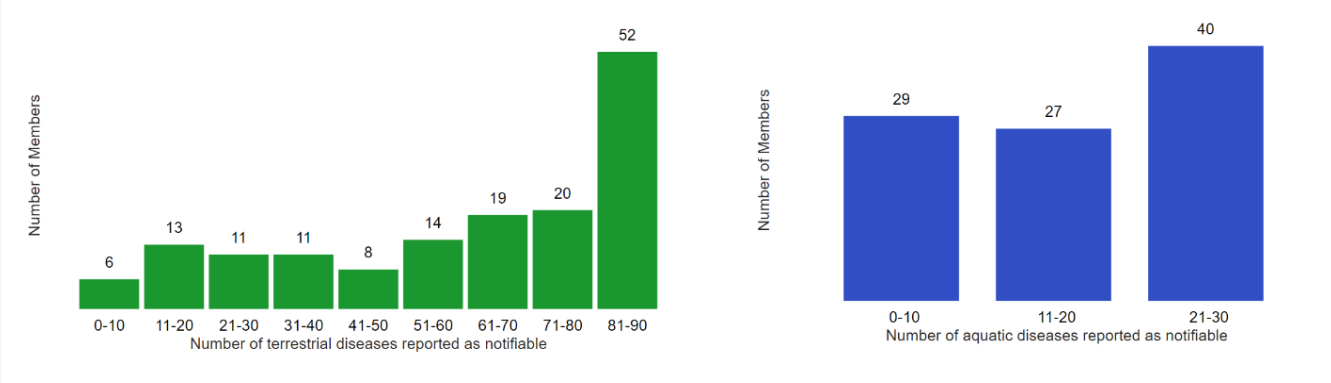

Figure 2. Distribution of WOAH Members in relation to the number of terrestrial (left, in green) and aquatic (right, in blue) animal diseases that were reported as notifiable at national level in 2019

For aquatic animal diseases, 40 Members reported having between 21 and 30 diseases notifiable at national level, which equates to 42% of Members that submitted information.

Considering geographical distribution, the median number of diseases that were notifiable at national level in 2019 varies by WOAH region. The median ranges from 37 to 88 for terrestrial and from 15 to 29 for aquatic animal diseases (**Fig. 3**).

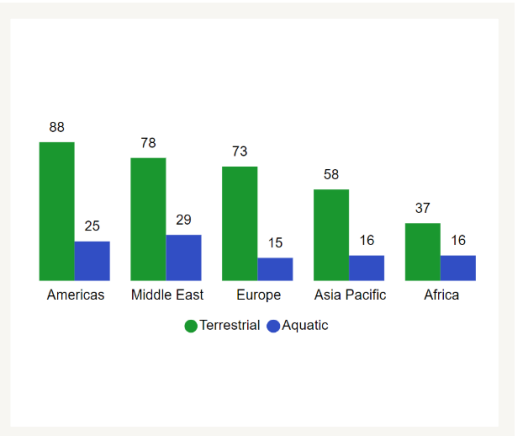

Figure 3. Median number of terrestrial (green) and aquatic (blue) animal diseases notifiable at national level in 2019, by WOAH region

b) Percentage of WOAH Members for which a given disease is notifiable by law at national level

See subsection (d) next page.

c) Percentage of WOAH Members for which a given disease is notifiable by law at national level and that have a surveillance system in place for that disease

See subsection (d) next page.

d) Percentage of WOAH Members for which a given disease is notifiable by law at national level and that have a surveillance system in place and that have reported a National Reference Laboratory for that disease

These three indicators are combined here to better illustrate the findings. It is not possible to present all the available data in this report; however, using the interactive dashboard, one can select different criteria and thus visualise the information corresponding to the disease of interest. As an example, **Table I** presents the data corresponding to three terrestrial animal diseases and one aquatic animal disease.

Indicator (b): The percentage of Members for which a specific disease is notifiable at national level was examined, with the understanding that not all the WOAH-listed diseases are notifiable at national level for all Members (**Table I**).

Indicator (c): **Table I** shows the percentage of Members, of those that submitted a six-monthly report, for which a disease is notifiable at national level and a surveillance system is in place to detect the incursion of the disease.

Indicator (d): If a disease is notifiable at national level and surveillance measures are in place to detect it, one might expect that the Member has a National Reference Laboratory for that disease. As shown in **Table I**, this is not always the case, and the gap between indicators (b) and (c) on the one hand and indicator (d) on the other is significant for some diseases.

The three indicators have a common denominator: the number of Members that submitted six-monthly reports.

Table I. Percentage of Members meeting surveillance parameters for various animal diseases

Percentage of Members reporting the disease as notifiable at national level	Percentage of Members reporting the disease as notifiable at national level AND that have surveillance in place	Percentage of Members reporting the disease as notifiable AND that have surveillance AND that have a National Reference Laboratory
African horse sickness		
80.00%	66.45%	27.10%
Highly pathogenic avian influenza		
73.38%	67.53%	64.94%
Bovine spongiform encephalopathy		
79.22%	71.43%	38.31%
Koi herpes virus		
60.00%	44.35%	15.65%

e) Performance of Veterinary Services regarding surveillance, as assessed by the PVS Tool

Between 2016 and 2021, 43 WOAH Members hosted a PVS Evaluation or Follow-up mission and 6 Members hosted a mission on aquatic animals. Amongst all the Critical Competencies described in the PVS Tool[2] and assessed during these missions, they were assessed against:

- **Critical Competency II-1.A:** Access to veterinary laboratory diagnosis
- **Critical Competency II-1.B:** Sustainability of national laboratory infrastructures
- **Critical Competency II-2:** Laboratory quality assurance
- **Critical Competency II-5.A:** Passive epidemiological surveillance
- **Critical Competency II-5.B:** Active epidemiological surveillance
- **Critical Competency II-8.B:** *Ante-* and *post-mortem* inspection.

In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

As shown in **Figure 4**, just over half of the Members that hosted a PVS Evaluation/Follow-up mission between 2016 and 2021 were assigned a Level of Advancement of 3 or above for two of the surveillance-relevant Critical Competencies. For the other four Critical Competencies, the percentage of Members reaching a level of 3 ranged from 30% to 40%.

The dashboard allows for selection of PVS Evaluation/Follow-up.

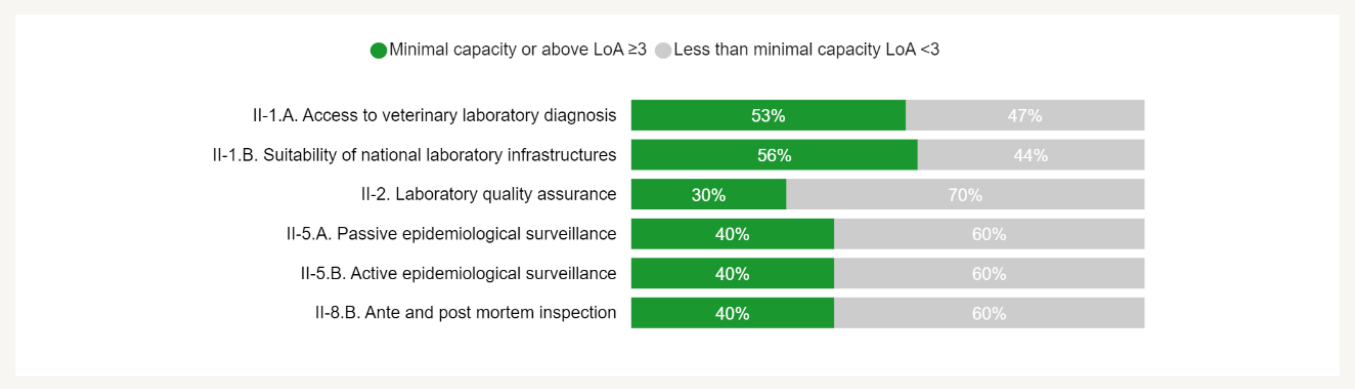

Figure 4. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green) for each of the six Critical Competencies related to surveillance as assessed in PVS missions between 2016 and 2021

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[2] 2013 Version

Figure 5 presents the distribution of Level of Advancement scores for Critical Competencies on surveillance in all PVS Evaluation and Follow-up missions between 2016 and 2021. Of the six Critical Competencies assessed in 43 missions, 57% (147) scored less than a 3 and were thus found not to reach minimal capacity levels.

Figure 6 indicates that 35% of Members that received a PVS Evaluation/Follow-up mission between 2016 and 2021 were assessed as reaching minimal levels of capacity (Level of Advancement ≥ 3) for all six Critical Competencies related to surveillance.

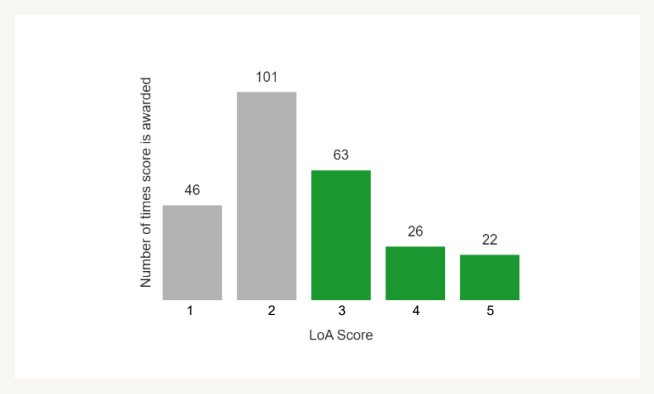

Figure 5. Distribution of the Level of Advancement (LoA) scores to all six Critical Competencies related to surveillance as assessed in PVS missions between 2016 and 2021

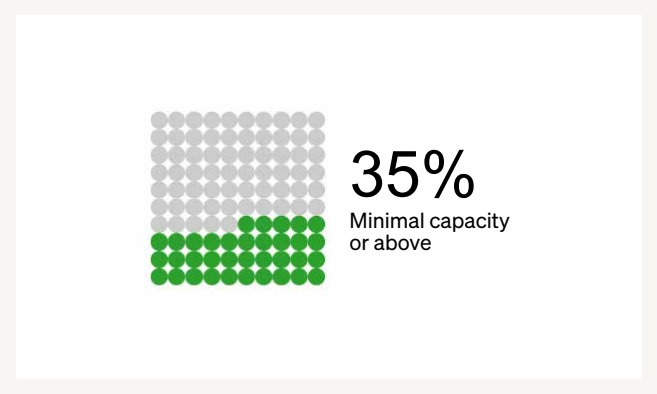

Figure 6. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for all six Critical Competencies related to surveillance as assessed in PVS missions between 2016 and 2021

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

As the GBADs programme attests, animal diseases negatively impact livestock health and productivity. The findings presented in this section suggest that there are important gaps worldwide in the application of measures to ensure early detection of animal diseases to hinder their spread.

The findings point to the conclusion that not all Members legally require WOAH-listed diseases to be notifiable at the national level. The reasons for making animal diseases notifiable are diverse and depend on the importance of a given disease in the territory, the presence of susceptible species, and national resources. The decision to make a WOAH-listed disease notifiable at national level is one for each Member to take. However, because there is an obligation to report all WOAH-listed diseases to WOAH, the question arises as to how Members can respect this requirement if they have not made the diseases notifiable in their territories.

Some Members have a reduced list of notifiable diseases in their national legislation but do have legal provisions establishing that all WOAH-listed diseases must also be notified. This raises questions about potential discrepancies between Members in the six-monthly reports. This consideration could be added in the guidance on how to complete the report.

Knowing whether WOAH diseases are notifiable at national level, whether Members implement surveillance systems and whether they have National Reference Laboratories to detect these diseases are valuable criteria on their own. However, combining the three factors provides a clearer picture of the weaknesses of WOAH Members' surveillance systems. It is difficult to understand how Members can accurately report the presence or absence of a disease if surveillance systems have not been implemented or diagnostic capacity does not exist.

Additionally, Veterinary Services for more than half of WOAH Members do not reach minimal capacity levels in most Critical Competencies related to surveillance. This could imply that even if a given disease is notifiable and some sort of surveillance is in place, it may not be reported due to a lack of suitable surveillance capacity. Training, resources and political will should be dedicated to this area to boost surveillance in the national Veterinary Services.

In summary, WOAH Members are invited to reflect on the following points:

- Members should ensure that measures enabling early detection of WOAH-listed diseases, including diagnostic capacity, are in place at national level.
- National Veterinary Services and Aquatic Animal Health Services are encouraged to report the diagnosis of WOAH-listed diseases in their territories, including those diagnosed in reference laboratories overseas.
- Six-monthly reports must be completed accurately regarding the diseases that are notifiable at national level.
- Veterinary Services and Aquatic Animal Health Services must have the capacity levels to secure appropriate disease surveillance.

Likewise, WOAH should ensure that guidance to complete the six-monthly reports is clear concerning notifiable diseases at national level.

Additionally, the reporting of the presence of a National Reference Laboratory, although not a negligible indicator, does not guarantee high-quality diagnostic performance. While collecting data on Members' diagnostic capacity is critical to WOAH, a thorough discussion should occur internally to identify the data related to National Reference Laboratories and their performance (e.g. regular participation in proficiency tests) that should be collected and to consolidate and standardise the way they are collected. This should be considered in addition and in parallel to the ongoing work of both the Biological Standards Commission and the Aquatic Animal Health Standards Commission related to the network of WOAH Reference Laboratories.

05 Transparency of Veterinary Services

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1. Introduction

Transparency enables veterinary authorities to take appropriate and timely actions that limit the spread of diseases, enable safe trade in animals and animal products and facilitate cooperation in tackling global issues such as antimicrobial resistance. It is also of the greatest importance to generate trust between trading partners in the quality and integrity of Veterinary Services and Aquatic Animal Health Services.

This section evaluates transparency data relating to disease notifications, Veterinary Services and Aquatic Animal Health Services as assessed through PVS missions, and antimicrobial use.

In becoming WOAH Members, countries and territories commit to notify their animal health situation to WOAH and the international community. Access to transparent, timely and good-quality information about worldwide disease events is essential for Veterinary Services and Aquatic Animal Health Services to take appropriate and timely actions that limit disease spread. In accordance with Chapter 1.1. of the *Terrestrial Code* and *Aquatic Code*, WOAH Members 'shall make available to other Member Countries, through WOAH, whatever information is necessary to minimise the spread of important animal diseases, and their pathogenic agents, and to assist in achieving better worldwide control of these diseases'. They must also comply with the notification requirements defined in these chapters of the *Codes*.

As per Article 1.1.2. of the *Terrestrial Code*, an 'event' means 'a single outbreak or a group of epidemiologically related outbreaks of a given listed disease or emerging disease that is the subject of a notification' (immediate notification in WAHIS). Article 1.1.2. of the *Aquatic Code* provides a similar definition.

Article 1.1.3. lists the different events that must be notified to WOAH, along with the reports and information that must be submitted:

- Immediate notification for listed diseases to be sent within 24 hours after the confirmation of an exceptional event, plus follow-up reports on a weekly basis;
- Six-monthly reports providing sanitary information on the listed diseases;
- Annual reports providing other information relevant to animal health and Veterinary Services, such as the animal population, the veterinary workforce or the existence of National Reference Laboratories.

The WOAH website offers ample information about the different reports; guidance on how to complete them can be found on the WOAH Delegate's website (restricted access).

Further, Article 3.2.2. of the *Terrestrial Code* makes an explicit mention of transparency. It states that 'Veterinary Services should be as transparent as possible in all their governance and technical activities, including but not limited to, disease reporting, policy and programme decision-making, human resources and financial issues'. Article 3.1.2. of the *Aquatic Code* reads 'Aquatic Animal Health Services should conduct themselves, in an objective, transparent and non-discriminatory manner'.

This section on transparency first addresses whether WOAH Members comply with their notification obligations, with a focus on immediate notification of exceptional events.

Subsequently, two types of information from the PVS Pathway are considered:

a) The Level of Advancement for the Critical Competency on transparency, assessed during a PVS Evaluation/Follow-up/Aquatic mission, following similar analysis performed in other sections of this report.

b) The confidentiality status of the PVS mission reports. When the PVS Pathway mission reports are finalised, Delegates have the possibility to publish them on the WOAH website, make them available to WOAH partners and donors only, or keep them confidential. Chapter 3.3. of the *Terrestrial Code*, on the Evaluation of Veterinary Services, notes that Members are encouraged to use the PVS Pathway Tool (Article 3.3.4.) and to use these PVS reports in a transparent way (Article 3.3.5.). Similarly, although in less detail, the *Aquatic Code* refers to the evaluation of the Aquatic Animal Health Services *via* the *WOAH Performance of Veterinary Services and/or Aquatic Animal Health Services* (WOAH *PVS Tool*: *Aquatic*) (Article 3.1.5.).

The confidentiality status of these PVS reports may be used as a metric for the transparency of WOAH Members. For the purpose of the transparency section, only PVS Evaluation, Follow-up and Gap Analysis missions have been taken into account; reports related to PVS Laboratory missions or the VLSP have not been considered.

Finally, given the common goal to minimise the inappropriate use of antibiotics, aimed at reducing antimicrobial resistance, the publication of antimicrobial use data by WOAH Members has also been considered as a means to assess transparency. In fact, Chapter 6.9. of the *Terrestrial Code* on 'Monitoring the quantities and usage patterns of antimicrobial agents used in food producing animals' states that 'the publication of these data is important to ensure transparency and to allow all interested parties to assess trends, to perform risk assessments and for risk communication purposes' (Article 6.9.3.). In their annual report to WOAH on the use of antimicrobials, Members are asked to indicate whether they have made their national report on antimicrobial use publicly available, making this a relevant indicator on transparency.

The objective of this section is to assess to what degree transparency-related standards are implemented or adhered to by WOAH Members.

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2. List of monitored indicators

The following indicators have been monitored:

- Time elapsed between the confirmation of a listed disease and the submission of an immediate notification to WOAH (reporting gap);
- Confidentiality status of PVS reports;
- Performance of Veterinary Services regarding transparency, as assessed by the PVS Tool during PVS missions (Critical Competency IV-6: Transparency);
- Number of Members that have published a national report on the use of antimicrobials.

3. Data, data sources, and advantages/ limitations of the data used

The following indicators have been monitored:

- Immediate notifications from WAHIS: time elapsed between the date of confirmation of a listed disease and the date the immediate notification was sent to WOAH. The analysis was run for all Members that had submitted at least one immediate notification from 2005 to 2021.
- Confidentiality status of the PVS reports corresponding to PVS Evaluation, Follow-up and Gap Analysis missions (including Aquatic missions): PVS dataset, from 2006 to 2021, provided by the WOAH Capacity Building Department, indicating the status of each report (i.e. whether the report is entirely confidential, accessible only to WOAH partners and donors, or publicly available).
- Performance of Veterinary Services on transparency: Level of Advancement of Critical Competency IV-6 of the PVS Tool.[1] The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/Follow-up/Aquatic missions conducted between 2016 and 2021 were taken into account.
- Annual reports on the use of antimicrobials submitted to WOAH between May 2016 and May 2021. Focus was given to the question about the existence of a publicly available report on the use of antimicrobials at national level. The annual report corresponding to 2021 can be found on the WOAH website.

These data sources have advantages and limitations as described in the table below.

[1] Reference of Critical Competencies, from the Sixth Edition of the PVS Tool and from the First Edition of the PVS Aquatic Tool, in 2013

Immediate notifications from WAHIS
(date of confirmation of the listed disease *versus* date of report submission to WOAH)

Advantages

- Standardised information
- Requested of all WOAH Members when an exceptional event occurs
- Official data provided under the supervision of WOAH Delegate
- Already organised in a database
- Choosing the confirmation dates eliminates bias related to detection and diagnostic capacity (e.g. as opposed to choosing the starting date of the outbreak)

Limitations

- Good indicator only if the Member notifies the event *via* an immediate notification. However, this indicator will miss Members that:
  - do not use the immediate notification system but favour reporting *via* the six-monthly report;
  - do not report at all.
- A prolonged time period between confirmation of a disease and its notification may be attributed not only to transparency issues: other factors such as access to WAHIS, capacity of the Focal Point and unclear governance systems may influence the timely reporting of disease events
- The time period between confirmation and immediate notifications also includes the notion of 'efficient reporting'. However, the transparency element is important here as reporting may be delayed for commercial reasons

Confidentiality status of the PVS mission reports

Adv.

- See Section 01 on Governance and PVS

Limitations

- A number of Members have not yet indicated whether their pre-2017 PVS reports can be made public. As of 2017, the PVS reports for which Members do not express a position as to their confidentiality level are classified by default as 'partners and donors'
- There could be reasons other than transparency not to make the report public

PVS Critical Competency IV-6

Adv.

- See Section 01 on Governance and PVS

Limitations

- See Section 01 on Governance and PVS
- Direct and significant link between the Level of Advancement for this Critical Competency and the submission of regular animal health information reports to WOAH means there is a lack of independence between these two indicators, even if the Critical Competency also considers other elements

Annual reports on the use of antimicrobials

Advantages

- Standardised information
- Requested of all WOAH Members; good participation rate
- Official data provided under the supervision of WOAH Delegate
- Already organised in a database
- Updated annually

Lim.

- Voluntary reporting
- Self-declared information that does not undergo validation

4. Descriptive analysis

a) Time elapsed between confirmation of a listed disease and its immediate notification to WOAH (reporting gap)

The figures presented in this section, along with others elsewhere in this report, are screenshots of the interactive dashboard, which can be accessed for further information, including data corresponding to some specific diseases and other specific criteria.

The total number of 'epidemiological events' notified to WOAH between 2005 and 2021 for listed diseases was 3,749 **(Fig. 1)**, of which 3,549 correspond to terrestrial animal diseases and 200 to aquatic animal diseases. Of the 182 WOAH Members, 166 notified epidemiological events. A breakdown by region demonstrates that most of these events were reported by Members from the European region **(Fig. 1)**.

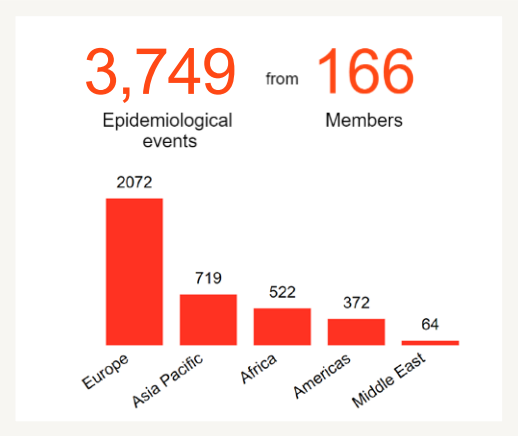

Figure 1. Total number of epidemiological events reported and number of reporting Members (top), and number of events reported per WOAH region (bottom) between 2005 and 2021

The distribution of the reporting gap between confirmation of a disease and the submission of an immediate notification to WOAH was examined (n=3,749). **Figure 2** shows that the majority (89%) of the epidemiological events were reported less than a month after confirmation, with the highest number of events reported between two and seven days after formal diagnosis of the disease. Around one-third of the events were reported within the prescribed time period (24 hours after confirmation) and approximately 11% of events were reported at least a month after confirmation.

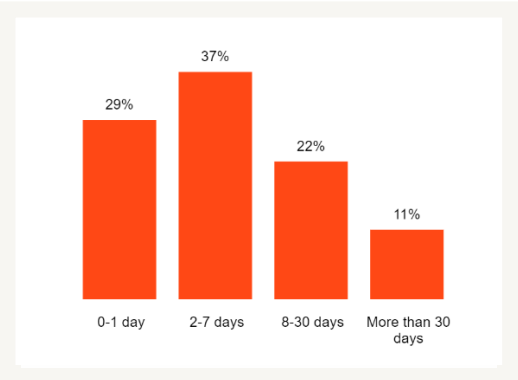

Figure 2. Distribution of all the epidemiological events from 2005 to 2021 by time elapsed between confirmation and notification (in days)

For each event, the time elapsed between disease confirmation by the WOAH Member and the submission of the report to WOAH – called the 'reporting gap' – was measured. The median reporting gap for reports corresponding to listed terrestrial diseases was 4 days and ranged between 0 and 405 days. For the listed aquatic animal diseases, the median reporting gap was 10 days, ranging from 0 to 398 **(Table I)**.

Table I. Median reporting gap and maximum and minimum reporting gap (in days) for terrestrial (green) and aquatic (blue) animal diseases

Terrestrial diseases		Aquatic diseases	
Median reporting gap (days)		Median reporting gap (days)	
4		10	
Maximum reporting gap	Minimum reporting gap	Maximum reporting gap	Minimum reporting gap
405	0	398	0

The regional differences in these median values are shown in **Figure 3**.

The distribution of the data for the listed terrestrial and aquatic diseases is shown in **Figure 4**, with significant differences between the reporting gap of listed terrestrial and aquatic animal diseases observed between WOAH regions (**Fig. 4**).

Owing to the different sample size, a statistical test[2] was carried out to determine whether the differences were significant statistically. Statistically significant differences in the reporting gap were observed for terrestrial animal diseases between Asia and both Africa and Europe, as well as between Europe and both Africa and the Middle East. For aquatic animal diseases, significant differences were observed between Africa and the Americas, Asia and Europe.

The reporting gap also varies by disease. For example, the median reporting gap for avian influenza was two days, and the median reporting gap for rabies was six days. As previously mentioned, Chapter 1.1. of the *Aquatic* and *Terrestrial Codes* requires notification within 24 hours after the confirmation of a listed disease. The dashboard provides additional information on specific diseases.

b) Confidentiality status of PVS reports

From 2006 to 2021, 340 missions were carried out within the PVS Pathway for PVS Evaluation, Gap Analysis and Follow-up missions (including Aquatic missions). Most Members that hosted those activities decided on the degree of accessibility that the mission reports would have. As **Figure 5** shows, 35% of those reports were made publicly available on the WOAH website, whereas approximately 43% were available just for partners and donors and around 18% were kept confidential.[3] For 4% of reports, the level of confidentiality was not indicated by the associated Members; those have been kept, by default, as confidential.

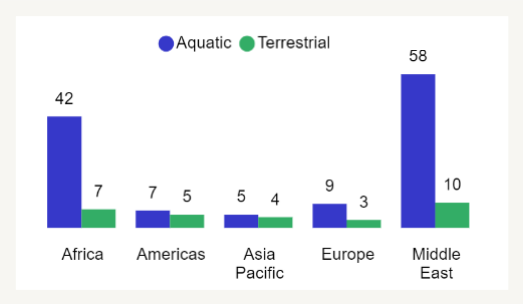

Figure 3. Median reporting gap (days), by WOAH region

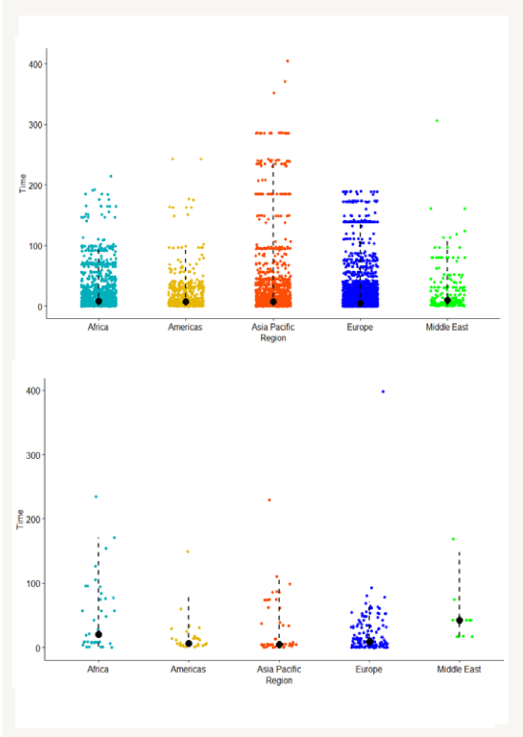

Figure 4. Distribution of the reporting gap (days) for terrestrial (top) and aquatic (bottom) animal diseases per WOAH region. Median represented by a black dot

Figure 5. Total of PVS Evaluation, Follow-up and Gap Analysis mission reports (centre) and percentage breakdown of level of accessibility, or confidentiality status, of the mission reports: published on WOAH website, available to partners and donors (P&D), kept confidential and non-determined (N/D)

[2] Kruskal–Wallis test

[3] Since 2017, in the absence of a Member's feedback, a PVS report is by default considered available just for partners and donors.

Figure 6 shows the same indicator displayed by WOAH region.

Despite clear differences, a commonality throughout all regions is that the documents that are entirely public or accessible to partners and donors outnumber those that are kept confidential.

In general terms, between 16% and 18% of all types of reports are kept totally confidential, which tends to show that the Members' decision not to publish has nothing to do with the nature of the report. As shown in **Figure 6**, a higher proportion of Members decided to make their PVS Follow-up reports available online, in comparison to their initial PVS Evaluation report. As these two missions are sequential, this could indicate a trend towards greater transparency. This conclusion is also valid for the PVS Gap Analysis missions, for which more reports are available online than for PVS Evaluation missions (but fewer than for PVS Follow-up missions, possibly due to the sensitivity of the information collected in the Gap Analysis). Regarding PVS Aquatic reports, 64% are made entirely publicly available.

To contextualise the data, hovering over these figures on the dashboard provides additional information about the number of reports of each type and the proportion of participation for each region.

To further analyse the trend concerning the transparency of PVS reports, the percentage of documents that were made public annually was examined during the period studied. Despite the fluctuating dynamics of the annual figures, there is a clear increasing tendency to make the PVS reports publicly available **(Fig. 7)**. This trend will continue to be monitored in the coming years.

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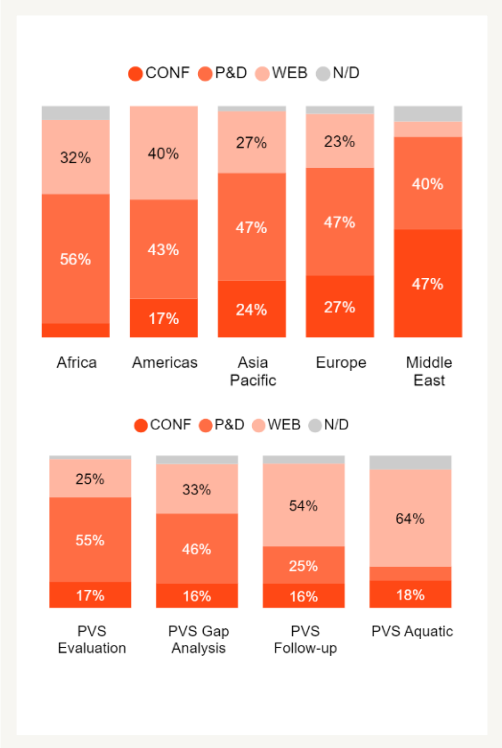

Figure 6. Breakdowns of the degree of accessibility of PVS reports by WOAH region (top) and by type of mission (bottom). CONF: confidential; P&D: accessible to partners and donors; WEB: public on WOAH website; N/D: non-determined

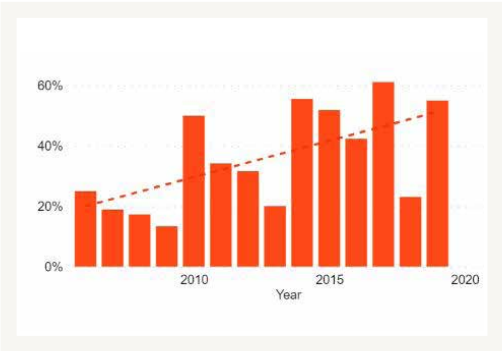

Figure 7. Percentage of PVS visit reports that have been published on the WOAH website, and trend line (dashed line)

c) Performance of Veterinary Services regarding transparency (Critical Competency IV-6), as assessed by the PVS Tool

Between 2016 and 2021, 42 Members received a PVS Evaluation or Follow-up mission, and their Level of Advancement for Critical Competency IV-6 on transparency was assessed.[4] In PVS missions, each Critical Competency is assigned a Level of Advancement (LoA) ranging from 1 to 5. For Critical Competency IV-6, a Level of Advancement of 3 means, as defined by the PVS Pathway, that 'the Veterinary Services notify in compliance with the procedures established by WOAH, WTO, trading partners and other relevant organisations'. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

Figures 8 and **9** show that the majority of Members that received a PVS Evaluation or Follow-up mission between 2016 and 2021 were assessed as reaching a Level of Advancement of 3 or above for Critical Competency IV-6. A marginal number of Members excelled or underperformed in this domain.

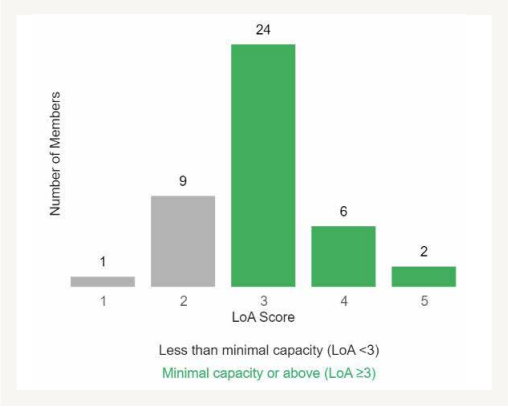

Figure 8. Distribution of the Level of Advancement (LoA) scores to the Critical Competency IV-6 related to transparency as assessed in PVS missions between 2016 and 2021

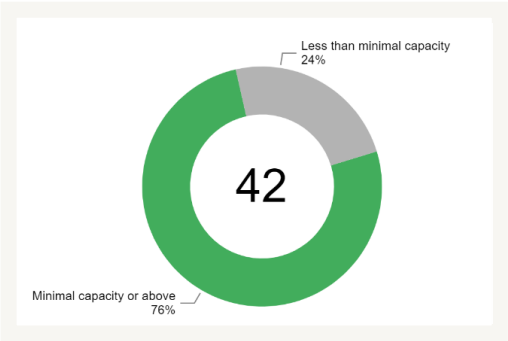

Figure 9. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for the Critical Competency IV-6 related to transparency as assessed in PVS missions between 2016 and 2021

d) The number of Members that have published a national report on the use of antimicrobials

Table II shows that between May 2016 and May 2021, 44 WOAH Members confirmed having published a national report on the use of antimicrobials on their website. This means that 29% of the Members that submitted an annual report on antimicrobial use to WOAH in that time bracket had published a national report on the subject (*via* national publication, not related to WOAH).

Table II. Members that published a national report on antimicrobial use (AMU)

44	29%
Number of Members that published a national report on AMU	Members that published a national report on AMU, of those that submitted an AMU annual report to WOAH

[4] Although the number of PVS missions between 2016 and 2021 is 43, the Level of Advancement for the Critical Competency on transparency (IV-6) is available for 42 Members.

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

The time period between the confirmation of an epidemiological event and its notification to WOAH varies widely, and only 29% of immediate notifications were submitted within 24 hours after the confirmation of a disease, as prescribed by the WOAH *Codes* (Article 1.1.3.). By looking into this first indicator, it seems that, in general terms, most if not all WOAH Members must explore how the time from the diagnostic confirmation of an outbreak to notification to WOAH could be reduced.

The World Organisation for Animal Health has recently launched initiatives, such as a survey on aquatic animal diseases, to identify the barriers to disease notification to WOAH; however, other exercises to gain further insights of this nature should be implemented to elucidate how to best support its Members.

On the other hand, WOAH should reinforce the importance of notifying diseases in a transparent and timely manner and should develop initiatives to support its Members in this task.

After submitting an immediate notification to WOAH, Members must send weekly follow-up reports so that the evolution of the event can be monitored. The country or territory must also submit a final report to notify either that the event has been resolved or that the disease has become sufficiently stable to be reported through six-monthly reports. In the future, the level of adherence to this standard might also be measured by other indicator(s) discussed in this section.

Similarly, most WOAH Members send their six-monthly reports *via* WAHIS, but the quality and thoroughness of the information provided should be given greater weight in the overall assessment. An indicator to measure the quality of these reports could be considered by WOAH, with the aim of improving the reliability and rigour of the information provided so it can be used to infer meaningful insights.

The World Organisation for Animal Health has a team that actively searches for unofficial information (rumour tracking) to increase the sensitivity of its surveillance system and to support and encourage its Members to submit all relevant sanitary notifications. Records from this activity could also be used to further define the transparency profile of WOAH Members. The following additional indicators could be included in future annual reports:

- Number of immediate notifications submitted as a direct result of an active search activity;
- Behaviour of Members and timeliness in responding to requests for information (not responding at all, responding with significant delays, etc.);
- Number of Members that reported exceptional events in the six-monthly reports rather than in an immediate notification.

An increasing trend for PVS reports to be made public can be observed in recent years. While the majority of WOAH Members have responded positively to the strong encouragement and campaign from the WOAH PVS Secretariat to make their PVS reports publicly available, nearly a fifth of all reports are still kept confidential. If not full disclosure, the intermediate status that allows these reports to be shared within WOAH and with partners and donors should be promoted.

The Level of Advancement of Members for the Critical Competency on transparency is an important indicator as well. However, the positive results for this Critical Competency contrast with the delays seen when measuring disease notification. This could be due to the fact that just conforming with the minimal requirement for disease notification (as per Chapter 1.1. of the *Codes*) grants a Level of Advancement of 3. While this demonstrates regular disease notification, it is probably not enough to demonstrate transparency, as the event might not have been present in the public domain from the outset as it should have been. There is also limited consideration of the quality and exhaustiveness of the submitted information.

Lastly, approximately 29% of Members that submit an annual report on antimicrobial use to WOAH declare they make a national report on the use of antimicrobials publicly available. In the interest of transparency, Members should be encouraged to publish this information, which would, in turn, encourage a reduction in the inappropriate use of antimicrobial agents.

06 Self-declarations of animal health status

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1. Introduction

In accordance with the provisions of Article 1.6.3. of the *Terrestrial Code* and Article 1.4.4. of the *Aquatic Code*, WOAH Members can self-declare the animal disease free status of their territory (country, zone or compartment). The World Organisation for Animal Health provides a service for Members to publish these self-declarations on its website to increase their visibility. This is an open and voluntary service whereby Members share information to support a claim of freedom from a given WOAH-listed disease or another animal disease, excluding the six diseases subject to WOAH official status recognition. Each individual Member holds responsibility for the information it submits.[1]

For example, a Member wishing to self-declare its animal health status regarding a terrestrial animal disease must provide documented information on its compliance with the provisions of the relevant chapters of the WOAH *Terrestrial Code*, namely:

- Evidence that the disease is a notifiable disease in the entire country;
- History of absence or eradication of the disease in the country, zone or compartment;
- Surveillance in accordance with the relevant provisions of the *Terrestrial Code*, including an early warning system for all relevant species in the country, zone or compartment;
- Measures implemented to maintain freedom in the country, zone or compartment.

Article 1.4.4. of the *Aquatic Code* describes similar provisions for Members wishing to self-declare freedom from an aquatic animal disease.

Publications of self-declaration of the animal health status are governed by a WOAH Standard Operating Procedure.[2]

An outbreak in a Member Country, zone or compartment having a self-declared free status results in the loss (or inactivation) of the self-declared free status.

The objective of this section is to assess to what degree the self-declaration related standards are implemented or adhered to by WOAH Members.

2. List of monitored indicators

The following indicators have been monitored:

- Number of self-declarations published by country/compartment/zone;
- Percentage of Members that have self-declared freedom from a disease out of those that reported absence of the same disease in WAHIS;
- Number of self-declarations that were inactivated and for which recovery was claimed afterwards.

[1] https://www.woah.org/en/what-we-offer/self-declared-disease-status/

[2] https://www.woah.org/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/Self-declarations/EN_Procedure_self_declaration.pdf

3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- The self-declared animal health status of Members, obtained from the two datasets published by WOAH, displaying the recent and historic self-declarations from the years 2000 to 2021.
- Absence of diseases documented in the WAHIS six-monthly reports, including those declared as 'absent' and as 'never reported' by the Members.

These data sources have advantages and limitations as described in the table below.

	Absence in WAHIS six-monthly report (occurrence codes)	
Advantages	• Standardised information • Collected twice a year for all WOAH-listed diseases • Mandatory for all WOAH Members as per Article 1.1.3. of the *Terrestrial Code* and 1.1.2. of the *Aquatic Code*	• Official data provided under the supervision of the WOAH Delegate • Already organised in a database
Limitations	• Reports from Members that do not involve verification by a third party • The quality, reliability and accuracy of the information is dependent on the surveillance conducted by Members, although the surveillance or lack of it can be found in the report	• This source indicates the absence of detection but does not show whether the Member is compliant with all the *Terrestrial Code*'s requirements to claim freedom from disease • Some Members may not have submitted six-monthly reports for the last few years; hence, latest data are from 2019
	Self-declarations	
Advantages	• Follows Standard Operating Procedure • Possibility to submit for all animal diseases (not only the ones listed by WOAH) with the exclusion of the diseases that are part of the official status recognition procedure	• Provides partial information regarding the Member's compliance with the *Code*'s requirements to claim freedom • Under the responsibility of the Delegate • Increases visibility of self-declared disease freedom
Limitations	• Submitted on a voluntary basis • Limited number of Members making use of this service • Potential bias as Members making use of this service might be representative of just a specific profile or focused on diseases of national/regional importance – e.g. (i) exporters willing to increase the visibility of their claimed free status to facilitate trade or (ii) Members with sufficient resources to conduct the surveillance required to support the declaration and complete and submit the documents	• The self-declaration does not involve verification of compliance with WOAH requirements • Self-declarations published up to 2017 and those published from 2018 on are based on different procedures and thus information is presented in different formats • Activation/deactivation dates of the self-declarations are not displayed in an easy-to-follow manner

4. Descriptive analysis

a) Number of self-declarations published by whole country/ compartment/zone

From 2000 to 2021, 72 WOAH Members submitted 251 reports to self-declare their animal health status. The vast majority of these self-declarations (229) referred to disease freedom in the whole territory, whereas a marginal number alluded to disease freedom in zones (17) or compartments (5). **Table I** breaks down these data into terrestrial and aquatic animal diseases. As one Member may self-declare freedom from both aquatic and terrestrial diseases, the combined total of Members self-declaring shown in **Table I** is higher than the aforementioned number of 72.

Aquatic diseases are not very visible in the WOAH self-declaration system as they account for 7% of the total self-declarations. The rest (93%) correspond to self-declarations of the animal health status of terrestrial diseases, of which avian influenza, African swine fever (ASF) and rabies were the most commonly reported in this system from 2000 to 2021 (**Fig. 1**).

In 2007 there was a peak in the number of self-declarations submitted to WOAH, which may be attributed to the incursion of ASF into Europe, as Members in the region might have wanted to demonstrate freedom from the disease (**Fig. 2**). Selecting ASF on the interactive dashboard shows that 23 (44%) of the 52 self-declarations filed in 2007 correspond to this disease. With that exception, self-declarations have not been filed in great numbers. Still, an increasing tendency to file can be observed from 2017 to 2021, which have seen an increase from 14 to 24 self-declarations (71% increase). This may be due to the changes made in 2018 to the procedures for publication of self-declarations. The new system revitalised the service and self-declarations began to be published on the website rather than in the WOAH *Bulletin*, which gave them more visibility. The period between the self-declaration submissions and their publication was also reduced.

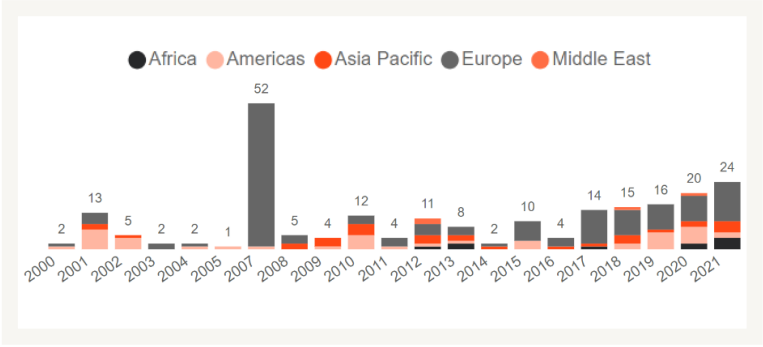

Figure 2. Number of self-declarations filed with WOAH, distributed by year and region

Table I. Total number of Members having sent at least one self-declaration for publication on the WOAH website and the total number of self-declarations published on WOAH website for terrestrial (left) and aquatic (right) animal diseases. Breakdown of self-declarations by country-wide, zones and compartments

TERRESTRIAL		AQUATIC	
70 Members have self-declared disease freedom		7 Members have self-declared disease freedom	
234 Total self-declarations	218 Country-wide self-declarations	17 Total self-declarations	11 Country-wide self-declarations
12 Zone self-declarations	4 Compartment self-declarations	5 Zone self-declarations	1 Compartment self-declarations

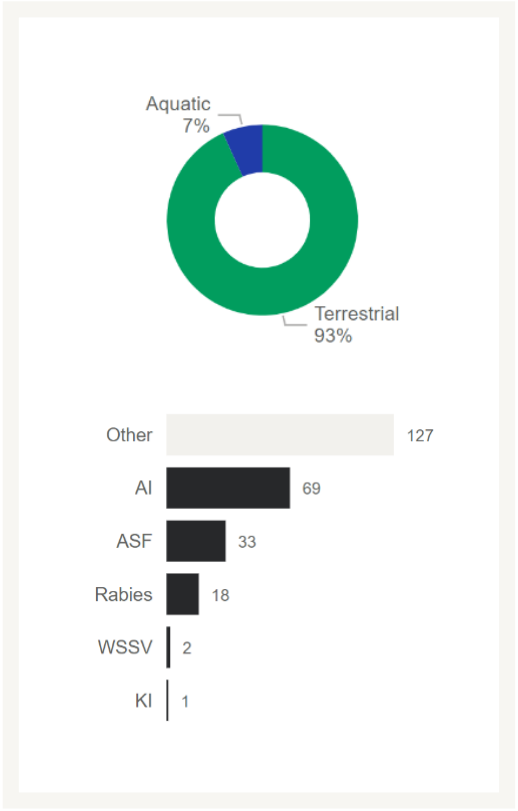

Figure 1. Percentage of aquatic and terrestrial self-declarations (top) and number of self-declarations per disease (bottom). AI: avian influenza; ASF: African swine fever; WSSV: white spot syndrome virus; KI: Koi herpesvirus

Use of WOAH's self-declaration service differs significantly between regions, as shown in **Figure 2**. **Figure 3** presents the same information in a more explicit graph, indicating the self-declarations filed, per region, between the years 2000 and 2021. Europe submits the most self-declarations of any region. This could be attributed to the reported increasing frequency of highly pathogenic avian influenza outbreaks in Europe over the last 15 years, given that avian influenza is the most frequently self-declared disease.[3]

b) Percentage of Members that have self-declared freedom from a disease, of those that reported absence of the same disease in WAHIS

The number of Members with active self-declarations for avian influenza, ASF and rabies during the second semester of 2019 was measured against all the Members that had reported the absence of those diseases during the same period in the WAHIS six-monthly reports. In this analysis, only Members reporting the absence of the disease in both wild and domestic animals in WAHIS were considered to be free from disease.

A limitation of this comparison is that by definition, absence in WAHIS may reflect absence during a given semester, which may not be sustainable over longer periods and therefore does not fulfil the criteria required for self-declaration of freedom.

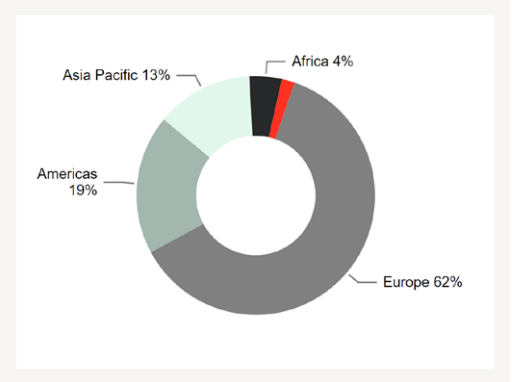

Figure 3. Percentage of Members that filed a self-declaration of their animal health status by WOAH region, 2000–2021

©WOAH/N.Katzenstein

[3] Verhagen J.H., Fouchier R.A.M. & Lewis N. (2021) – Highly pathogenic avian influenza viruses at the wild-domestic bird interface in Europe: future directions for research and surveillance. *Viruses*, **13** (2): 212. https://doi.org/10.3390/v13020212.

Despite this limitation, the comparison between disease notifications to WAHIS and self-declarations offers interesting results. For rabies, slightly more than a quarter of the Members that reported disease absence in WAHIS self-declared their animal health status for this disease (**Fig. 4**). It is also apparent that for ASF and avian influenza, a similarly low percentage of Members that documented disease absence in the WAHIS six-monthly reports also submitted self-declarations of their animal health status (**Fig. 4**).

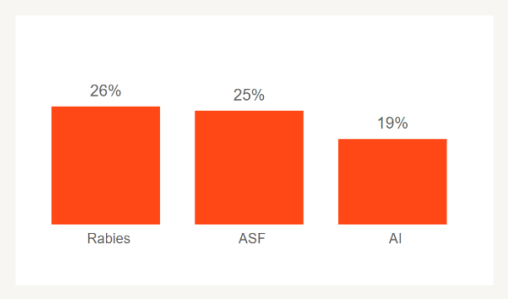

Figure 4. Percentage of Members that had active self-declarations for rabies, African swine fever (ASF) and avian influenza (AI) in 2019 out of all those that reported disease as absent or never reported in WAHIS

c) Number of self-declarations that were inactivated and for which recovery was self-declared or claimed afterwards

As shown in **Figure 5**, of all the self-declarations filed from the year 2000 on, 59% remain active, whereas 31% became inactive at some point following the occurrence of an outbreak. It is worth pointing out that during the period studied, AHS and CSF were included, in 2013 and 2015, respectively, in the procedure by which WOAH officially recognises an animal health status. The percentage referring to 'official status' in **Figure 5** contains self-declarations for these two diseases, for which Members may no longer undergo the self-declaration procedure.

The graph at the centre of the same figure indicates that just 37% of self-declared animal health status that were lost were later regained after submission of another self-declaration of disease-free status.

Figure 5 also indicates the contrast between self-declarations that are submitted to claim an animal health status for the first time and those that are filed to recover a self-declared disease freedom that was lost as a result of an outbreak. The former predominates in all studied diseases; however, avian influenza and ASF are the diseases for which Members are most keen to recover their disease-free status. Europe is the WOAH region that submits the most declarations to claim the recovery of a previously lost animal health status.

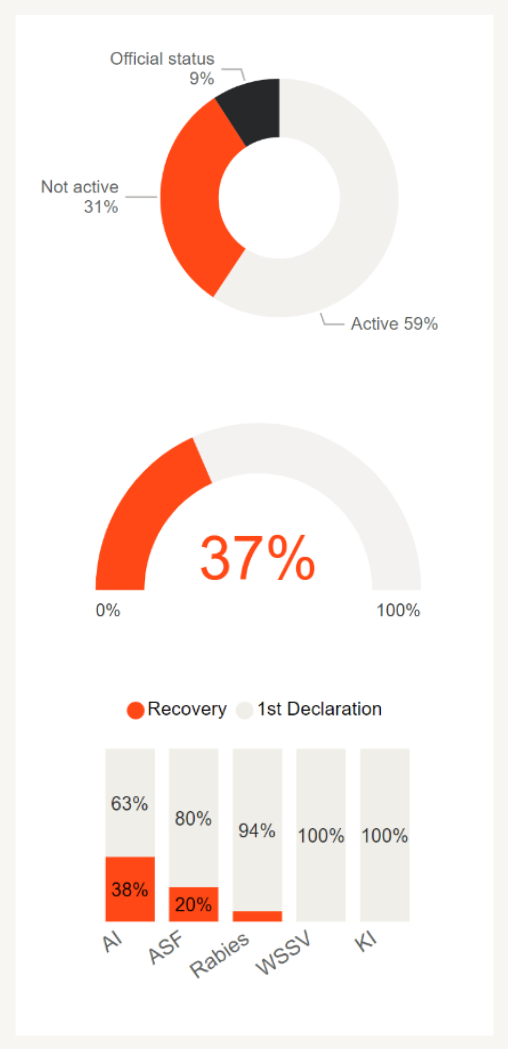

Figure 5. Percentage of self-declarations that are active and those that have been inactivated throughout the period studied (top); percentage of declarations that have been filed to recover a lost animal health status (centre); percentage of self-declarations filed to declare animal health status for the first time *versus* those that claimed recovery of the status, by disease (bottom). AI: avian influenza; ASF: African swine fever; WSSV: white spot syndrome virus; KI: Koi herpesvirus

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

The findings from the analysis carried out for this section of the annual report are not dissimilar from those in the same section in the ASF prototype, published in May 2022. However, although the absolute number of annual self-declarations submitted to WOAH remains moderate, an increase of 71% (from 14 to 24) is noted between 2017 and 2021. The use of self-declarations is not extensive worldwide, as less than half of WOAH Members used this service between 2000 and 2021.

Work is ongoing to improve the process of managing, storing and tracking self-declarations. This report invites WOAH to reflect on how this service can better answer the needs of its Members.

'Zoning' and 'compartmentalisation' are mechanisms to control disease and facilitate trade, and provide assurance as to the safety of such trade, by applying measures to separate animal subpopulations with different health status.[4] These concepts are especially useful in large countries/territories, where guaranteeing the absence of disease in the entire territory is challenging. The 'Zoning and compartmentalisation' section of this report indicates that in 2019, 77% and 31% of the Members that submitted a six-monthly report applied zoning or compartmentalisation, respectively, for at least one disease. There are, however, disparate values depending on the disease. This contrasts with the low number of self-declarations that refer to zones and compartments, with 17 (7% of all self-declarations) and 5 (2% of all self-declarations) self-declarations, respectively.

It is essential to fully understand and address the challenges that prevent WOAH Members from using the self-declaration service to its full capacity, as doing so could potentially bring benefits for market access by enhancing visibility of the disease situation in Members' territories. Additionally, self-declaring the disease status of zones and compartments could limit the economic impact of import restrictions.

As reported in the ASF prototype, this limited use of the self-declaration service could be due to Members not perceiving value from the publication of self-declarations, the resources required to submit all the necessary information, a lack of capacity of WOAH Members to document their animal health status, or a lack of awareness of this WOAH service.

The World Organisation for Animal Health should raise awareness of self-declarations and showcase good practices. This should involve all sectors (terrestrial including bees, aquatic animals) and may require the support of regional and sub-regional representations. Involvement of the private sector and awareness-raising activities aimed at improving businesses' understanding of self-declarations and their potential benefits may foster private–public sector collaboration for self-declaring disease freedom.

This section highlights that avian influenza is the primary disease for which Members seek to self-declare their animal disease free status, and the European region submits the highest number of self-declarations. Further work is required to understand the reasons for the reduced use of self-declarations for other diseases and by other regions.

Finally, only 37% of self-declared animal health status that were lost due to an outbreak were later regained after submission of another self-declaration. In principle, it should be easier to submit a second declaration after having filled in the templates once before and become familiar with the process. This suggests that rather than the complexity of the procedure, it may be the continuous challenge of undertaking animal health surveillance and balancing costs and benefits that hinders self-declarations of animal disease free status.

[4] Thiermann, A.B. (2011) – International standards in mitigating trade risks. *Rev Sci Tech*, **30** (1): 273–279. http://doi.org/10.20506/rst.30.1.2032

07 Movement control inside countries/ territories and precautions at borders

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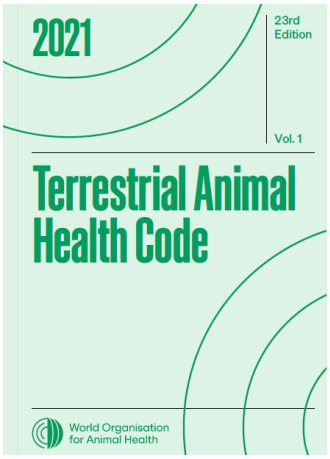
1. Introduction

Chapter 1.1. of the *Terrestrial Code* and Chapter 1.1. of the *Aquatic Code* in Article 1.1.2, indicate that Members 'shall also provide information on the measures taken to prevent the spread of diseases'. The *Terrestrial Code* clarifies that 'information shall include (...) restrictions applied to the movement of animals' whilst the *Aquatic Code* mentions 'quarantine measures and restrictions applied to the movement of aquatic animals, aquatic animal products, biological products'.

Chapter 4.19. of the *Terrestrial Code* on official control programmes for listed and emerging diseases provides recommendations on movement controls in Article 4.19.7. This chapter was adopted in May 2021 and has therefore received limited feedback for retrospective analysis. In the *Aquatic Code*, movements of aquatic animals, products and fomites are covered in Chapter 4.1. on Biosecurity for aquaculture establishments.

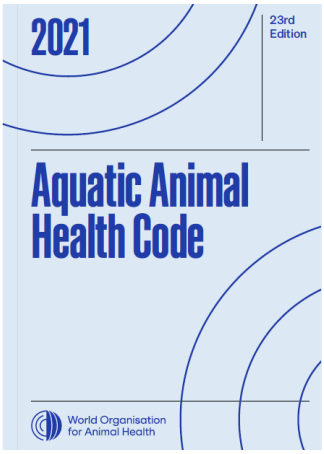
In both *Codes*, Section 5 includes trade-related articles in disease-specific chapters and establishes standards for precautions at borders, particularly in the following chapters:



Terrestrial Code

Chapter 5.6. Border posts and quarantine stations in the importing country

Chapter 5.7. Animal health measures applicable on arrival



Aquatic Code

Chapter 5.8. Frontier posts in the importing country

Chapter 5.9. Aquatic animal health measures applicable on arrival

Some additional chapters of the *Terrestrial Code* are particularly relevant to these topics: Chapter 4.2. on General principles on identification and traceability of live animals, Chapter 4.3. on Design and implementation of identification systems to achieve animal traceability, and, even broader, Chapter 3.2. on Quality of Veterinary Services (and its equivalent in the *Aquatic Code*, Chapter 3.1.) and Chapter 3.4. on Veterinary Legislation.

The disease control measures applied by WOAH Members are collected in two different reports: immediate notifications of exceptional events (and their follow-up reports) and six-monthly reports for all WOAH-listed diseases. As they are collected for all countries/territories independently of the presence or absence of disease, the information from six-monthly reports is interesting to consider when assessing the global situation.

The objective of this section is to assess to what degree standards related to movement control are implemented or adhered to by WOAH Members.

2. List of monitored indicators

The following indicators have been monitored:

- Members declaring that they conduct 'movement control inside the territory' and/or 'precautions at borders' as control measures, in WAHIS six-monthly reports. Looking into:
  - Percentage of Members that reported implementing those control measures (with reference to the total number of Members that submitted a six-monthly report);
  - Trends over time.
- Performance of Veterinary Services regarding movement controls, assessed by the PVS Tool during PVS missions (Critical Competencies II-4: Quarantine and border security and II-12 A: Animal identification and movement control).

The two indicators above are assessed on their own and crossed with:

- The performance of Veterinary Services regarding movement control, of Members that reported implementing such measures in WAHIS.

3. Data, data sources, and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- Control measures from WAHIS six-monthly reports: amongst the proposed control measures, 'movement control inside the country' and 'precautions at borders' have been selected. Data collected and presented correspond to the two semesters of the years from 2005 to 2021.
- Performance of Veterinary Services on movement control: Levels of Advancement of Critical Competencies II-4 (Quarantine and border security) and II-12.A (Animal identification and movement control) of the PVS Tool.[1] The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/Follow-up missions conducted between 2016 and 2021 were taken into account.

These data sources have advantages and limitations as described in the table below.

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[1] Reference of Critical Competencies, from the Sixth Edition of the PVS Tool, in 2013

	WAHIS control measures (six-monthly reports)	
Advantages	• Standardised information • Collected twice a year for all WOAH-listed diseases • Requested of all WOAH Members	• Official data provided under the supervision of the WOAH Delegate • Already organised in a database
Limitations	• Self-declaration from the country/territory that is impossible to validate systematically • Automatic processing of the control measures data in WAHIS from one semester to the next, as a result some Members may not regularly revise and update the control measures reported to WOAH or may stop reporting measures that are no longer implemented	• Acknowledging the time needed for Members to submit their six-monthly reports and for WOAH to validate them, there are still limited validated reports for 2020 and 2021 • The control measure 'movement control inside the territory' may be interpreted differently depending on the Member, and on whether the disease is present or absent in the territory
	PVS Critical Competencies (II-4 and II-12.A)	
Adv.	• See Section 01 on Governance and PVS	
Lim.	• See Section 01 on Governance and PVS	

Additional limitations:

- The last indicator crosses data from PVS Evaluation/Follow-up missions and control measures reported by Members *via* WAHIS. In interpreting the indicator, attention should be paid to the bias linked to the following:
  - PVS data are not disease-specific, and only reports of missions conducted between 2016 and 2021 were considered;
  - Control measure data from WAHIS are disease- and species-specific. For this analysis, Members that had reported in their six-monthly report implementing movement control within the territory or precautions at borders for at least one disease/species were considered; only WAHIS data from 2016 to 2021 were used in order to match the period for which PVS data were taken.
- PVS Evaluation/Follow-up missions assess the capacity of Veterinary Services to implement WOAH international standards relevant to 'quarantine and border security', as well as 'animal identification and movement control', without directly assessing the level of implementation of the specific control measures reported in WAHIS for specific diseases. Still, PVS data are considered a good proxy to check the general capacity of Members to implement these standards. This caveat should be considered when interpreting the results.

4. Descriptive analysis

a) Percentage of Members that reported in their WAHIS six-monthly reports that they conduct movement control inside the territory and/or take precautions at borders

Movement control is key to disease prevention and control. A majority of WOAH Members report the implementation of this measure. **Figure 1** on the peste des petits ruminants (PPR) situation during the first semester of 2019 reveals that 33% of the Members that submitted their six-monthly report indicated conducting both movement control inside their territory and precautions at borders; 57% reported taking precautions at borders without controlling movement within their territory; 6% claimed to control movement within their territory without taking precautions at borders, and 4% reported not using movement control within their territory nor border precautions.

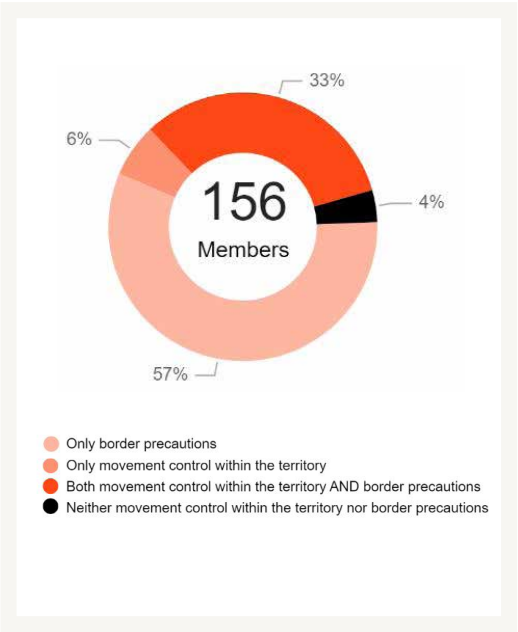

Figure 1. Percentage of Members that reported conducting movement control within their territory or taking precautions at borders for PPR (amongst Members that submitted their six-monthly report for the first semester of 2019 *via* WAHIS)

Based on reports received and depending on diseases, the reporting of these measures is slowly but regularly increasing over time **(Fig. 2)**. This could be linked to the reporting mechanism itself, as, each semester, the control measures reported the previous semester are pre-selected and need only to be confirmed. It is possible that some Members continue reporting the measures even if they are no longer implemented. This is mentioned only as a potential risk of the data collection method and is not a claim that Members do this. In fact, some Members have added new measures that were not previously reported – as opposed to

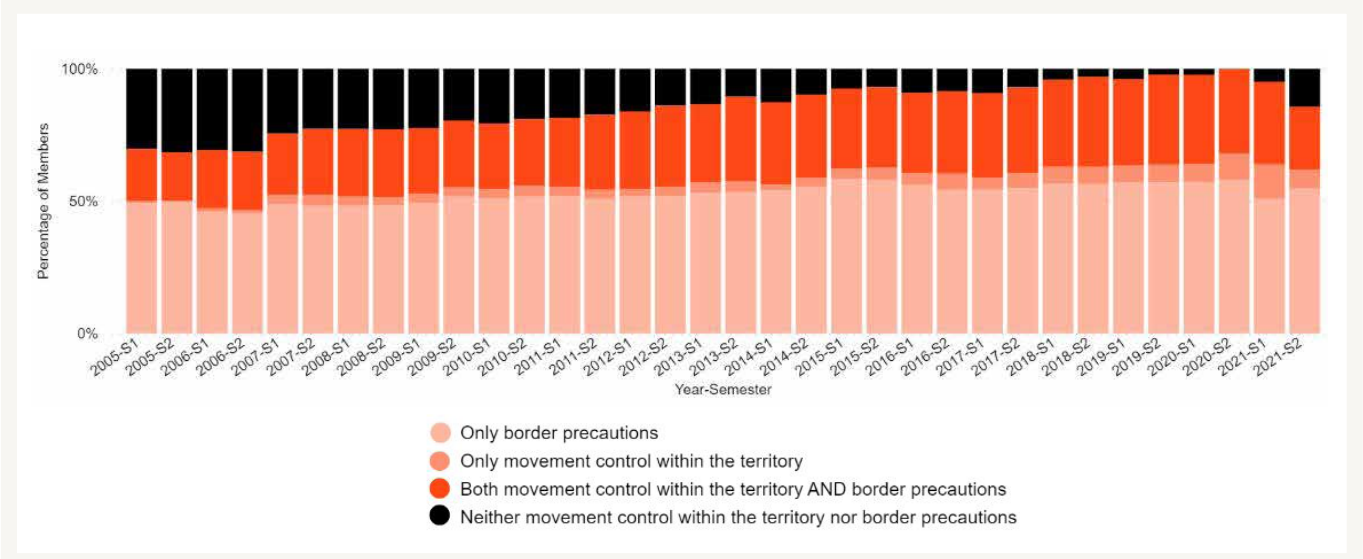

Figure 2. Percentage of Members that have reported conducting movement control within their territory or having precautions at borders in WAHIS, by semester, from 2005 to 2021 (here for PPR)

b) Performance of Veterinary Services regarding animal movement control, as assessed by the PVS Tool

In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

For Critical Competency II-4. on Quarantine and border security, a Level of Advancement of 3 means that the Veterinary Services 'can establish and apply quarantine and border security procedures based on international standards, but the procedures do not systematically address illegal activities relating to the import of animals and animal products'.

For Critical Competency II-12.A on Animal identification and movement control, a Level of Advancement of 3 means that the Veterinary Services 'implement procedures for animal identification and movement control for specific animal subpopulations as required for disease control, in accordance with relevant international standards'.

Of the 43 Members that undertook a PVS Evaluation or Follow-up mission between 2016 and 2021, 50% were assessed with a Level of Advancement of 3 or more for Critical Competency II-4 and are therefore considered as reaching compliance with minimal requirements. The proportion for Critical Competency II-12.A was 38% (**Fig. 3**).

Figure 4 displays the percentage of Members that comply with both Critical Competencies. As represented, 29% of WOAH Members reached a Level of Advancement of at least 3 for the two relevant Critical Competencies.

On the other hand, 40% of WOAH Members did not reach this level for either of the Critical Competencies. Looking at the Critical Competencies independently, 21% reached this level for quarantine and border security only, while 10% of Members reached it for animal identification and movement control.

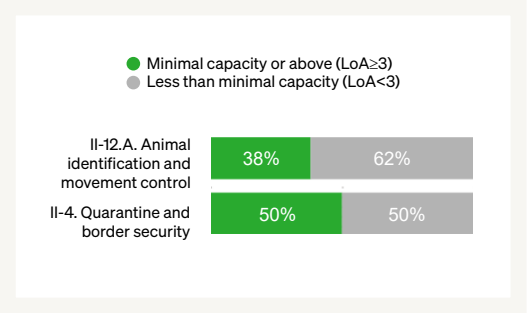

Figure 3. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green) for each of the two Critical Competencies related to animal movement and precautions at borders as assessed in PVS missions between 2016 and 2021

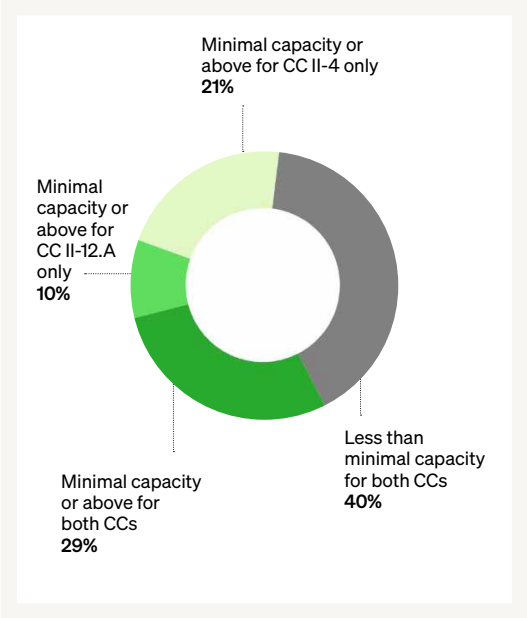

Figure 4. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for the two Critical Competencies (CCs) related to animal movement and precautions at borders as assessed in PVS missions between 2016 and 2021

c) Performance of Veterinary Services regarding animal movement control of Members that reported such measures in WAHIS

Consideration was given to Members with a PVS Evaluation or Follow-up mission between 2016 and 2021 and that reported in their WAHIS reports implementing precautions at borders or movement control within their territory for at least one disease. As noted in the limitations, these indicators should be interpreted with caution as the reporting of control measures in WAHIS is disease-specific while the PVS Tool evaluates horizontal capacity. However, crossing these data provides insight into the gaps between reported control measures and assessed capacity to implement these measures.

Of the Members that reported having taken precautions at borders for foot and mouth disease (FMD), in their six-monthly reports in 2019, and that had undertaken a recent PVS Evaluation or Follow-up mission between 2016 and 2021, 50% were assessed as having minimal capacity or above for Critical Competency II.4. on Quarantine and border security (**Fig. 5**, left).

Amongst the Members that indicated implementing movement control inside the country for FMD, 38% were considered to have minimal capacity or above for Critical Competency II.12.A on Animal identification and movement control (**Fig. 5,** centre).

Amongst the Members that reported implementing both measures for FMD, 25% were considered to have minimal capacity or above for both Critical Competencies (**Fig. 5**, right).

The figures comparing Members' capacity to implement WOAH recommendations on animal identification, movement control and quarantine and border security, and the reporting of these measures in WAHIS invite prudence when considering the reporting of movement control and security at borders as control measures in WAHIS.

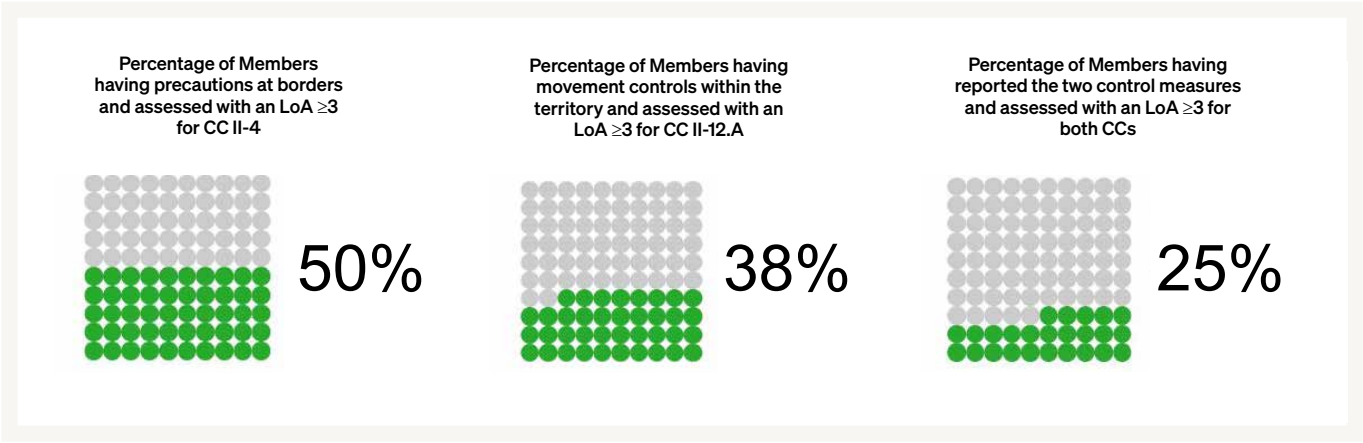

Figure 5. Percentages of Members that have reported animal movement control measures in WAHIS and that have been as assessed as having minimal capacity or above (Level of Advancement of 3 or more, in green) for the relevant Critical Competency, here taking the WAHIS data from 2019 for FMD; left, for precautions at borders; centre, for animal movement control within the territory; right, for both measures/PVS Critical Competencies

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

- Many of the Members that undertook a PVS Evaluation or Follow-up mission between 2016 and 2021 were assessed as not having the capacity to implement measures such as border protection and movement control within their country/territory. This conclusion is also true for those Members that claim, in their WAHIS six-monthly reports, to be applying these measures: many of them were considered to have insufficient capacity to implement them. Together with findings presented in other sections of this report, this point highlights that the control measures reported in WAHIS should be interpreted carefully.
- Future activities could consider better linking PVS mission findings to WAHIS data in order to better identify gaps and improve data quality reported to WAHIS.
- The use of precautions at borders, as well as the performance of Veterinary Services, appears to be more widespread than movement control within a territory. However, this latter measure is critical to prevent the spread of animal disease within a territory and is a prerequisite to the implementation of other control measures, such as zoning. This could be an important topic to consider for further capacity building, potentially associated with zoning.
- Many control measures can only be effective or are more effective when associated with other measures; for example, having robust movement controls in place is a prerequisite to zoning. In line with similar conclusions in Section 08 on Zoning and compartmentalisation, advocacy and capacity building could promote the message that control measures complement each other and should be implemented in parallel.
- WOAH, its Specialist Commissions and the WAHIS Key Users Group should engage in a broader discussion to improve the quality of reporting on control measures. Steps could include a description of the links between the measures reported in WAHIS and the WOAH *Terrestrial* and *Aquatic Codes*, a clarification of the minimum expected activities implemented in the field when the control measure is reported in WAHIS, a clearer understanding of the links between complementary control measures (e.g. zoning and movement control), and the more systematic use of PVS reports.

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08 Zoning and compartmentalisation

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2. List of monitored indicators, **p. 87**

3. Data, data sources, and advantages/ limitations of the data used, **p. 88**

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5. Conclusions and recommendations for improvement, **p. 98**

To access the interactive dashboard and executive summary of this section click here

1. Introduction

Zoning and compartmentalisation prevent disease incursion and enable animal disease control. Further, these measures can limit the disruption of international/regional trade in the event of introduction of a disease in a given territory.

The definitions of zoning and compartmentalisation in the 2022 notification procedure for completing six-monthly reports on WOAH-listed diseases (hereafter, Guidelines for WAHIS six-monthly reports) are very similar but not entirely identical to those in the WOAH 2022 *Codes*, as described in **Annex 1** (at the end of this section). The *Codes* define 'zone' and 'compartment', whereas the Guidelines have a more conceptual approach, describing 'zoning' and 'compartmentalisation'.

Zones and compartments may be recognised through bilateral agreements between trading partners for the purpose of international trade. The World Organisation for Animal Health provides procedures for its Members to acquire and maintain official recognition of the animal health status of an entire territory or of zones for six WOAH-listed diseases, and to publish self-declared animal disease freedom in a country, zone(s) or compartment(s) for the other WOAH-listed diseases.

Section 4 of both *Codes* includes standards related to prevention and control measures, particularly:

Terrestrial Code	*Aquatic Code*
Chapter 4.4. Zoning and compartmentalisation	Chapter 4.2. Zoning and compartmentalisation
Chapter 4.5. Application of compartmentalisation	Chapter 4.3. Application of compartmentalisation

Zoning and compartmentalisation are quite recent concepts that were added to the *Terrestrial Code* in 1993 and 2003, respectively. Chapter 4.4. on Zoning and compartmentalisation was first adopted in 1998 and most recently updated in 2021. It specifically describes a free zone (Article 4.4.4.), infected zone (Article 4.4.5.), protection zone (Article 4.4.6.) and containment zone (Article 4.4.7.), whilst acknowledging that other types of zones may be established.

Chapter 4.5. on Application of compartmentalisation was first adopted in 2008 and updated in 2012. For ASF in particular, dedicated Compartmentalisation Guidelines were developed and published in 2021.

In the *Aquatic Code*, Chapter 4.2. is devoted to zoning and compartmentalisation. It was first adopted in 1995 and the most recent update was in 2010. In parallel to the *Terrestrial Code*, Chapter 4.3. of the *Aquatic Code* covers the application of compartmentalisation. It was first adopted in 2010 and the most recent update took place in 2016.

Zoning is recognised in Article 6 of the WTO SPS Agreement. For terminology, the SPS Agreement uses 'disease-free area' to describe a disease-free zone and 'regionalisation' for zoning in relation to animal diseases. The SPS Committee monitors the implementation of regionalisation under a standing agenda item at its regular meetings. WTO Members are encouraged to inform the SPS Committee about their experiences in the implementation of regionalisation. Based on the information provided by Members, the Secretariat of the SPS Committee prepares an annual report on the implementation of regionalisation.

The WTO regionalisation annual report consists of three sections and is based on the information Members provide on:

a) requests for recognition of pest- or disease-free areas or areas of low pest or disease prevalence;

b) determinations on whether to recognise a pest- or disease-free area or area of low pest or disease prevalence;

c) Members' experiences in the implementation of Article 6 and the provision of relevant background information by Members on their decisions to other interested Members.

The objective of this section is to assess to what degree zoning and compartmentalisation related standards are implemented or adhered to by WOAH Members.

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2. List of monitored indicators

The following indicators have been monitored:

- Number and percentage of Members reporting zoning as a control measure in their WAHIS six-monthly reports;
- Average number of diseases for which zoning has been reported as a control measure;
- Number of Members that have reported the presence of a given disease/infection/suspected disease limited to one or more zones in their WAHIS six-monthly reports;
- Percentage of Members that have reported the presence of a disease/infection/suspected disease limited to one or more zones and that applied zoning as a control measure;
- Percentage of Members that apply movement control within their territory, of those that apply zoning as a control measure for a given disease;
- Number of Members that have reported the presence of a disease/infection/suspected disease limited to one or more zones and that apply the key control measures and that have self-declared freedom or have official recognition for that disease in a zone;
- Number of Members reporting compartmentalisation as part of their disease control measures in their WAHIS six-monthly reports;
- Performance of Veterinary Services regarding zoning and compartmentalisation, as assessed by the PVS Tool;
- Number of WOAH Members reporting regionalisation related to animal health in WTO annual reports on implementation of regionalisation.

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3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- Control measures as indicated in WAHIS six-monthly reports. Amongst the proposed control measures, focus has been given to 'zoning' and 'compartmentalisation'. Data collected correspond to the two semesters of the years from 2005 to 2021.

- Disease occurrence codes as reported in WAHIS six-monthly reports, with a focus on:
  - 'Disease limited to one or more zones', defined in the Guidelines for WAHIS six-monthly reports as meaning the disease is present with clinical signs and limited to one or more zones/compartments (in domestic species or wildlife);
  - 'Infection/infestation limited to one or more zones', defined as a confirmed infestation or infection using diagnostic tests, but with no clinical signs observed and limited to one or more zones/ compartments (in domestic species or wildlife);
  - 'Disease suspected but not confirmed and limited to one or more zones', meaning the presence of the disease was suspected but not confirmed and limited to one or more zones/compartments (in domestic species or wildlife).

For the purpose of this analysis focusing on the geographical distribution of diseases, infections/ infestations and suspected diseases, these three occurrence codes were merged and considered together. Data collected correspond to the two semesters of the years from 2005 to 2021.

- List of self-declared animal health status in a zone or compartment. Data collected and presented were obtained from the two datasets published by WOAH[1] from 2005 to 2021.

- Performance of Veterinary Services on the two Critical Competencies directly related to zoning and compartmentalisation (IV-7 and IV-8, respectively), assessed *via* the PVS Tool[2] during PVS missions. The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data used in the analysis were up-to-date, only the reports of PVS Evaluation/Follow-up missions conducted between 2016 and 2021 were taken into account.

- Annual reports of the WTO SPS Committee on the implementation of Article 6 of the SPS Agreement (on regionalisation) from 2012 to 2021.

[1] https://www.woah.org/en/what-we-offer/self-declared-disease-status/
[2] Reference of Critical Competencies, from the Seventh Edition of the PVS Tool, in 2013

These data sources have advantages and limitations as described in the table below.

	WAHIS control measures	
Advantages	• Standardised information • Collected twice a year for all WOAH-listed diseases • Requested from all WOAH Members • Official data provided under the supervision of the WOAH Delegate	• Already organised in a database • Data from immediate notifications/follow-up reports during that semester are automatically pre-filled into six-monthly reports, so these reports contain data about control measures actually used during disease outbreaks
Limitations	• Disease control measures are self-declared by Members and information has not been verified by WOAH • Uncertainties about the level of understanding of zoning or compartmentalisation as per WOAH standards • Compartmentalisation has only been listed as a control measure in WAHIS six-monthly reports since 2017. There is limited information on the implementation of this concept before that year • The data on control measures are prepopulated in the WAHIS system (from the previous report) and some WOAH Members may not update them routinely	• Due to the delay in sending reports to WOAH, the most recent data that are comprehensive enough to use are from 2019 • Control measures are reported by species in domestic animals, and for the entire wild animal population in wildlife. This information granularity presents challenges in data reconciliation when crossing information between disease situation and control measures • Differences in the definitions of zoning in the Guidelines for WAHIS six-monthly reports *versus* the *Codes* may have contributed to misunderstandings. These differences have, however, been reduced since 2022.

	WAHIS occurrence codes	
Advantages	• Standardised information • Collected twice a year for all WOAH-listed diseases • Requested from all WOAH Members	• Official data provided under the supervision of the WOAH Delegate • Already organised in a database
Limitations	• All diseases reported *via* an immediate notification during a semester, irrespective of the reason for the immediate notification, are automatically transcribed as 'present in one or more zones' in the relevant six-monthly report. Members can adjust the occurrence code (e.g. from 'present in a zone' to 'present') when filling out the six-monthly report. Despite that option, this system may generate a bias towards 'zoning' in the disease situation analysis	• Although the definition of 'limited to one or more zones' refers to zones and compartments in the Guidelines for WAHIS six-monthly reports, it is in practice frequently used for diseases limited to certain areas of the countries/territories (not necessarily zones as defined by the WOAH *Codes*) • Information self-declared by WOAH Members and not verified by WOAH, other than comparison with intelligence gathered on disease outbreaks • Reporting the presence of a disease in wild and domestic animals in a zone provides detailed intelligence. However, it can complicate data analysis

	List of self-declared animal health status in a zone or compartment
Lim. Adv.	• See Section 06 on Self-declarations of animal status
Lim. Adv.	• See Section 06 on Self-declarations of animal status
	PVS Critical Competencies (IV-7 Zoning and IV-8 Compartmentalisation)
Lim. Adv.	• See Section 01 on Governance and PVS
Lim. Adv.	• See Section 01 on Governance and PVS
	WTO annual reports on regionalisation from the SPS Committee meetings
Advantages	• The vast majority of WOAH and WTO Members are the same[3] • Information filed by WTO Members regularly • Standard formatting as this is checked by the WTO Secretariat • Significant amount of qualitative and quantitative information
Limitations	• The information is manually extracted from the minutes of the SPS Committee meetings, in which regionalisation is a standard agenda item • The information is collected for purposes other than the WOAH Observatory and thus its analysis must be interpreted with caution • The profile of Members that intervene in the WTO SPS Committee meetings on regionalisation might not be representative of all WTO Members • Not all the regionalisation-related information at country level is mentioned in this forum

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[3] Ninety percent of the 182 WOAH Members are also WTO Members and 93% of the 164 WTO Members are also WOAH Members.

4. Descriptive analysis

Using the interactive dashboard, one can select different criteria, such as a given disease or time period, and visualise the information corresponding to the selected parameters. It is not practical to present the information corresponding to all the diseases in this annual report. Therefore, the indicators below show the information corresponding to specific criteria that have been selected as examples.

a) Number and percentage of reporting Members that apply zoning as a control measure in their WAHIS six-monthly reports

Figure 1 displays the evolution of the percentage of Members that submitted a six-monthly report that reported 'zoning' from 2005 to 2019. The years 2020, 2021 and 2022 have not been taken into account because not all the reports have been submitted and those that have been filed might not represent the global picture. The figure shows an increase of 36% from 2005 to 2019 in the number of Members that have implemented zoning for at least one terrestrial animal disease. For aquatic animal diseases, despite an increase of 275% over the same period, the application of zoning is not as established as for terrestrial diseases.

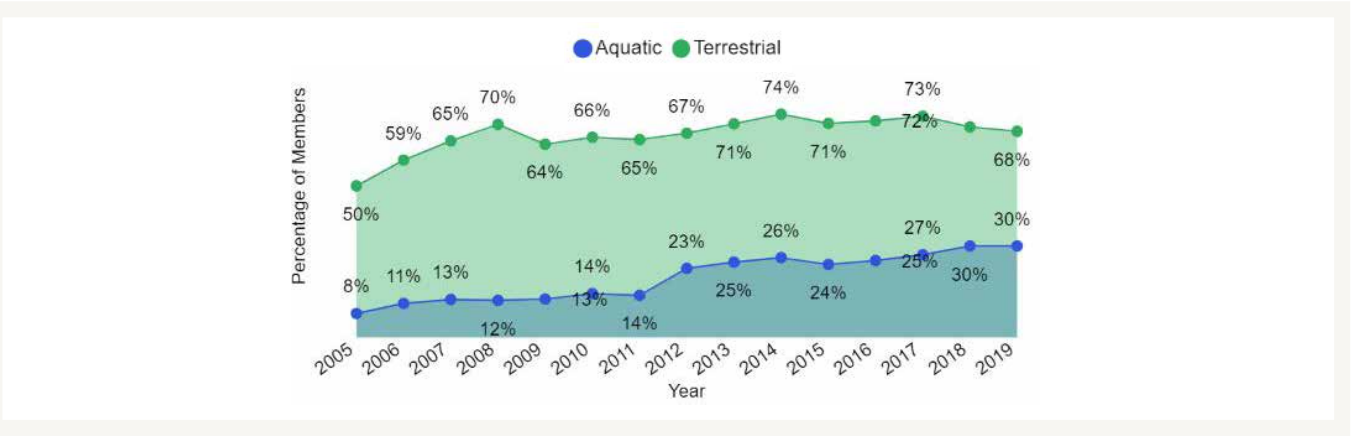

Figure 1. Evolution of the percentage of Members submitting a six-monthly report that apply zoning as a control measure for at least one terrestrial (green) and aquatic (blue) animal disease

To illustrate this indicator with an example, the data from 2019 were used in **Figure 2**. Of the 170 WOAH Members that filed a WAHIS 2019 six-monthly report, 120 (71%) reported zoning as a control measure for at least one disease. A statistical test[4] confirmed significant differences between WOAH regions, with 92% of the Members in Europe reporting zoning *versus* 67% and 48% in the Americas and Africa, respectively (**Fig. 2**).

Figure 2. Number and percentage of Members reporting 'zoning' as a control measure (top) and percentage of Members reporting 'zoning' as a control measure per WOAH region (bottom) in 2019

[4] Fisher's test

As shown in **Figure 3**, highly pathogenic avian influenza in poultry, FMD, Newcastle disease, ASF, CSF and PPR are the six diseases for which the most Members reported applying zoning as a control measure, at least once, from 2005 to 2019. On the interactive dashboard, one can scroll down to see the diseases for which fewer Members report applying zoning as a control measure.

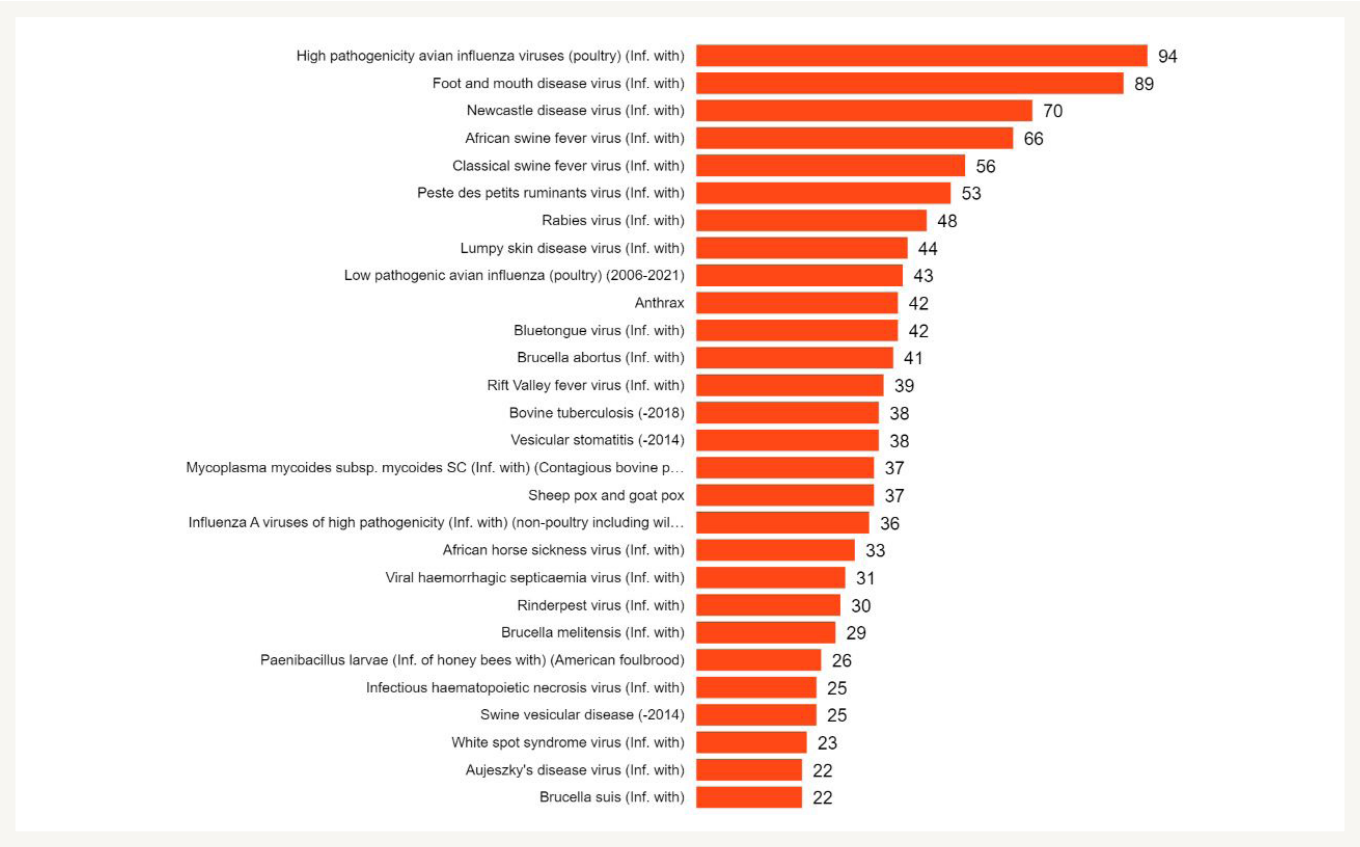

Figure 3. Listed diseases sorted by the number of Members that have reported zoning as a control measure between 2005 and 2019

The percentage of Members that implement zoning per occurrence code[5] was also measured. **Figure 4** presents the reporting of ASF for the second semester of 2019. It shows that 38 Members reported applying zoning as a control measure for that disease during that semester. Of those Members, 49% stated that ASF was absent from their entire territory or never reported, suggesting that zoning may be part of their contingency plans. This may indicate that there is not a robust understanding of how control measures should be reported in WAHIS. The disease was present in 16% of the 38 Members and disease/infection/suspected disease was limited to one or more zones in 35%.

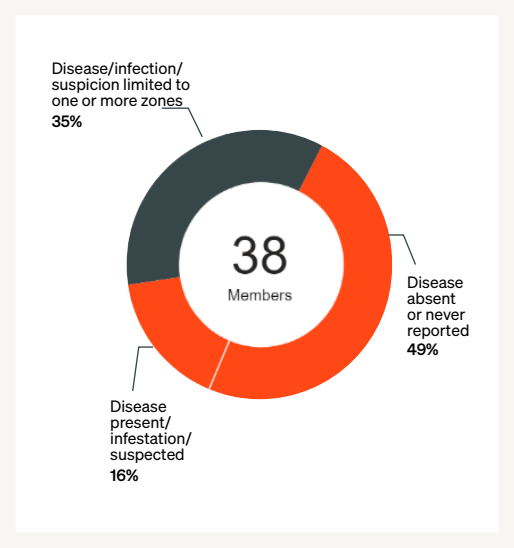

Figure 4. Percentage of Members that reported zoning, as a control measure, per disease occurrence code code for ASF in the second semester of 2019

[5] Disease situation: (i) Disease absent or never reported; (ii) Disease/infection or suspicion limited to one or more zones; (iii) Disease present (disease or infection/infestation present, or disease suspected)

b) Average number of diseases for which zoning has been reported as a control measure

This indicator focuses on the number of diseases for which zoning was reported as a control measure in WAHIS six-monthly reports. The average number of diseases reported per Member ranged from 14 to 20 between 2005 and 2021 (**Fig. 5**).

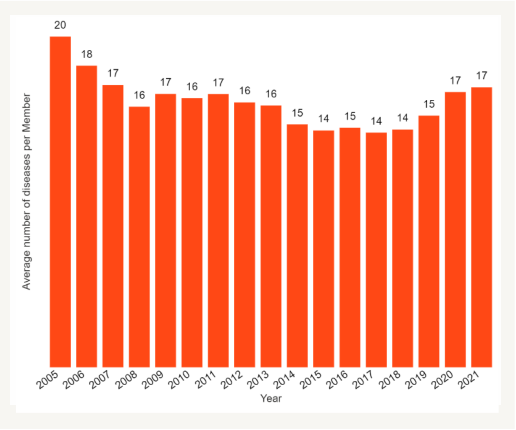

Figure 5. Average number of diseases reported, per Member, for which zoning is used as a control measure

c) Percentage of Members that apply movement control within their territory, of those that apply zoning as a control measure for a given disease

As described in the *Codes*, controlling movements is a prerequisite for zoning. However, data extracted from WAHIS six-monthly reports shows that not all Members that applied zoning as a control measure for a given disease also applied movement control within their territories for the same disease.

The application of these two measures simultaneously varied depending on the disease and time period selected. For instance, only 72% of Members that reported applying zoning as a control measure for AHS in the second semester of 2019 also reported applying movement control for the same disease. For HPAI in poultry and FMD during the same time period, this figure with 83% and 95%, respectively.

Figure 6. Percentage of Members reporting ASF limited to a zone in the second semester of 2019

d) Number of Members that have reported the presence of a given disease/infection/suspected disease, limited to one or more zones, in their WAHIS six-monthly reports

This indicator focuses on the description of disease occurrences in WAHIS six-monthly reports, and specifically on situations in which Members reported that a disease, infection/infestation or suspected disease was limited to one or more zones within their territory.

Figure 6 displays the situation of ASF, as reported for the second semester 2019, when 26 Members reported the disease limited to one or more zones. This accounts for 62%[6] of the Members that reported the presence of the disease during this semester (disease or infection present or suspected).

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[6] This high percentage may be attributed to the fact that all diseases reported as immediate notifications are, in turn, reported by default as limited to a zone in the six-monthly reports, due to WAHIS functionalities. This percentage is therefore biased with overestimation.

e) Percentage of Members that have reported the presence of a disease/infection/suspected disease limited to one or more zones and that applied zoning as a control measure

In reporting the presence of a disease, infection or suspected disease limited to one or more zones, Members are effectively reporting the absence of this disease in other zones of their territories. In these cases, Members are expected to apply key control measures, namely 'zoning' and associated measures, to prevent the spread of disease to non-infected zones. This indicator measures the percentage of Members that apply 'zoning' as a control measure, of those that have reported having a disease restricted to one or more zones.

Using the example of ASF in the second semester of 2019, as in the previous indicator, 12 (46%) of the 26 Members that reported the presence of ASF restricted to one or more zones, also reported applying zoning as a control measure for this disease.

Looking at other diseases for this period reveals that zoning was not commonly used as a control measure by Members that reported having a given disease limited to one or more zones of their territory.

f) Number of Members that have reported the presence of a disease, infection or suspected disease limited to one or more zones and that apply key control measures and that have self-declared freedom or have official recognition of freedom in a zone for that disease

This indicator builds on the two previous ones and adds another criterion by taking into account the number of Members that have self-declared their animal health status or have official recognition for a zone. What is sought, therefore, is the number of Members that meet the following criteria:

- Have reported in their WAHIS six-monthly reports a disease, infection or suspected disease limited to one or more zones;
- Apply zoning and movement control as control measures;
- Have self-declared their free animal health status or have official recognition of freedom for at least one zone.

Table I takes the example of ASF for the second semester of 2019. Three Members had reported ASF restricted to at least one zone, were applying zoning and movement control as control measures and also had an active self-declaration for ASF in that period. Making the same search in the dashboard without selecting any disease shows that 12 Members had reported diseases limited to a zone, applied zoning and movement control and had self-declared their free animal health status or had official recognition of freedom for a zone for a given disease.

Table I. Number of Members reporting a disease limited to one or more zones, applying two key control measures and with an active self-declaration or official recognition in the second semester of 2019, for ASF (left) or not selecting any disease (right)

3 Members meet the three criteria above for ASF in the second semester of 2019	12 Members meet the three criteria above, not selecting any disease, in the second semester of 2019

g) Number of Members reporting compartmentalisation as part of their disease control measures in their WAHIS six-monthly reports

Compartmentalisation is reported in much smaller numbers than zoning by WOAH Members. This could be attributed to the fact that compartmentalisation is a newer concept and possibly requires strong public-private partnerships. Compartmentalisation began being reported in WAHIS in 2017. As shown in **Figure 7**, an increasing tendency to report compartmentalisation appears to be emerging. This apparent trend will have to be monitored and confirmed in the coming years. The difference in the number of Members reporting compartmentalisation in six-monthly WAHIS reports for terrestrial *versus* aquatic animals is much less pronounced than for zoning.

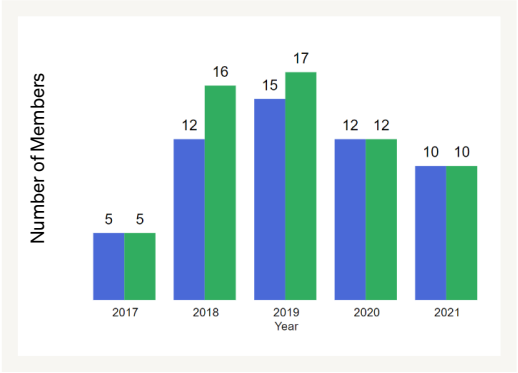

Figure 7. Evolution of the number of Members reporting compartmentalisation as a control measure for terrestrial (green) and aquatic (blue) animal diseases

h) Performance of Veterinary Services regarding zoning and compartmentalisation, as assessed by the PVS Tool

Between 2016 and 2021, 43 WOAH Members have hosted a PVS Evaluation or Follow-up mission. Amongst all the Critical Competencies described in the PVS Tool[7] and assessed during these missions, Members were assessed against:

- Critical Competency IV-7: Zoning
- Critical Competency IV-8: Compartmentalisation.

In PVS missions, each Critical Competency is assigned a Level of Advancement (LoA) ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

For Critical Competency IV-7 on Zoning, an LoA of 3 means that 'The Veterinary Services are implementing biosecurity and sanitary measures with the intention of establishing a disease free zone for selected animals and animal products'. A Level of Advancement above 3 indicates a stronger capacity and the establishment of at least one disease-free zone.

For Critical Competency IV-8 on Compartmentalisation, an LoA of 3 means that 'The Veterinary Services, working in close partnership with interested stakeholders, ensure that planned biosecurity measures to be implemented will enable the establishment and maintenance of disease free compartments for selected animals and animal products'.

As shown in **Figure 8**, nearly a third of the Members that received a PVS Evaluation or Follow-up mission between 2016 and 2021 were assigned an LoA of 3 or above for the Critical Competency related to zoning. For the compartmentalisation Critical Competency, the proportion of Members reaching level 3 or above was 14%.

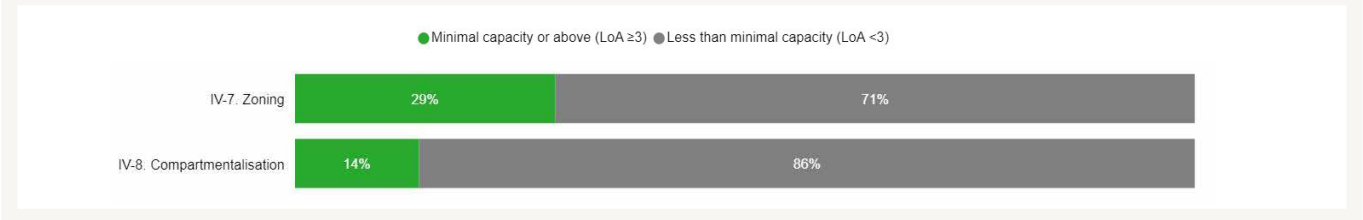

Figure 8. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for the two Critical Competencies (CCs) related to zoning and compartmentalisation as assessed in PVS missions between 2016 and 2021

[7] 2019 version

i) Number of WOAH Members reporting regionalisation related to animal health in WTO annual report on implementation of regionalisation

From 2012 to 2021, a total of 34 WOAH Members, half of which were from the Americas region, informed the SPS Committee about their 'experiences in the implementation' of regionalisation related to animal health (**Fig. 9**).

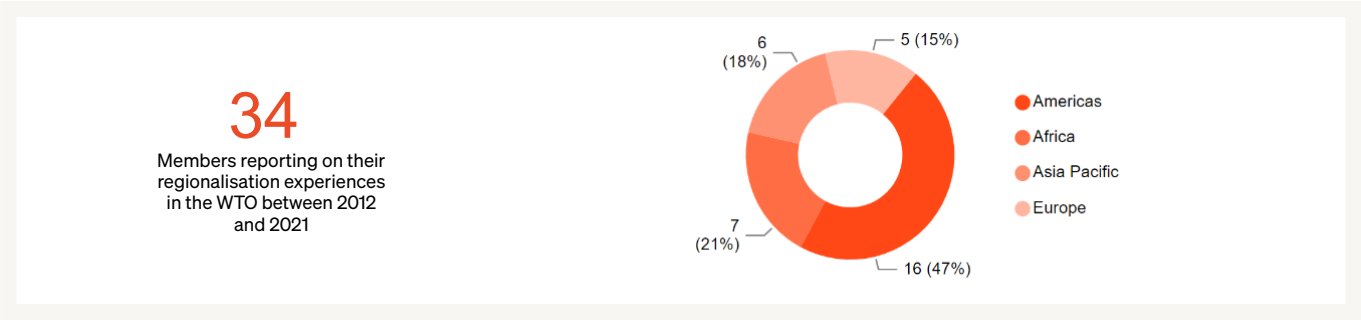

Figure 9. Number of WOAH Members that reported 'regionalisation experiences' in WTO annual reports between 2012 and 2021 (left) and percentage breakdown by WOAH region (right)

These 34 Members filed 130 'regionalisation experiences' related to animal diseases in the WTO annual reports on implementation of regionalisation during the period studied (2012–2021). As shown in **Figure 10**, over 50% of these reports of 'regionalisation experiences' requested recognition of regionalisation (Section A), more than 40% referred to Members' experiences in the implementation of Article 6 (Section C), and a very low percentage of the interventions (5%) alluded to instances in which regionalisation in some territories was recognised by other Members (Section B).

FMD was the most common animal disease mentioned by WOAH Members in the 130 interventions made in this WTO forum on regionalisation. The distribution of the animal diseases corresponding to the 130 WOAH Member interventions and the part of the report in which they were filed are shown in **Figure 10**.

Reading through the WTO annual reports on regionalisation, it is apparent that not all the Members' interventions in this forum refer strictly to regionalisation. In some instances, Members' 'request for recognition' was simply promoting the newly established animal health status of a given disease that had just been self-declared or officially recognised by WOAH for their entire territory. This is evidence of the value of the WOAH official status and self-declaration processes and their positive impacts on trade.

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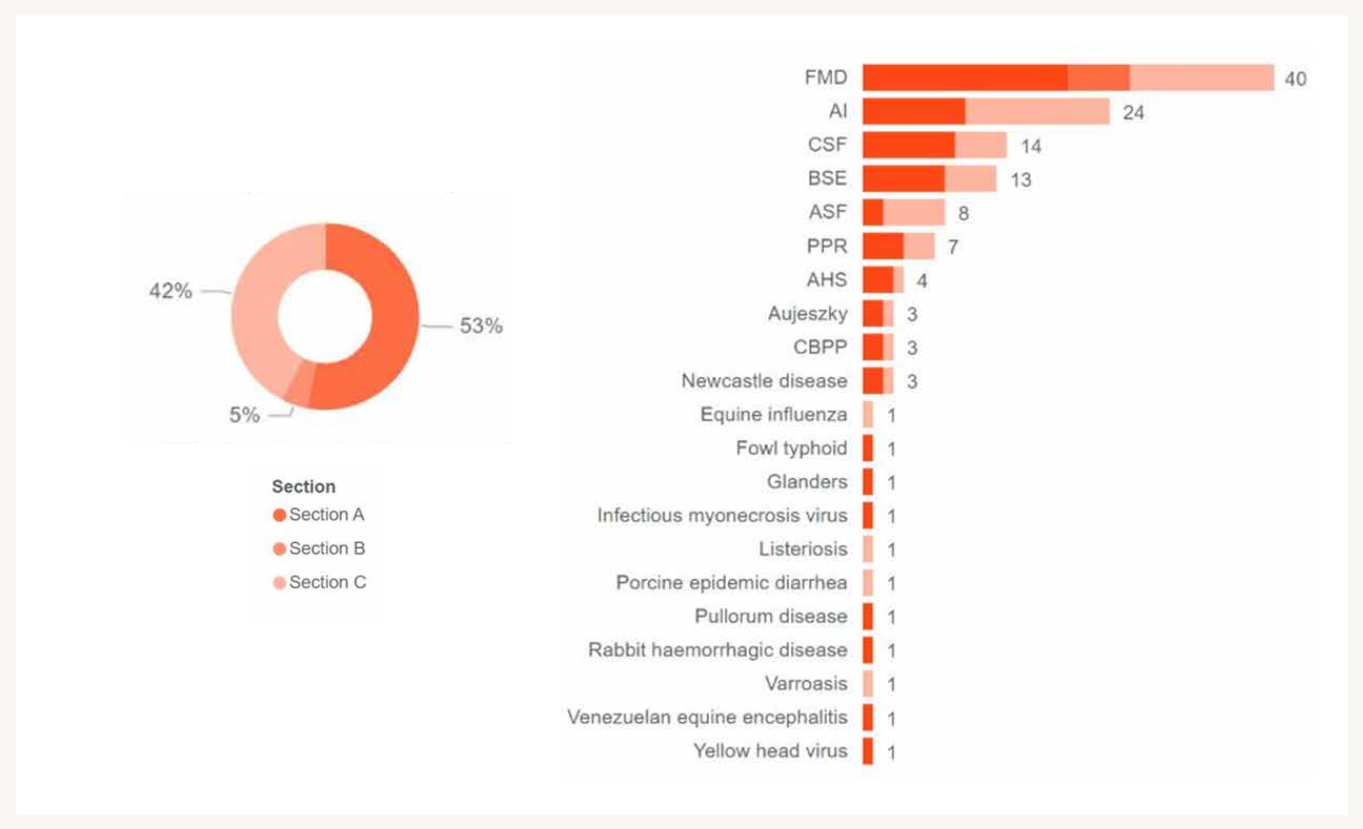

Figure 10. Percentage of 'regionalisation experiences' reported per section of the WTO regionalisation report between 2012 and 2021 (left) and distribution of 'regionalisation experiences' by the diseases mentioned (right)

Careful reading of these ten annual reports (2012–2021) and subsequent analysis revealed that slightly more than 50% of the interventions recorded were related to zones within countries, whereas the rest were only for information about the country's animal health status (**Fig. 11**).

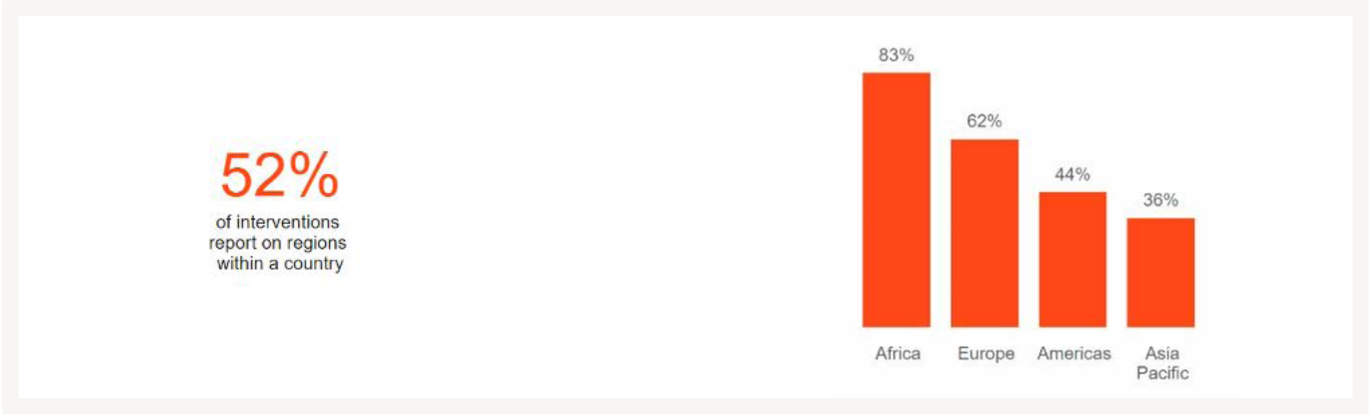

Figure 11. Percentage of regionalisation reports that refer strictly to regionalisation-related aspects (left) and breakdown by WOAH region (right)

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are therefore not intended to demonstrate facts. Still, the information available can yield relevant insights into various situations from which recommendations can be made.

None of the indicators discussed above is adequate to directly monitor the level of implementation of WOAH standards on zoning and compartmentalisation on its own. However, when considered together, these indicators can provide an overall picture of the situation:

- Compartmentalisation is far from being routinely put into practice. The implementation of zoning, on the other hand, appears to be more regular. However, looking individually at the number of Members applying zoning for selected diseases reveals that zoning is not as well established as it could be.

- In WAHIS, diseases that were the subject of an immediate notification, irrespective of the reason for the immediate notification, are automatically recorded as 'limited to one or more zones' in the corresponding six-monthly reports. This has been identified as a bias in the list of limitations. If Members do not amend these six-monthly reports when required, these reports will contain records about zoning that do not align with the definitions of 'zone' provided in the WOAH *Terrestrial* and *Aquatic Codes*.

- It is worth noting that amongst the Members that reported the presence of a disease limited to one or more zones, a limited percentage reported applying the key control measure of zoning that would help to contain the disease. In addition, although movement control is required to effectively implement zoning, not all Members that applied zoning as a control measure also applied movement control. These findings raise the question of whether the seemingly low implementation of these control measures is due to underreporting of control measures in WAHIS, misunderstanding of the critical link between these control measures and the sanitary situation, lack of training and awareness or a shortage of resources to enforce these control measures.

- The Guidelines for WAHIS six-monthly reports recommend only reporting control measures that were applied during the semester being reported. However, some Members have reported zoning as a control measure even in the absence of the disease. This suggests that zoning was reported as it was part of contingency plans to be used in the event of a disease incursion. To properly assess the uptake of zoning-related standards, it would be interesting to ascertain whether zoning is used as part of contingency plans, for disease control, for surveillance or for the purpose of trade facilitation when it is reported to WAHIS. The current notification procedure for completing the six-monthly report on WOAH-listed diseases does not allow such a distinction.

- Findings from the PVS Evaluation and Follow-up missions carried out between 2016 and 2021 confirm that the great majority of Members do not reach the minimal capacity levels expected for the implementation of zoning and compartmentalisation.

These points being made, it is recommended that alignment be enhanced between the concept of 'zoning' as defined in the *Codes* and the way it is reported in WAHIS.

It is suggested that WOAH consider the following:

a) If it is appropriate to automatically record diseases in the six-monthly reports as 'limited to a zone' if they were previously reported as an immediate notification that semester;

b) How to further clarify that when reporting the presence of a disease limited to one or more zones, this should be in line with the zoning definition provided in the *Codes*;

c) How to convey to Members the expectation that reporting a disease as limited to one or more zones should be associated with the application of relevant control measures, such as zoning and movement control, amongst others;

d) The development and delivery of bespoke capacity building activities;

e) The best approach for Members to report the implementation of zoning as well as the relevance of asking them to report on the existence of contingency plans and related measures.

WOAH Members are also invited to give careful thought to:

a) Reporting a disease as being 'limited to one or more zones' only when measures to contain the disease and prevent its spread from infected areas have been put in place;

b) The functional relationship between some control measures. For example, according to the *Codes*, the application of zoning requires movement control;

c) Limiting the control measures reported to WOAH to those applied during the reporting time period, as advised in the Guidelines for WAHIS six-monthly reports.

Crossing these findings with WOAH Members' self-declarations of animal health status in zones re-enforces what is presented in the section of this report devoted to self-declarations (see Section 06) and highlights the fact that the self-declaration of disease-free zones/compartments is not fully exploited.

Regarding the WTO reports on regionalisation, it can be established that only a small fraction of WOAH Members report in this forum. Even when they do, a report does not always equate to a request for regionalisation, as half of the reports are intended for a more informational purpose. On the other hand, with a couple of exceptions, Members do not publicly recognise disease-free 'regions' that other Members have presented. This indicates that although Members are keen on others recognising regionalisation, there is no reciprocity, in general, for declaring that recognition with regard to other Members in this WTO forum. This could raise the question of whether Members may not wish to encourage others to submit extra requests for zone recognition, as doing so could increase sensitivity in bilateral trade negotiations.

Given the absence of homogeneous reporting by Members in the WTO process, it is difficult to gain a comprehensive understanding of the bilateral processes to recognise regionalisation for trade purposes.

The need to improve capacity and raise awareness of zoning and compartmentalisation is apparent. This is likely the case for several audiences: WAHIS Focal Points, whose understanding of the reporting of these occurrence codes and control measures could be enhanced; and animal health officers of countries/territories willing to implement zoning and compartmentalisation in the future. There might also be a need to identify and explore the barriers to implement regionalisation, as well as to find out the potential incentives for their recognition. This would certainly help in developing more tailored capacity building activities.

Annex 1

Comparison of the definitions of zoning and compartmentalisation in WAHIS and the *Terrestrial* and *Aquatic Codes*

	Definition in the 2022 Guidelines for WAHIS six-monthly reports	Definition in the Glossary of the *Terrestrial* and *Aquatic Codes*, 2022 Edition
Zoning/zone	**For terrestrial animal diseases – Zoning:** Delineation defined by the Veterinary Authority, of part of a country/territory containing an animal population or subpopulation with a specific animal health status with respect to a disease, infection or infestation for which required surveillance, control and biosecurity measures have been applied for the purposes of international trade or disease prevention and control, under the provisions of Chapter 4.4. of the *Terrestrial Code*.	***Terrestrial Code* – Zone:** means a part of a country defined by the Veterinary Authority, containing an animal population or subpopulation with a specific animal health status with respect to an infection or infestation for the purposes of international trade or disease prevention or control.
	For aquatic animal diseases – Zoning: Delineation defined by the Competent Authority, of an area in one or more countries/territories containing an aquatic animal population with a specific aquatic animal health status with respect to a disease or infection for which required surveillance, control and biosecurity measures have been applied, under the provisions of Chapter 4.2. of the *Aquatic Code*.	***Aquatic Code* – Zone:** means an area in one or more countries containing an aquatic animal population with a specific aquatic animal health status with respect to a disease, in which surveillance and control measures and basic biosecurity conditions are applied. The zone should be defined by the Competent Authority.
Compartmentalisation / compartment	**For terrestrial animal diseases – Compartmentalisation:** Procedure implemented by a Member under the provisions of Chapters 4.4. and 4.5. of the *Terrestrial Code* to define an animal subpopulation contained in one or more establishments, separated from other susceptible populations by a common biosecurity management system, and with a specific animal health status within its territory for the purposes of international trade or disease prevention and control.	***Terrestrial Code* – Compartment:** means an animal subpopulation contained in one or more establishments, separated from other susceptible populations by a common biosecurity management system, and with a specific animal health status with respect to one or more infections or infestations for which the necessary surveillance, biosecurity and control measures have been applied for the purposes of international trade or disease prevention and control in a country or zone.
	For aquatic animal diseases – Compartmentalisation: Procedure implemented by a Member under the provisions of Chapters 4.2. and 4.3. of the *Aquatic Code* to define one or more aquaculture establishments under a common biosecurity management system containing an aquatic animal population with a specific aquatic animal health status within its territory for the purposes of international trade or disease prevention and control.	***Aquatic Code* – Compartment:** means one or more aquaculture establishments under a common biosecurity management system containing an aquatic animal population with a distinct health status with respect to a specific disease or diseases for which required surveillance and control measures are applied and basic biosecurity conditions are met for the purpose of international trade. Such must be clearly documented by the Competent Authority(-ies).

09 Emergency Preparedness

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1. Introduction

When an animal health and welfare emergency or disaster occurs, the speed, suitability and effectiveness of the response depends upon the level of preparedness of the Veterinary Authority and relevant stakeholders.

For the *Terrestrial Code*, Article 4.19.3. of Chapter 4.19. on Official control programmes for listed and emerging diseases provides the transversal international standards for emergency preparedness, with references to contingency plans and simulation exercises. Other horizontal chapters also refer to emergency preparedness; for example:

- Article 3.2.7. of Chapter 3.2. on the Quality of Veterinary Services states that Veterinary Services should 'be prepared to respond effectively to sanitary emergencies'. Point 4 refers to 'emergency management, including preparedness and response planning, a legal framework, and access to the human, physical and financial resources to respond rapidly to sanitary emergencies in a well-coordinated manner'.
- Article 1.4.5. of Chapter 1.4. on surveillance covers early warning systems.
- Chapters 1.7. to 1.12. in Section 1 require Members that submit a dossier for official status recognition to annex their contingency plan and share any information related to simulation exercises.

Additionally, some disease-specific chapters specifically require contingency plans (e.g. Chapter 8.8. on FMD).

On the aquatic animal side, specific standards and recommendations on contingency planning are available in Chapter 4.6. of the *Aquatic Code*.

Since 2002, WOAH has encouraged its Members to voluntarily report the simulation exercises they conduct to strengthen the capacity of their Veterinary Services. After translation in the three WOAH official languages, this information is disseminated to the international community *via* the WAHIS Distribution List[1] and published on a dedicated webpage.[2] This publication prevents the simulation exercise from being mistaken for a real disease emergency and raises awareness of preparedness. The *Guidelines for Simulation Exercises* were developed in 2020 to provide more guidance for WOAH Members to prepare, deliver and learn from exercises.

In 2018, WOAH carried out a one-off review[3] to explore whether WOAH Members had contingency plans and for which diseases/disasters. A majority of WOAH Members (n=159; 87%) were identified as having at least one contingency plan in place. Some Members granted permission to publish their plans on the WOAH website in the interests of solidarity and transparency in order to share their experience and support other Members willing to develop/revise their own contingency plans.

The objective of this section is to assess to what degree the emergency preparedness-related standards are implemented or adhered to by WOAH Members.

[1] More information and subscription at https://www.woah.org/en/what-we-do/animal-health-and-welfare/disease-data-collection/info-list/

[2] Available at https://www.woah.org/en/what-we-do/animal-health-and-welfare/disease-data-collection/simulation-exercises/

[3] McDougle J., Sabirovic M., Pietropaoli S. & Hamilton K. (2020). – The gulf between emergency plans and the resources needed: a global review. *Rev. Sci. Tech.*, **39** (2), 373–384. https://doi.org/10.20506/rst.39.2.3088

2. List of monitored indicators

The following indicators have been monitored:

- Number of simulation exercises reported to WOAH;
- Number of Members that reported having a contingency plan;
- Percentage of Members that reported having a contingency plan and a recent simulation exercise for the same diseases;
- Percentage of Members that have an officially recognised disease-free status and that have reported (i) having a contingency plan and (ii) a recent simulation exercise for this disease;
- Percentage of Members that have a self-declared disease-free status and that have reported (i) having a contingency plan and (ii) a recent simulation exercise for this disease (with a focus on ASF, avian influenza and rabies);
- Performance of Veterinary Services regarding emergency preparedness, as assessed by the PVS Tool during PVS missions. For this indicator, two Critical Competencies were considered:
  - I-9: Emergency funding
  - II-6: Emergency response.

Considering the very limited numbers of contingency plans and simulation exercises for aquatic animal diseases, focusing on specific aquatic animal diseases was not considered to be informative or relevant.

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3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- List of Members that reported having a contingency plan to WOAH in 2018 (one-off review): dataset provided by the Preparedness and Resilience Department, WOAH.
- List of Members that reported to WOAH having conducted simulation exercises from 2002 to 2021: information available online[4] and compiled in a table format by the World Animal Health Information and Analysis Department, WOAH. When compared to the list of Members that reported having a contingency plan in 2018 (see just below), only the simulation exercises reported between 2017 and 2021 were considered.
- List of Members with an officially recognised status for AHS, BSE, CBPP, CSF, FMD and PPR: dataset provided by the Status Department, WOAH, and displayed on the webpage,[5] as recognised on 31 December 2021.
- List of Members that self-declared a free status for ASF, avian influenza and rabies: dataset provided by the Status Department and displayed on the webpage,[6] as of 31 December 2021.
- Performance of Veterinary Services on emergency preparedness: Levels of Advancement of Critical Competencies I-9 and II-6 of the PVS Tool.[7] The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/Follow-up missions conducted between 2016 and 2021 were taken into account.

These data sources have advantages and limitations as described in the table below.

	List of Members that reported/shared a contingency plan with WOAH in 2018	
Advantages	• Review conducted in 2018 • All WOAH Members were given the opportunity to contribute; the response rate was higher than 90%	• The information includes contingency plans for WOAH-listed diseases, non-WOAH-listed diseases and any veterinary emergencies
Limitations	• One-off review, that has not been repeated to date • Not easy to regularly update the data • The dataset lists the Members that have claimed to have a contingency plan. There has been no validation of this information, nor assessment of the quality of the contingency plan	• Having contingency plan does not necessarily equate to being prepared, as many Members do not have the resources to implement their plans, or their plans are not based on local risks • Some Members may not have a disease-specific contingency plan but a generic plan that aims to cover all emergencies. It is unclear whether the generic plan would specifically cover a given disease

[4] https://www.woah.org/en/what-we-do/animal-health-and-welfare/disease-data-collection/simulation-exercises/

[5] https://www.woah.org/en/what-we-do/animal-health-and-welfare/official-disease-status/

[6] https://www.woah.org/en/what-we-offer/self-declared-disease-status/

[7] Reference of Critical Competencies, from the Sixth Edition of the PVS Tool, in 2013

List of Members that reported to WOAH having conducted simulation exercises

Adv.

- Easiness of data collection

Limitations

- Voluntary reporting from Members, with limited communication regarding the ability to report, leading to:
  - lack of representativeness
  - underreporting
- Some simulation exercises are conducted for a group of diseases, but the detailed list of covered diseases is not clear (for example 'exotic diseases'). This complexifies disease-specific data analysis
- Members tend to prefer notifying national and cross-border exercises. Sub-national or local exercises may be reported less frequently, leading to overall underreporting
- For the indicator looking at simulation exercises and contingency plans, only the simulation exercises reported between 2017 and 2021 were considered, in order to align with the time the review on contingency plans was conducted
- Regional bias may exist depending on the regional animal health status: in regions where a disease is endemic, Members are unlikely to conduct simulation exercises for this disease

List of Members with an officially recognised status for AHS, BSE, CBPP, CSF, FMD and PPR

Advantages

- Robust procedure with detailed information officially provided by the Delegate and carefully assessed by WOAH (procedures described on the webpage[8])
- Official recognition by the World Assembly of WOAH Delegates
- Requirements for official recognition include emergency preparedness, including the existence of a contingency plan
- Direct information about the Members that have been recognised as complying with some identified standards

Limitations

- Voluntary procedure
- Only covers a subset of Members that have sought and received official recognition of their disease freedom
- Procedure limited to six diseases
- A recent amendment to the questionnaire for official status recognition requires Members to provide their contingency plan or a brief summary and information about any simulation exercises. However, this information is not stored in a way that allows comparison or feeding into other datasets

List of Members having self-declared a disease-free status

Adv.

- See Section 06 on Self-declarations of animal health status

Limitations

- See Section 06 on Self-declarations of animal health status
- No specific requirement to share contingency plans/simulation exercises but there is an assumption that Members self-declaring freedom should have a contingency plan tested *via* simulation exercises
- Some declarations may be old and there is no guarantee that the measures described in the document are still implemented

[8] https://www.woah.org/en/what-we-do/animal-health-and-welfare/official-disease-status/, consulted on 1 June 2022

	PVS Critical Competencies (I-9 and II-6)
Lim. Adv.	• See Section 01 on Governance and PVS
	• See Section 01 on Governance and PVS

Other limitations:

- The datasets used have different timelines. This should be considered when interpreting the results, especially when datasets were crossed with others.
- The indicators related to the existence of contingency plans are based on a dataset collected in a one-off review in 2018 with limited time validity. The Observatory will stop using them in 2023 unless these data can be regularly collected/updated (see **Part 5, Conclusions and recommendations**).

For this group of indicators, the following assumptions were made:

- Except for tabletop exercises, Members performing simulation exercises would, in principle, have an emergency/contingency plan (to be tested during the simulation exercise).
- Members that have an officially recognised or self-declared disease-free status should have an emergency/contingency plan. The WOAH procedure for official recognition of disease status requires specific information about the existence of contingency plans and simulation exercises (collected *via* the initial dossier and for annual reconfirmation). Those Members are expected to have reported on the existence of their contingency plans in the 2018 review, and to have notified simulation exercises. This recommendation is also reflected in many Members' regulations, such as the European Union Council Directive 2003/85/EC on Community measures for the control of FMD.[9]

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[9] Available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02003L0085-20150806&from=EN

4. Descriptive analysis

a) Number of Members that reported having a contingency plan in 2018, by region and disease

Figure 1 illustrates that 159 WOAH Members (87%) indicated having at least one contingency plan in the 2018 review, with some regional differences: from 75% of Members from Middle East up to 94% of Members from the Americas.

Many Members reported having several contingency plans. Out of the total 1,169 plans reported, 47% (n=544) were reported by European Members and 3% (n=33) were reported by Members from the Middle East.

Most contingency plans (95%) have been developed for terrestrial animal diseases; aquatic animal diseases account for 2% of the plans (**Fig. 2**). A few other contingency plans (3%) were developed on horizontal matters.

Avian influenza is the disease for which the highest number of Members (129, i.e. 71% of WOAH Members) have indicated having a contingency plan (**Fig. 2**). WOAH did not collect the date when these contingency plans were developed or last updated, but they were likely developed following the highly pathogenic avian influenza H5N1 crisis of 2005–2006.

In terms of numbers, the second most common disease is FMD, with 95 Members (52% of WOAH Members) reporting having a FMD contingency plan. Other diseases follow with less than half this number.

Regarding ASF, 40 Members claimed to have a plan that specifically covered this disease. However, given the continued global spread of ASF it is likely that more Members have developed contingency plans for this disease in recent years.

If information on the date of development/revision of contingency plans was available, it would be interesting to correlate it with international and regional disease events.

b) Number of simulation exercises per year, disease and WOAH region

Figure 3 shows the total number of simulation exercises reported to WOAH (408) between 2002 and 2021 and their distribution by region. It illustrates that most simulation exercises were reported by Europe (n=160; 39%) and the Americas (n=158; 39%), followed by Asia (n=78; 19%) and Africa (n=13; 3%). No simulation exercises were reported by Members from the Middle East.

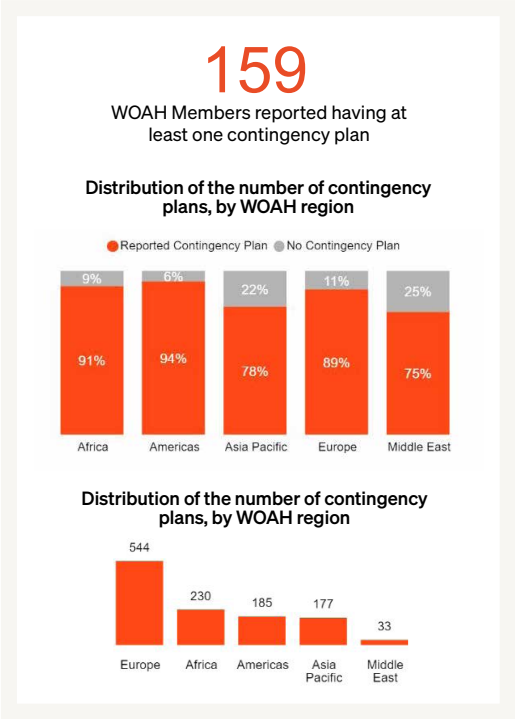

Figure 1. Number of Members that reported having at least one contingency plan (top), percentage of Members having done so per region (centre), and number of contingency plans (bottom), as reported by WOAH Members in the 2018 review

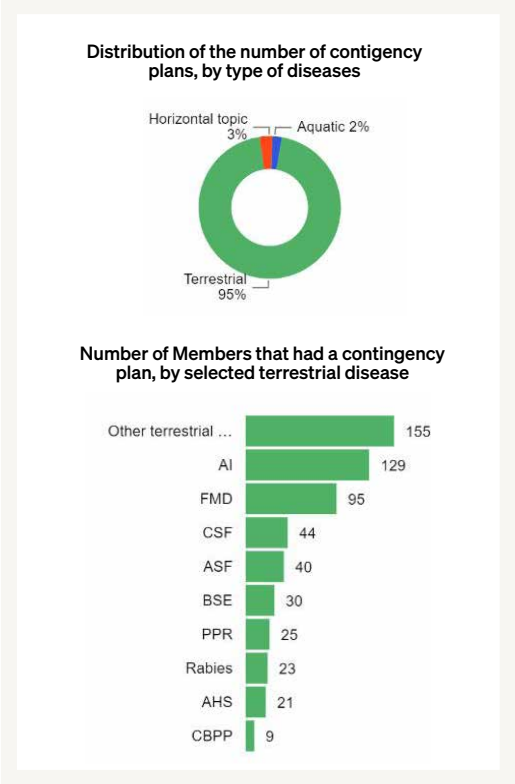

Figure 2. Distribution of contingency plans by type of diseases (top) and by selected terrestrial disease (bottom), as reported by WOAH Members in 2018 review

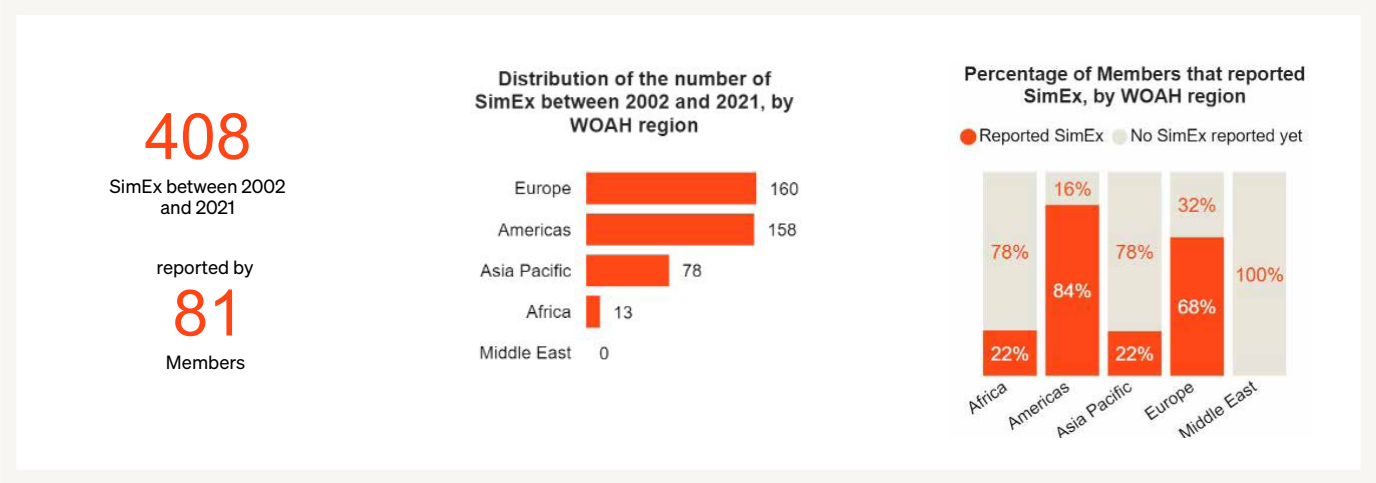

Figure 3. Number of simulation exercises (SimEx) reported to WOAH between 2002 and 2021 (left), number of Members that reported at least one simulation exercise between 2002 and 2021 (top right), regional distribution (centre) and percentage of Members that reported to WOAH at least one simulation exercise between 2002 and 2021 (right)

It also reveals that 81 Members reported their simulation exercises to WOAH, with some variations between regions (84% of American Members *versus* 22% of African and Asian Members and none from the Middle East).

Figure 4 reveals an increasing tendency to report simulation exercises over time, until an abrupt reduction in 2020. This is very likely due to the COVID-19 pandemic, a hypothesis that will be confirmed in the coming years. However, despite the steady increase, the maximum number of simulation exercises conducted in any single year across all Members and diseases was 42, which occurred in 2019.

In addition, the ring of **Figure 4** shows that most simulation exercises (96%) were related to terrestrial animal diseases and 2% were focused on aquatic animal diseases. Some other simulation exercises (n=8; 2%) were conducted on horizontal matters and have not been considered here.

Amongst the simulation exercises related to terrestrial animal diseases (n=391), 161 were devoted to FMD (41%), 118 to avian influenza (30%), 46 to ASF (12%) and 41 to CSF (10%). The interactive dashboard can be used to visualise the temporal and regional distributions of specific diseases.

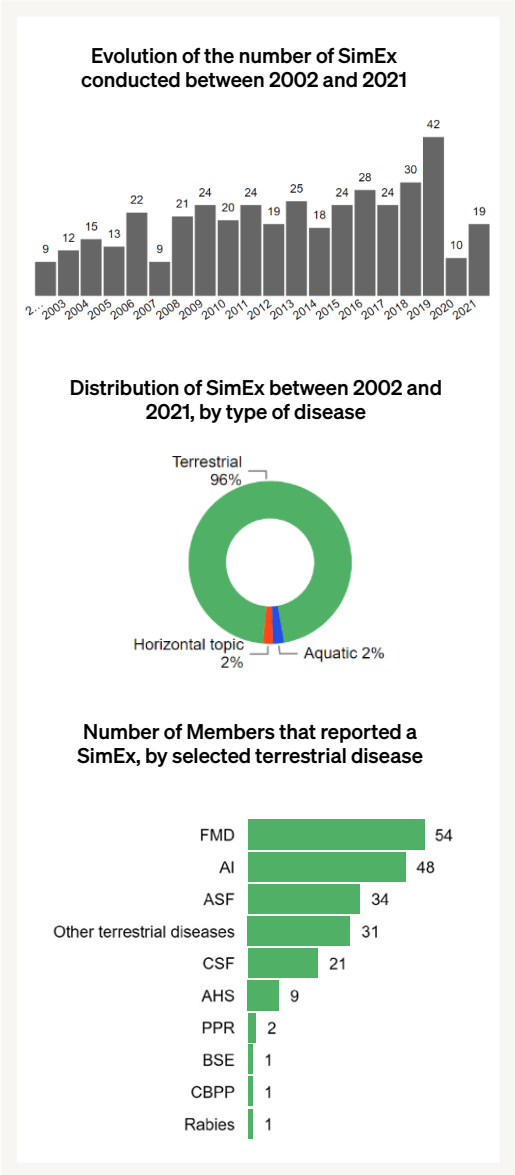

Figure 4. Evolution of the number of simulation exercises (SimEx) between 2002 and 2021 (top), their distribution by type of disease (centre) and by selected terrestrial diseases (bottom)

c) Percentage of Members that have indicated having a contingency plan and have reported a recent simulation exercise

We hypothesised that Members that have a contingency plan for a given disease would regularly run simulation exercises for that disease (to test and adjust their plan and improve preparedness). Because simulation exercises are only reported on a voluntary basis, we also made the assumption that Members that reported having a contingency plan for a given disease to WOAH would be inclined to also report their simulation exercises on that same disease.

This indicator includes all Members that have reported the existence of a contingency plan for a given disease, whether or not they have an officially recognised or self-declared free status for this disease. With regard to the simulation exercises, consideration was only given to those reported between 2017 and 2021; these are referred to as 'recent' simulation exercises. As mentioned above, the number of simulation exercises was reduced in 2020 and 2021, likely due to the global COVID-19 restrictions.

Figure 5 takes ASF and CSF as examples to illustrate the proportion of WOAH Members that declared having a contingency plan for one of these diseases in 2018 and reported conducting at least one recent simulation exercise on the same disease. The examples of **Figure 5** show that around 11% of the Members that reported having a contingency plan for CSF in 2018 had conducted at least one recent simulation exercise. This percentage is 55% for ASF. This difference between these two pig diseases makes sense in the context of an increasing spread and risk posed by ASF in the years examined (2017–2021), reflecting an appropriate response from WOAH Members to this threat.

Figure 5. Percentage of Members with a contingency plan in 2018 that reported having conducted a recent simulation exercise for the same disease. Example of CSF on the left in orange and of ASF on the right in blue

Looking across all the diseases examined, the percentage of Members that have reported both having a contingency plan and conducting a recent simulation exercises tends to be low. However, the hypothesis that Members with a contingency plan would regularly run simulation exercises to test that plan cannot be verified. This indicator also heavily impacted by the percentage of Members voluntarily reporting their simulation exercises to WOAH, among other factors.

d) Percentage of Members that have an officially recognised or self-declared disease-free status and that have reported (i) having a contingency plan and (ii) a recent simulation exercise

WOAH Members, when free from a disease, can either request the WOAH procedure to obtain official recognition of disease status (available for six diseases) or request that WOAH publishes their self-declared status (for other animal diseases).

We hypothesised that WOAH Members that have an officially recognised or self-declared disease-free status for a given disease would have measures in place to both prevent the introduction of the pathogen and rapidly and effectively respond to potential incursions of the disease. This is a requirement for Members applying for official recognition of disease status.

Providing a contingency plan (or a brief summary of what it covers) and information on simulation exercises is required for official status dossiers. Members self-declaring disease freedom are expected to also have a contingency plan and run simulation exercises regularly.

This indicator includes all Members that have an officially recognised or self-declared free status for a given disease and checks whether they had a contingency plan for this disease and have voluntarily notified a recent simulation exercise for this disease.

Figure 6 takes ASF and CSF as examples to illustrate the percentage of Members that are free from a disease (either officially recognised or self-declared) and that had a contingency plan in 2018 and had reported at least one recent simulation exercise for that same disease.

Figure 6. Percentage of Members with an officially recognised (left, for CSF) or self-declared (right, for ASF) disease-free status that have reported a contingency plan and a recent simulation exercise (SimEx) for that same disease

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The examples of **Figure 6** compare CSF (for which WOAH offers a procedure for official recognition of disease-free status) and ASF (which does not have a procedure of official recognition), showing:

- For CSF, around 29% of the Members that have been officially recognised as free from CSF by WOAH had reported a contingency plan and a recent simulation exercise.
- For ASF, 24% of the Members that requested that WOAH publish a self-declaration of ASF freedom had reported the existence of a contingency plan and a recent simulation exercise.

Here again, the assumption that Members with an officially recognised or self-declared disease-free status have a contingency plan and regularly conduct simulation exercises cannot be verified. The dataset is based on voluntary reporting, which may explain these results, as it is likely that not all Members that have contingency plans report them to WOAH. Other explanations may include the different timelines of the datasets used, as well as the fact that Members having a free status for a disease historically absent from their continent may not prioritise the development and reporting of a contingency plan or simulation exercise. WOAH also collects information on the existence of contingency plans and simulation exercises *via* the annual reconfirmation of officially recognised free status. While this source of information is likely to be more comprehensive, it is not yet easily accessible.

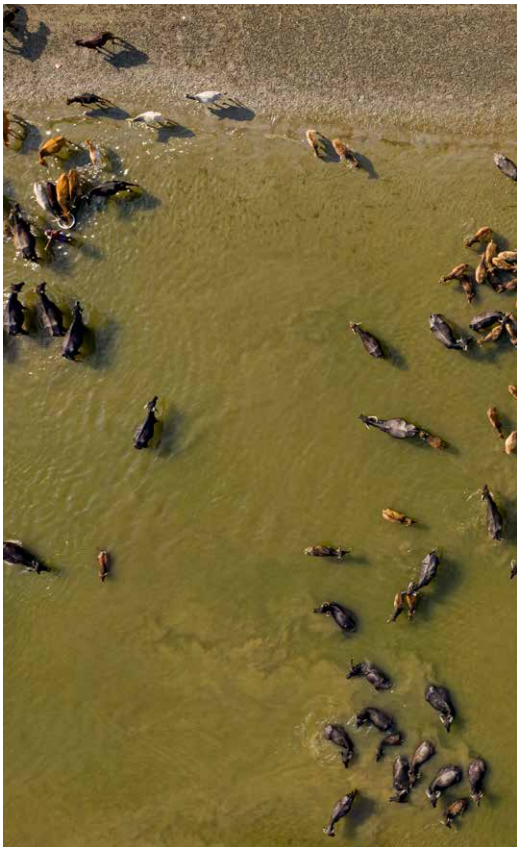
e) Performance of Veterinary Services regarding emergency preparedness, as assessed by the PVS Tool

Between 2016 and 2021, 43 WOAH Members have undertaken a PVS Evaluation or Follow-up mission. Amongst all the Critical Competencies described in the PVS Tool and assessed during PVS missions, they were assessed against:

- Critical Competency I-9: Emergency funding
- Critical Competency II-6: Emergency response.

In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

PVS Evaluation and Follow-up missions highlight WOAH Members' limited capacity with respect to the two PVS Critical Competencies related to emergency preparedness, with only 40% of the Members reaching or exceeding the minimal level of capacity for both Critical Competencies (**Figs. 7 & 8**).



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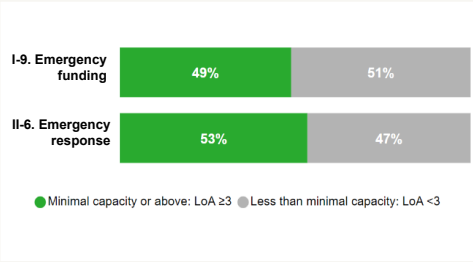

Figure 7. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green) for each of the two Critical Competencies related to emergency preparedness as assessed in PVS missions between 2016 and 2021

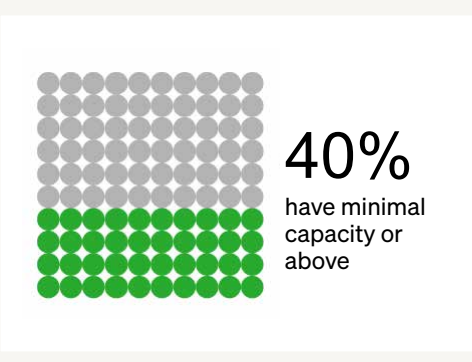

Figure 8. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for the two Critical Competencies related to emergency preparedness as assessed in PVS missions

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

Currently, information about simulation exercises is collected and published on a voluntary basis, and information on the existence of contingency plans has only been collected once in 2018. As a result, there are information gaps that make interpretation difficult.

Despite current information gaps, general trends can be drawn for some high-impact diseases: FMD, CSF, avian influenza and ASF. The limited association between a Member having a contingency plan and having run a recent simulation exercise is particularly interesting. For example, the percentage of Members that have reported having a contingency plan for a specific disease and that also notified at least one recent simulation exercise is variable but usually low: from 55% for ASF and 30% for FMD to 11% for CSF and as low as 6% for avian influenza. Acknowledging the quality of this information and in particular the historical underreporting of simulation exercises (exacerbated in 2020 and 2021 by the COVID-19 restrictions), WOAH is not able to determine the representativeness of these figures. However, should they represent reality, this would raise concerns about Members' disease preparedness. In addition, the annual number of simulation exercises reported across 182 WOAH Members and across diseases has never exceeded 42 exercises. While this likely underestimates the true number due to underreporting, and acknowledging that conducting simulation exercises likely depends on national, regional and international crises, priorities and resources, this is a very low number that raises questions about Members' preparedness for emergencies.

In addition, 101 Members have never shared any information with WOAH regarding the organisation of a simulation exercise. Similarly, between 2002 and 2021, only eight simulation exercises of a transversal nature have been reported. A similar conclusion can be drawn from contingency plan data.

The lists of Members that have reported contingency plans or simulation exercises and that have an officially recognised or self-declared disease-free status are stored in datasets that are not easy to manage, understand or analyse. The Observatory recommends that WOAH improve the collection and storage of this information and publish a clean dataset online with the ability to filter by disease, country, region and year. Following the recommendations of the ASF prototype, work is ongoing to improve the web presentation of self-declaration and simulation exercises data. In addition, WOAH will consider this recommendation when developing the information system for officially recognised status.

In the future, the Observatory will consider additional indicators to measure WOAH Members' preparedness by assessing the response and recovery time after a disease introduction.

In conclusion, WOAH could reflect on:

- The need and interest, for WOAH and its Members, to collect information on emergency preparedness and on the best way to do so. The Global Conference on Emergency Management planned for April 2023 provides a good opportunity to discuss key performance indicators for emergency preparedness, the strengths and weaknesses of existing data, and methods for data collection for the Observatory.
- Communicating on the importance of emergency preparedness and on the existence of the Guidelines for Simulation Exercises.
- Offering dedicated capacity building activities.
- Considering additional indicators to measure WOAH Members' preparedness by assessing the response and recovery time after a disease introduction.

In parallel, WOAH Members could reflect on:

- Identifying and investing resources to better prepare for animal health emergencies.
- The relevance of more regularly reporting to WOAH when they conduct simulation exercises.

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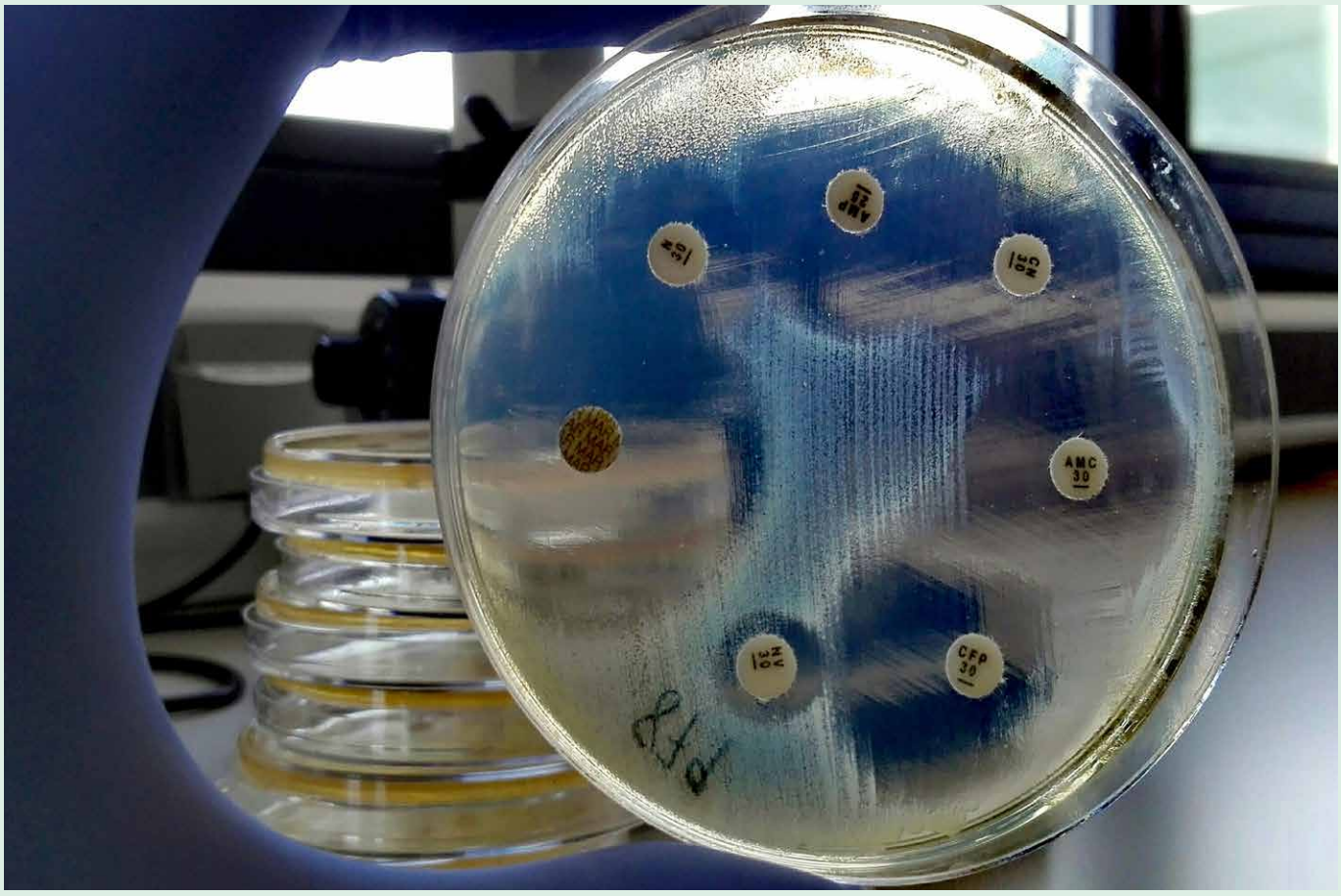
10 Antimicrobial use and antimicrobial resistance



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2. List of monitored indicators, **p. 117**

3. Data, data sources, and advantages/ limitations of the data used, **p. 118**

4. Descriptive analysis, **p. 120**

5. Conclusions and recommendations for improvement, **p. 125**

To access the interactive dashboard and executive summary of this section click here

1. Introduction

Antimicrobials are essential medicines both for human and animal health and for animal welfare. Because excessive or inappropriate antimicrobial use (AMU) can lead to the development of antimicrobial-resistant pathogens, WOAH has developed international standards on their responsible and prudent use in animals. They are available in Chapters 6.7. to 6.11. of the *Terrestrial Code* and in Section 6 of the *Aquatic Code*, as follows:

Terrestrial Code	*Aquatic Code*	Topic of the chapters
Chapter 6.7.	Chapter 6.1.	Recommendations for controlling antimicrobial resistance
Chapter 6.8.	Chapter 6.4.	Harmonisation of national antimicrobial resistance surveillance and monitoring programmes
Chapter 6.9.	Chapter 6.3.	Monitoring of the quantities and usage patterns of antimicrobial agents used in food-producing animals/in aquatic animals
Chapter 6.10.	Chapter 6.2.	Responsible and prudent use of antimicrobial agents in veterinary medicine/aquatic animals
Chapter 6.11.	Chapter 6.5.	Risk analysis for antimicrobial resistance arising from the use of antimicrobial agents in animals/in aquatic animals

Article 6.11.2. of the *Terrestrial Code* and Article 6.5.3. of the *Aquatic Code* outline how to undertake a risk assessment of the risks to human health from antimicrobial resistant microorganisms resulting from the use of antimicrobial agents in animals. These articles recommend that the consequence assessment component of these risk assessments should consider the importance of the antimicrobial agent in human medicine/human health. The *Aquatic Code* directly refers to the List of Critically Important Antimicrobials from the World Health Organization (WHO).[1]

In 2007, WOAH developed its List of Antimicrobial Agents of Veterinary Importance[2] to address antimicrobial agents authorised for use in food-producing animals. This list focuses on antimicrobial agents used in veterinary medicine, excluding antimicrobial classes/subclasses used only in human medicine. Some antimicrobial agents are considered to be critically important for both human and animal health (such as fluoroquinolones, the third and fourth generation of cephalosporins and colistin). WOAH recommends its Members urgently prohibit the use of these agents as animal growth promoters.

In addition, in 2015 WOAH launched a global database of antimicrobial agents intended for use in animals. Data are gathered from Members' annual reports on Antimicrobial Agents Intended for Use in Animals.[3] In 2022, WOAH transformed this database into an online customised database system called ANIMUSE Global Database (ANImal antiMicrobial USE).[4]

[1] WHO Critically Important Antimicrobials for Human Medicine, 6th revision: https://www.who.int/publications/i/item/9789241515528

[2] WOAH List of Antimicrobial Agents of Veterinary Importance (June 2021 version): https://www.woah.org/app/uploads/2021/06/a-oie-list-antimicrobials-june2021.pdf

[3] Access to this database to provide national information was opened to non-WOAH Members in 2017 (third round of data collection).

[4] WOAH ANIMUSE Global Database: https://amu.woah.org/amu-system-portal/home

This database aims to:

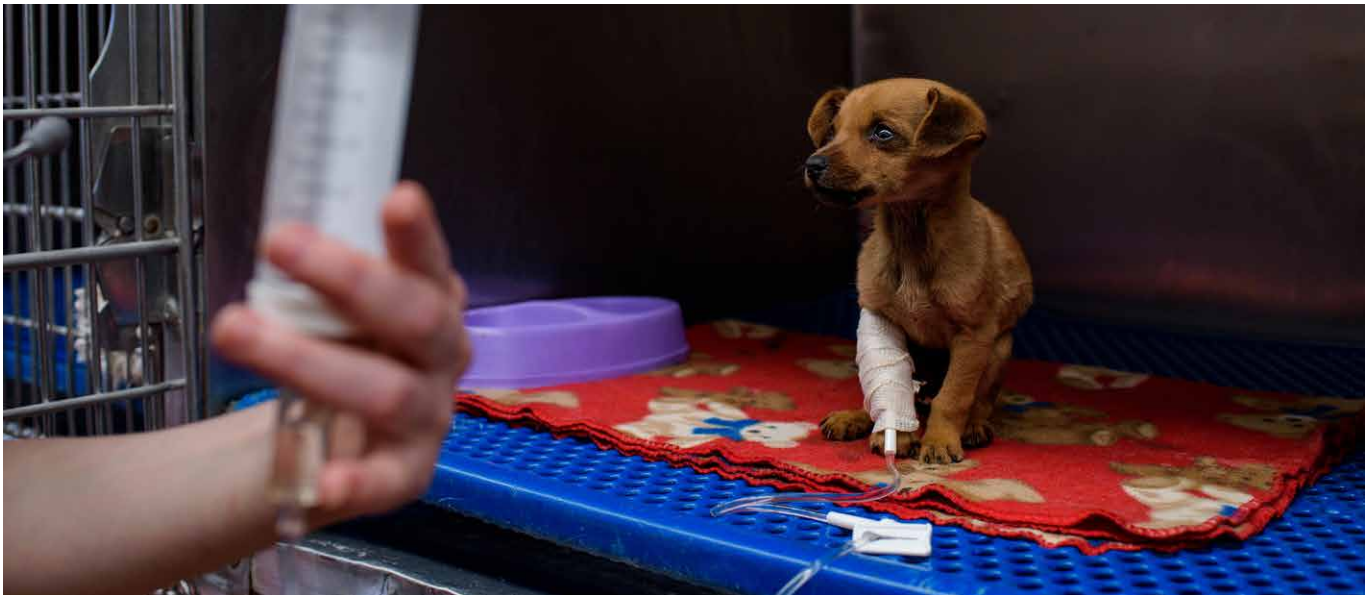
- Monitor the types and uses of antimicrobial products;
- Support Members in implementing Chapter 6.9. of the *Terrestrial Code* and Chapter 6.3. of the *Aquatic Code*;
- Measure AMU trends over time;
- Trace circulation of antimicrobials and AMU patterns globally;
- Evaluate the quality and authenticity of antimicrobial products in use.

Using the information collected in ANIMUSE Global Database, WOAH publishes a detailed annual report on the use of antimicrobials that are intended for use in animals.[5] This database has also been an important source of information for this section.

A Global Action Plan on antimicrobial resistance (AMR) was adopted in 2015 through decisions in the WHO World Health Assembly, the FAO Governing Conference and the World Assembly of WOAH Delegates. By adopting Resolution No. 26, WOAH Members agreed to have a national action plan for AMR (AMR-NAP), consistent with the Global Action Plan, and to implement relevant policies and plans to prevent, control and monitor AMR.

Since 2016–2017, countries and territories have been invited to complete an annual AMR self-assessment survey, the 'Tracking Antimicrobial Resistance Country Self-Assessment Survey' (TrACSS), to monitor their progress in the implementation of the AMR-NAP at national level. Annual self-assessments are stored in a publicly available database. This questionnaire is jointly administered by the Quadripartite (FAO, WOAH, WHO and the United Nations Environment Programme [UNEP]) and has been revised over the years. While this report was being developed, an important revision was ongoing in preparation for the 2021–2022 edition of the questionnaire. Four questions from this TrACSS were selected for their link with WOAH standards and are used here as indicators. An effort was made to ensure that these questions would remain in the 2021–2022 edition of the questionnaire to facilitate their annual monitoring. TrACSS is the second source of information used in this section.

The objective of this section is to assess to what degree AMR and AMU-related standards are implemented or adhered to by WOAH Members, and to support the monitoring of the WOAH Strategy on AMR and the Prudent Use of Antimicrobials. For a more comprehensive picture, this report should be read in conjunction with the annual report on the use of antimicrobials intended for use in animals.[5]



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[5] Annual reports are all available at https://www.woah.org/en/what-we-do/global-initiatives/antimicrobial-resistance/#ui-id-2. The last one (the Sixth Annual Report on Antimicrobial Agents Intended for Use in Animals) is directly available at https://www.woah.org/app/uploads/2022/06/a-sixth-annual-report-amu-final.pdf

2. List of monitored indicators

The following indicators have been monitored:

- **Reporting by WOAH Members**
  - Number of Members that submitted their annual report on the use of antimicrobials in animals to WOAH;
  - Number of Members that provided quantitative information on the use of antimicrobials in animals to WOAH in their annual report;
- **Use of growth promoters**
  - Number of WOAH Members using antimicrobial agents as growth promoters;
  - Number of WOAH Members using growth promoters that are listed by the WHO as critically important for human medicine;[6]
  - Number of WOAH Members using growth promoters that are listed by WOAH as Veterinary Critically Important Antimicrobial Agents (VCIA);[7]
- **Trend in the quantity of antimicrobial agents intended for use in animals**
- **TrACSS**
  - Percentage of Members in the different levels of development of their AMR-NAP;
  - Number of Members that reported an integrated multisectoral surveillance system for AMR and AMU in TrACSS in 2020–2021;
  - Percentage of Members in the different levels of development of their animal health surveillance system, as reported in TrACSS in 2020–2021;
  - Percentage of Members in the different levels of development of training and professional education on AMR in the veterinary sector.

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[6] WHO Critically Important Antimicrobials for Human Medicine, 6th revision: https://www.who.int/publications/i/item/9789241515528

[7] WOAH List of Antimicrobial Agents of Veterinary Importance (June 2021): https://www.woah.org/app/uploads/2021/06/a-oie-list-antimicrobials-june2021.pdf

3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- AMU:
  - Members that have submitted their annual report on the use of antimicrobials in animals to WOAH and Members that have provided quantitative information in these reports on the use of antimicrobials in animals. Data gathered from the AMU database, as compiled by the AMR&VP Department, WOAH, from the first round of data collection (October 2015 – May 2016) to the sixth round (2020–2021);
  - Members that have reported using antimicrobials as growth promoters, since the first round (October 2015 – May 2016), including the list of molecules used (data gathered from the AMU database);
  - WHO List of Critically Important Antimicrobials for Human Medicine, since the fourth round (September 2018 – May 2019);
  - WOAH List of Antimicrobial Agents of Veterinary Importance, with a focus on VCIA;
  - Quantity of antimicrobials used annually, between 2015 and 2021, compiled by the AMR&VP Department, WOAH (data gathered from the AMU database).
- TrACSS: data extracted from the publicly available database for the four selected questions. The data were presented since the first round of data collection (2016–2017) when relevant, or only for 2020–2021. The numbering below refers to the 2020–2021 edition of the questionnaire:
  - Member progress with development of an AMR-NAP: Question 5.1;
  - Establishment of an integrated multisectoral surveillance system for AMR/AMU: Question 7.6.1.;
  - Existence of a national surveillance system for AMR in animals (terrestrial and aquatic): Question 7.5 (a);
  - Training and professional education on AMR in the veterinary sector: Question 6.3.

These data sources have advantages and limitations as described in the table below.

	Members that have submitted their annual report on the use of antimicrobials in animals and Members that have reported qualitative information on the use of antimicrobial agents intended for animals	
Adv.	• High participation in the annual rounds	• Different levels of detail are proposed, allowing Members to provide the information they have available
Lim.	• Voluntary reporting	• Different levels of detail limit the options for analysis

Members that have reported quantitative information on the use of antimicrobial agents intended for animals

Adv.

- Increasing number of Members providing quantitative information

Lim.

- Voluntary reporting
- Different ways to collect this information depending on Members
- The overall quantity of AMU reported globally, and in each region, is affected by whether or not Members with large animal populations report quantitative information about antimicrobial agents intended for use in animals.

Members that have reported using antimicrobials as growth promoters (and list of molecules used)

Adv.

- Important to monitor, even in the absence of standards banning their use
- Likely to be specific data (Members reporting the use of growth promoters are likely to be actually using them)

Lim.

- Self-declaration from Members, which may lead to underreporting

WHO List of Critically Important Antimicrobials for Human Medicine and WOAH list of VCIA

Adv.

- Internationally recognised

Lim.

- The WOAH AMU database collects data about antimicrobials intended for use in animals. Verification of whether they are on the WHO List of Critically Important Antimicrobials for Human Medicine or the WOAH list of VCIA is conducted manually

TrACSS data

Adv.

- Collected annually
- Structured questionnaire
- One Health approach

Lim.

- The questionnaire has been revised every year, thus comparison over years is difficult for some questions
- Self-assessment from Members, with no validation from the Quadripartite
- Discrepancies with other data have been identified for some questions

4. Descriptive analysis

4.1. AMU indicators

a) Number of Members that have submitted their annual report on the use of antimicrobials in animals to WOAH and number of Members that have provided quantitative information on the use of antimicrobials in animals to WOAH in their annual report

Figure 1 is an extract from the interactive dashboard on AMU, without selecting any round of data collection or WOAH region. It is recommended to open the dashboard to benefit from all its functions, as it is not possible to include all the information contained there in this report.

The number of Members completing the AMU annual report increased from 130 in the first round (2015–2016) to 155 in the sixth round (2020–2021). The proportion of Members providing quantitative information (Options 1 to 3) also increased, from 65% in the first round to 81% in the sixth round.

The tendencies of Members to complete the AMU annual report and to provide quantitative information increased in a notably regular manner between the first and the fifth rounds, the latter being the most successful round, with 156 contributing Members, 84% of which provided quantitative information. The sixth round shows a slight drop that will need to be closely followed up in the seventh round. Despite the disruptions that the COVID-19 pandemic presented, the figures reveal that many Members were still able to submit, and were committed to submitting, their reports during the sixth round.

There are important differences between WOAH regions, as shown in detail in the dashboard. For example, in the sixth round, while 94% and 93% of the Members from Europe and Asia Pacific that submitted an annual report, respectively, provided quantitative information (Options 1 to 3), this proportion dropped to 73%, 70% and 50% in the Americas, Africa and the Middle East, respectively.

The number of Members providing quantitative information on antimicrobials intended for aquatic animals is significantly lower than those providing this information for terrestrial animals (**Fig. 2**). However, there was an increase for both categories between the first and sixth rounds: from 23 to 51 for Members providing quantitative information on antimicrobials intended for terrestrial animals, and from 6 to 19 for Members providing this information for aquatic animals. This general trend will be followed up in future rounds and reporting will continue to be encouraged.

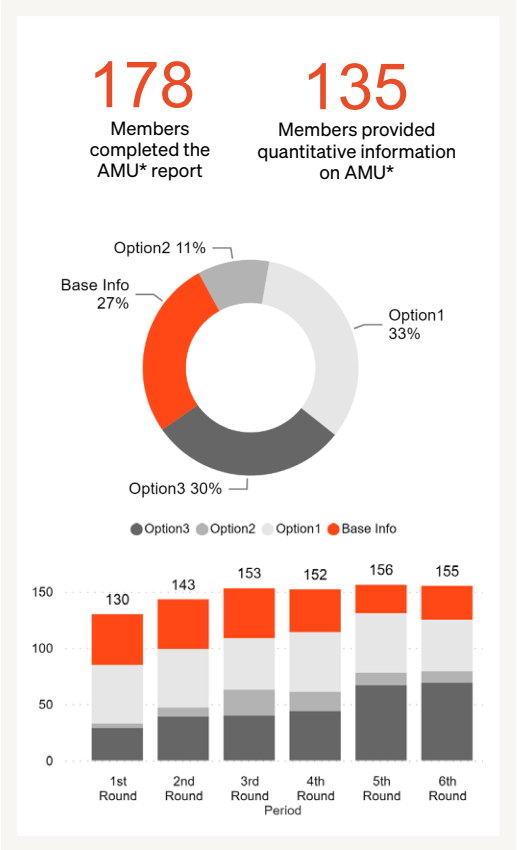

Figure 1. Number and percentage of Members reporting on AMU to WOAH per round and per reporting option

Base info: qualitative information only; Option 1: qualitative information and quantitative data by antimicrobial class and type of use (veterinary medical use *versus* growth promotion); Option 2: qualitative information and quantitative data by antimicrobial class, type of use and animal groups; Option 3: qualitative information and quantitative data by antimicrobial class, type of use, animal groups and

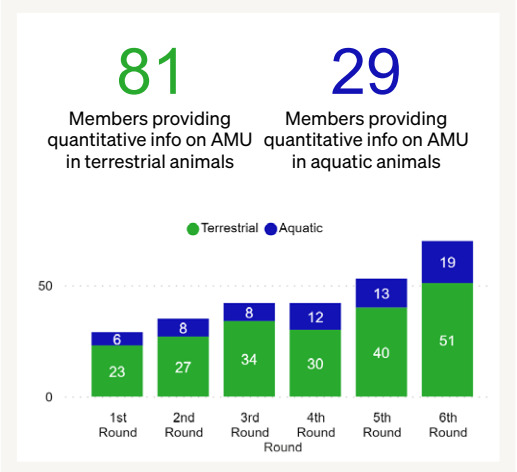

Figure 2. Number of Members providing quantitative information on AMU in terrestrial and aquatic animals (in total on top, evolution at the bottom)

b) Number of WOAH Members using antimicrobial agents as growth promoters

As shown in **Figure 3**, 40 Members (22% of WOAH Members and 26% of the Members that submitted their annual report) indicated using antimicrobials as growth promoters in the sixth round. According to the WOAH List of Antimicrobial Agents of Veterinary Importance,[8] the use of antimicrobial agents for growth promotion in the absence of a risk analysis is not deemed to be responsible use. However, data regarding risk analyses conducted on the risk of using antimicrobials for growth promotion are not yet being collected in the WOAH annual report.

c) Number of WOAH Members using growth promoters that are listed by WHO as highest priority critically important for human medicine

Figure 4 represents the number of WOAH Members using antimicrobials for animal growth promotion that are listed by WHO as highest priority critically important for human medicine. These data have only been collected for the past three years and a trend cannot yet be established. In the sixth round, 18 Members (12% of the Members that sent a report to WOAH and 10% of all WOAH Members) were still using WHO highest priority critically important antimicrobials for animal growth promotion (as reported in the sixth round); Of these, ten were in the Americas, five in Africa and three in the Asia Pacific region.

d) Number of WOAH Members using growth promoters that are listed as VCIA

Like the previous indicator, **Figure 5** displays the number of Members that use antimicrobials listed by WOAH as VCIA. These data were collected from the first round. The number of Members using these compounds per year has ranged between 19 and 25. In the sixth round, 19 Members (12% of the Members that sent a report to WOAH and 10% of all WOAH Members) reported that they were still using these critically important antimicrobials for growth promotion of animals; of these Members, ten were from the Americas, five from Asia Pacific and four from Africa.

It is worth noting that 17 Members reported using both WHO highest priority critically important antimicrobials for human medicine and WOAH VCIA as growth promoters in the sixth round.

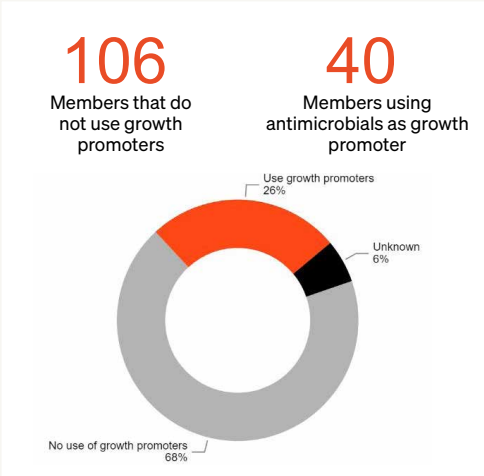

Figure 3. Number of Members using antimicrobials as growth promoters in the sixth round

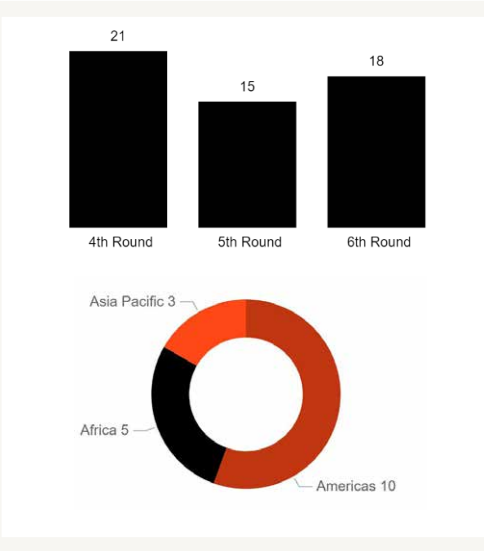

Figure 4. Number and evolution of WOAH Members using WHO highest priority critically important antimicrobials for growth promotion (top) and regional distribution for sixth round (bottom)

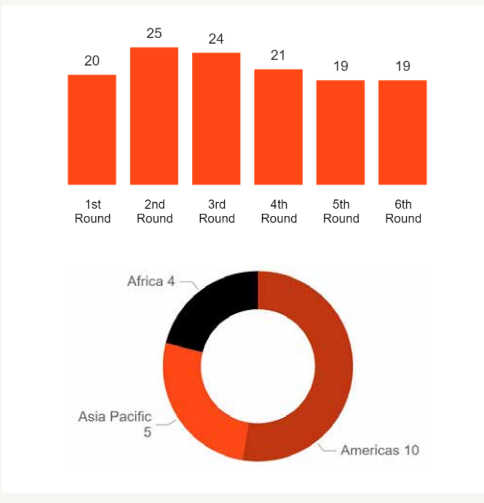

Figure 5. Number and evolution of WOAH Members using WOAH VCIA for growth promotion (top) and regional distribution for sixth round (bottom)

[8] WOAH List of Antimicrobial Agents of Veterinary Importance (June 2021 version): https://www.woah.org/app/uploads/2021/06/a-oie-list-antimicrobials-june2021.pdf

e) Trend in the quantity of antimicrobial agents intended for use in animals

Figure 6 shows the average quantity of antimicrobials used per animal biomass in mg/kg, per region and per year. This was calculated as the average quantity of antimicrobials per biomass of all the Members in these regions. In 2018, the Middle East and Africa reported an average or 14 mg and 15 mg of antimicrobials per animal kilogram, respectively, whereas Asia Pacific reported 101 mg/kg. Europe and the Americas reported 70 and 74 mg/kg, respectively.

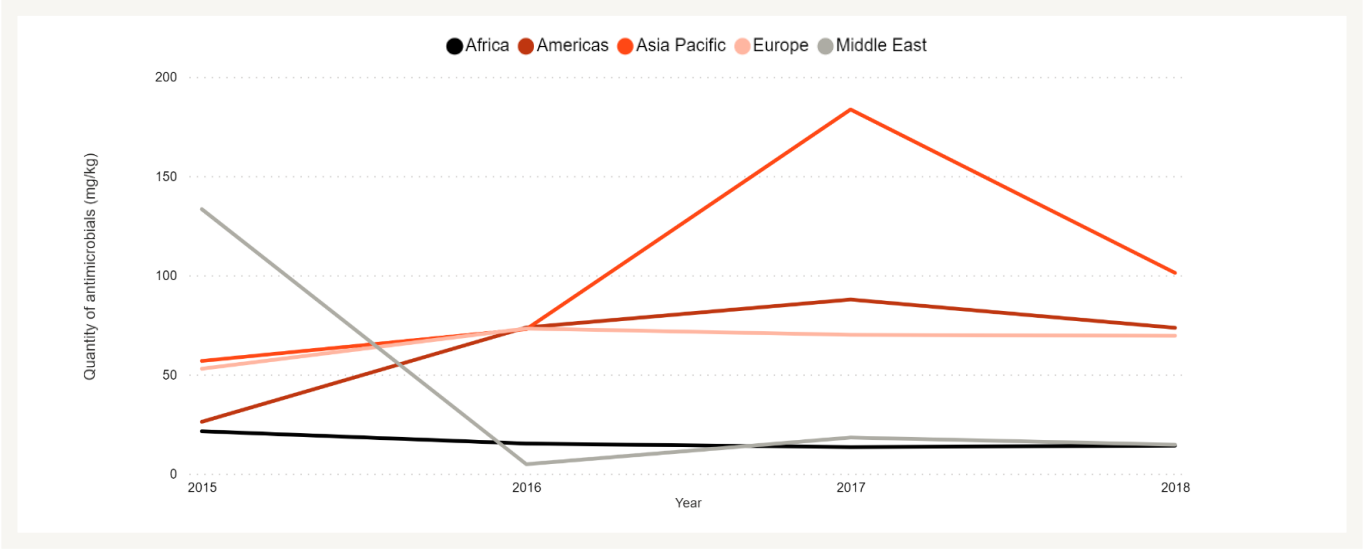

Figure 6. Average quantities of antimicrobials in mg of antimicrobials per kg of animal biomass, per region and per year

A longer study period and more stable quality data would be needed to interpret potential trends.

More data, graphs and information on the reported quantity of antimicrobials used are available in the Sixth Annual Report on Antimicrobial Agents Intended for Use in Animals.

4.2. TrACSS indicators

a) Percentage of Members in the different levels of development of their AMR-NAP

TrACSS data about AMR-NAPs were first collected in 2016–2017, a year after the Global Action Plan on AMR was adopted by the Tripartite. Since that time, the proportion of Members that have implemented and monitored an AMR-NAP has increased, reaching around 60% in the last two rounds (D and E in **Fig. 7**). However, in 2020–2021, 14% of the Members did not have an AMR-NAP (11% had one under development). Notably, 27% of the Members had developed an AMR-NAP in 2020–2021 but had not yet implemented it.

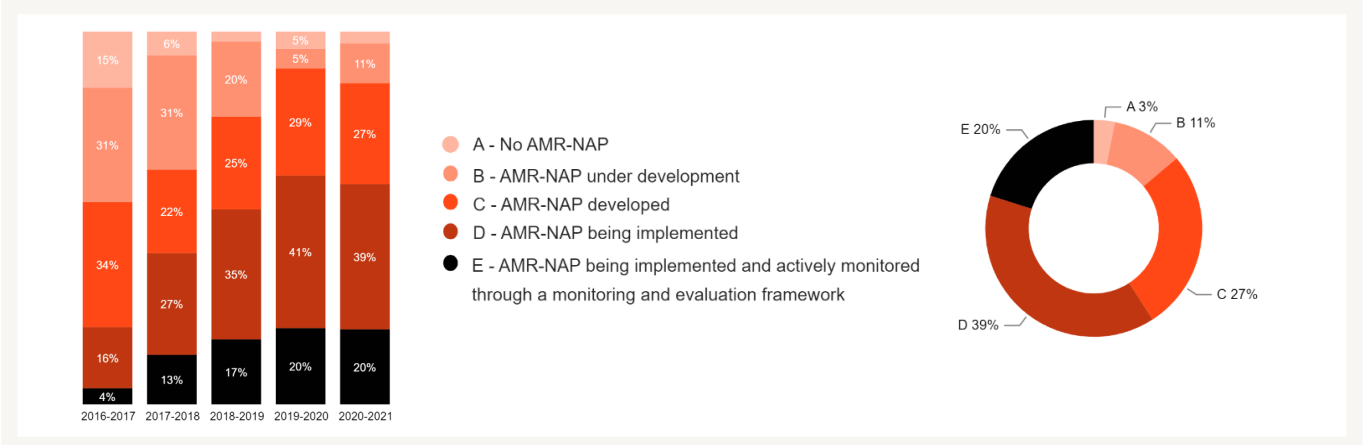

Figure 7. Percentage of Members in the different levels of development of their AMR-NAP: evolution from 2016–2017 to 2020–2021 (left) and state of play as reported in TrACSS in 2020–2021 (right)

b) Number of Members that reported an integrated multisectoral surveillance system for AMR and AMU in TrACSS

Of the 159 WOAH Members that answered the TrACSS in 2020–2021, only 7 Members reported having an integrated multisectoral surveillance system for AMR and AMU in place for all sectors (animal health, environment, food production, food safety, human health and public health) (**Fig. 8**). In contrast, 93 reported not having any integrated system, leaving 66 Members that had a surveillance system integrating at least two sectors.

As shown in **Figure 9**, 74 WOAH Members reported integrating the animal health sector in their surveillance system. This makes the animal health sector the second most integrated after human health.

c) Percentage of Members in the different levels of development of their animal health surveillance system

This question was added in 2020–2021; therefore, information is not available for previous years.

The development and implementation of national surveillance systems for AMR in animals varies greatly amongst WOAH Members. Progress is described by five pre-identified levels of development. In 2020–2021, WOAH Members were distributed amongst those levels in percentages ranging from 15% to 24% (**Fig. 10**).

Of the 158 WOAH Members that answered this question in 2020–2021, 36 Members (23%) reported the absence of an AMR surveillance system for animals. Nearly half (44%) reported conducting systematic data collection and reporting on levels of resistance, with at least one laboratory following quality assurance processes (categories D and E).

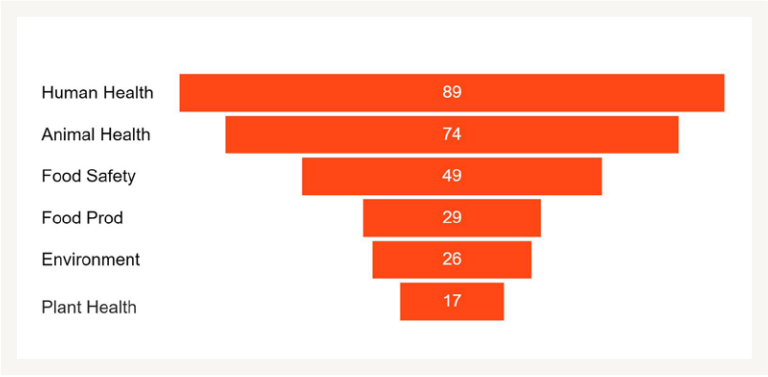

Figure 9. Distribution of Members that answered TrACSS 2020–2021 by the sectors for which they integrated their surveillance system

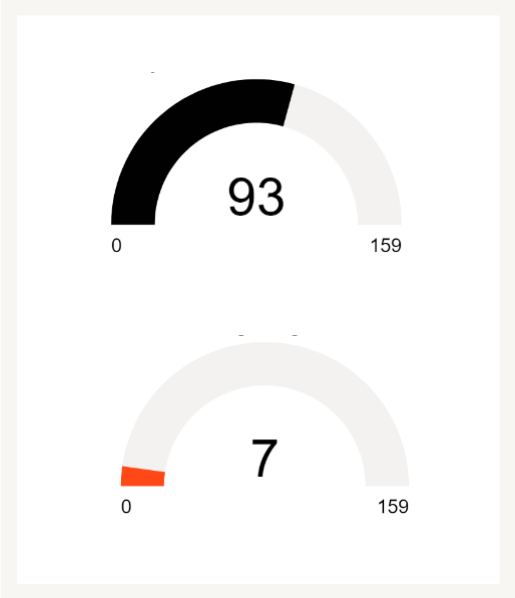

Figure 8. Number of Members that reported not having an integrated multisectoral surveillance system for AMR and AMU (top, in black) and number of Members that reported having a surveillance system for AMR and AMU integrating all sectors (animal health, environment, food production, food safety, human health and plant health; bottom, in orange), in TrACSS in 2020–2021

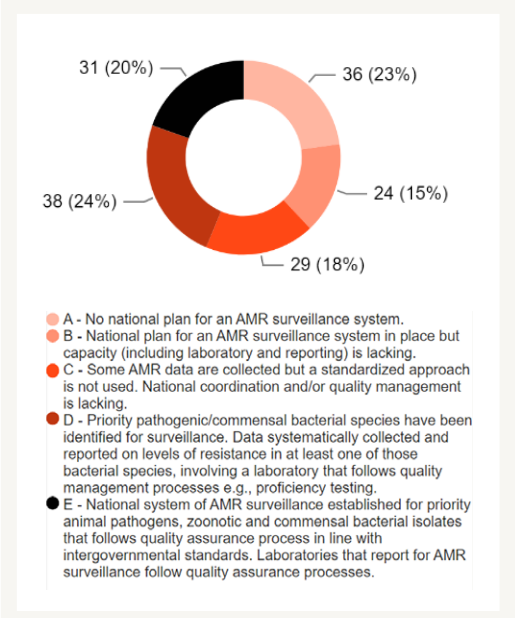

Figure 10. Percentage of Members by category of development of a national surveillance system for AMR in animals (terrestrial and aquatic animals considered together), as reported in TrACSS in 2020–2021

d) Percentage of Members in the different levels of development of training and professional education on AMR in the veterinary sector

In 2020–2021, 9% of WOAH Members indicated that they had no training available on AMR for the veterinary sector; 40% covered AMR and AMU, either in core curricula or in continuing professional training; and 12% had AMR systematically and formally incorporated into both (**Fig. 11**).

Although trends cannot easily be identified, the percentage of WOAH Members with no training on AMR (Category A in **Fig. 11**) seems to be decreasing. In contrast, the proportion of Members with AMR covered in the core curricula for graduating veterinary-related professionals (Category C) appears to be increasing.

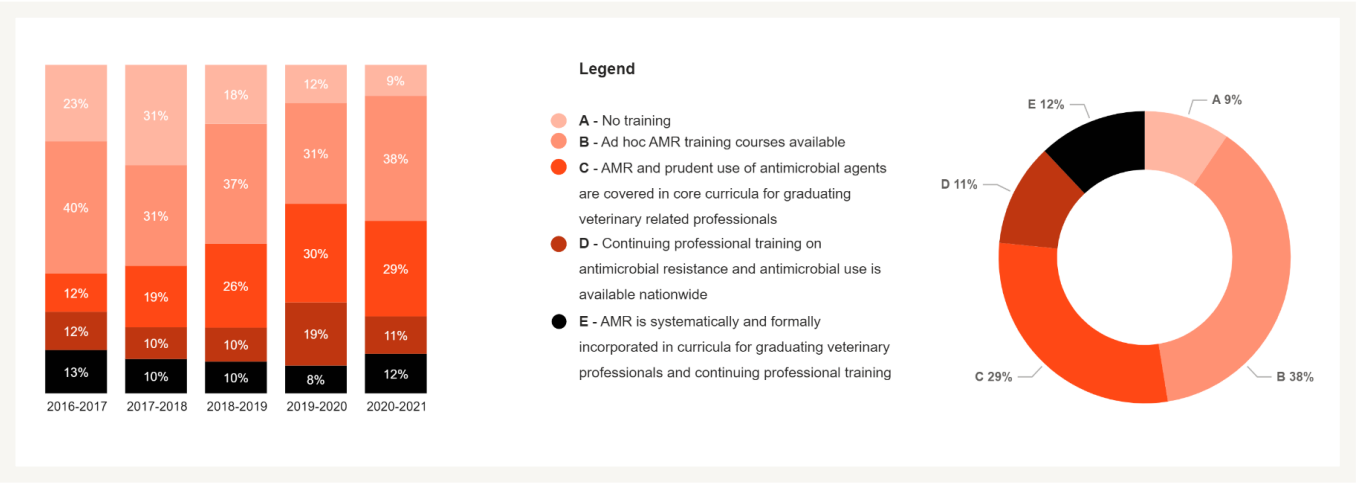

Figure 11. Existence of training and professional education on AMR in the veterinary sector, as reported in TrACSS: evolution from 2016–2017 to 2020–2021 (left) and state of play in 2020–2021 (right)

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5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

The data used in this report, along with other, more detailed information, are available in the WOAH AMU annual reports[9] and ANIMUSE Global Database.

Some of the selected indicators highlight positive trends in the implementation of WOAH international standards on the use of antimicrobials. These trends will be followed up and possibly confirmed in the coming years.

Members that have indicated they do not fully implement these standards could be offered specific support from WOAH. This could take the form of promotional activities to advocate for responsible use of antimicrobials in both the private and public sectors or capacity building in areas such as legislation and alternatives to antimicrobials. WOAH already has ongoing activities to support Members on this subject and these should continue to be encouraged. In 2022, a survey was conducted to further identify capacity building needs regarding activities/policies that lead to reduced use of antimicrobials in aquatic animals; the results will help tailor the development of capacity building activities in the coming months.

In the sixth round of data collection on AMU (2020–2021), 40 Members reported using antimicrobial agents as animal growth promoters. According to the WOAH List of Antimicrobial Agents of Veterinary Importance,[10] the use of antimicrobial agents for growth promotion in the absence of a risk analysis is not deemed to constitute responsible use. So far, data have not been collected on risk analyses on the use of antimicrobials for growth promotion in the WOAH annual report, and thus conclusions cannot be made about compliance with international standards.

More concerning, 21 WOAH Members reported antimicrobial agents listed as critically important by the WHO, WOAH, or both being used as animal growth promoters.

With regard to AMR-NAPs, Members that have not finalised their plans should be supported whenever possible, as should those that are struggling with implementation. Targeted regional and sub-regional activities could be planned for that purpose, potentially in collaboration with partners.

The same is true for the development of national AMR surveillance systems in animals. Chapter 6.8. of the *Terrestrial Code* (Harmonisation of national antimicrobial resistance surveillance and monitoring programmes) and Chapter 6.4. of the *Aquatic Code* (Development and harmonisation of national antimicrobial resistance surveillance and monitoring programmes for aquatic animals) provide recommendations on how to proceed. Other guidelines are also available, such as the FAO's Regional Antimicrobial Resistance Monitoring and Surveillance Guidelines.

[9] Annual reports are all available at https://www.woah.org/en/what-we-do/global-initiatives/antimicrobial-resistance/#ui-id-2. The most recent (the Sixth Annual Report on Antimicrobial Agents Intended for Use in Animals) can be accessed directly at https://www.woah.org/app/uploads/2022/06/a-sixth-annual-report-amu-final.pdf.

[10] WOAH List of Antimicrobial Agents of Veterinary Importance (June 2021 version): https://www.woah.org/app/uploads/2021/06/a-oie-list-antimicrobials-june2021.pdf

In terms of knowledge, access to consistent, systematic training and professional education on AMR and AMU remains low. Only 12% of the Members that responded to TrACSS in 2020–2021 indicated having AMR systematically and formally incorporated in both core *curricula* for graduating veterinary-related professionals and continuous education in the veterinary sector. As part of its mandate to strengthen aquatic animal health services, WOAH has conducted a survey on capacity building needs in order to better design the development of e-modules and other capacity building activities. This area will remain a priority in the coming years.

In conclusion, it is recommended that WOAH pursue activities to:

- advocate for the responsible use of antimicrobials;
- identify the capacity buildings needs for the reduction of AMU and develop tailored activities on the prudent and responsible use of antimicrobials and AMR.

Members are also invited to reflect on the following points:

- Members using antimicrobials for animal growth promotion that are listed by the WHO as critically important for human medicine or by WOAH as VCIA should urgently prohibit them and consider alternatives.
- More generally, Members using antimicrobials as growth promoters are encouraged to systematically accompany their use with a risk analysis in accordance with the WOAH List of Antimicrobial Agents of Veterinary Importance.
- Further development of AMR-NAPs and national AMR surveillance systems in animals could also be considered, with the support of relevant national, regional and international partners.
- Members could also reflect on the systematic inclusion of AMR in core *curricula* for graduating veterinarians and veterinary professionals, as well as ensuring access to continuous education on AMR in the veterinary sector.

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11 The implementation of the One Health approach

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3. Data, data sources, and advantages/ limitations of the data used, **p. 130**

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1. Introduction

The One Health concept has been known for centuries; human health and animal health are interdependent and bound to the health of the surrounding ecosystems. The One Health approach is defined[1] as 'an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems'. Through WOAH's own work and strong collaborative initiatives with other international organisations *via* the Quadripartite and its One Health Joint Plan of Action, WOAH promotes the One Health approach and its concrete implementation.

Disease (including zoonosis) notification

WOAH establishes and annually updates a list of diseases that its Members must notify to the organisation (as laid out in Chapter 1.1., Article 1.1.3. of both the *Terrestrial* and *Aquatic Codes*).

Chapters 1.2., Articles 1.2.2. of the *Terrestrial Code* and *Aquatic Code* list the criteria that a disease should meet to be listed by WOAH. The first three criteria are related to (i) international spread of the pathogenic agent, (ii) at least one country has demonstrated freedom or impending freedom from the disease and (iii) reliable detection and diagnostic means, as well as a case definition, exist. The fourth criterion refers to the impact of the disease. To be listed by WOAH, the disease must meet at least one of the following sub-criteria:

- 'Natural transmission to humans has been proven, and human infection is associated with severe consequences.'
- 'The disease has been shown to have a significant impact on the health of domestic animals (...).'
- 'The disease has been shown to, or scientific evidence indicates that it would, have a significant impact on the health of wildlife (...).'

Based on these criteria, there were 120 listed diseases in force in 2021, 29% of which were zoonoses.

In addition to listed diseases, Members have a legal obligation to report information on diseases considered to be emerging, as defined[2] in the glossaries of the *Terrestrial* and *Aquatic Codes*.

WOAH has developed a Standard Operating Procedure for determining whether a terrestrial animal disease should be reported as emerging.[3] Currently WOAH considers four diseases to be 'emerging', one of which has zoonotic potential (SARS-CoV-2 in animals).

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[1] Defined by the One Health High Level Expert Panel at https://www.woah.org/en/tripartite-and-unep-support-ohhleps-definition-of-one-health/

[2] Defined in the glossaries of both *Codes* as 'a new occurrence in an animal of a disease, infection or infestation, causing a significant impact on animal or public health resulting from:
a. a change of a known pathogenic agent or its spread to a new geographic area or species; or
b. a previously unrecognised pathogenic agent or disease diagnosed for the first time.'

[3] A procedure for aquatic animal emerging diseases was being developed at the time this report was drafted.

Intersectoral communication and coordination

In addition to disease notification (including zoonoses), WOAH encourages its Members to communicate, share data and coordinate with other relevant authorities. Several articles of the *Terrestrial Code* address this.

- In Chapter 1.4. on Animal health surveillance, Article 1.4.4. states, 'Whenever the responsibility for disease reporting falls outside the scope of the Veterinary Authority, for example human cases of zoonotic diseases or infections or infestations in wildlife, effective communication and data sharing should be established between the Veterinary Authority and other relevant authorities.'
- Chapter 3.2. on Quality of Veterinary Services lists intersectoral collaboration amongst the fundamental operating principles in Article 3.2.2. and specifies that 'Veterinary Services should operate collaboratively, including *via* a One Health approach, sharing professional knowledge and experience with all relevant sectors and actors while optimising the use of resources.'

The PVS Pathway assesses the capacity of Veterinary Services and Aquatic Animal Health Services to implement WOAH international standards. In the PVS Tool, Critical Competency I-6.B assesses the external coordination capability of the Veterinary Services (including the One Health approach).

In parallel, WHO has developed the International Health Regulations (IHR) Monitoring and Evaluation Framework to support capacity in responding to public health events. Subsequently, WHO and WOAH jointly developed a methodology to enable countries to improve intersectoral collaboration, thus strengthening capacity to address major health security risks. During IHR-PVS National Bridging Workshops, Members develop a joint roadmap targeting a truly operational One Health approach at the national level with the participation of the human health, animal health, wildlife and environmental sectors.

This section is not intended to be a comprehensive, or even a representative, summary of WOAH activities on One Health. Instead, its objective is to provide some measurable elements related to the One Health approach followed by WOAH and its partners.

Please note that antimicrobial use and antimicrobial resistance, important One Health topics, are discussed in a dedicated section of this annual report and are not covered in this section.

2. List of monitored indicators

The following indicators have been monitored:

- One Health contextual indicators:
  - Percentage of WOAH-listed diseases that are zoonoses;
  - Number and percentage of immediate notifications for WOAH-listed diseases related to zoonoses;
  - Number and percentage of immediate notifications for emerging diseases that were reported as having a public health impact.

- One Health implementation indicators:
  - Performance of Veterinary Services regarding external coordination capability of the Veterinary Services and Aquatic Animal Health Services (including the One Health approach), as assessed by the PVS Tool during PVS missions;
  - Number and percentage of Members that hosted an IHR-PVS National Bridging Workshop.

3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- WOAH-listed diseases that are zoonoses: dataset provided by the World Animal Health Information and Analysis Department, WOAH, as part of a project to develop a referential and codification system for animal diseases and sourced from Chapter 1.3. of the *Terrestrial* and *Aquatic Codes* (2021 version).
- Immediate notifications from WAHIS: attention was given to the reason for notification[4] (to differentiate reporting for listed diseases and for emerging diseases), and to the zoonotic/public health impact of the reported diseases. Data collected and presented correspond to the immediate notifications published between 2005 and 2021.
- Members that hosted an IHR-PVS National Bridging Workshop, obtained from the PVS mission dataset, managed by the Capacity Building Department, WOAH. Consideration was given to the workshops conducted from 2014 to the end of 2021.
- Performance of Veterinary Services and Aquatic Animal Health Services on external coordination capability: Levels of Advancement of Critical Competency I-6.B of the PVS Tool.[5] The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/Follow-up/Aquatic missions conducted between 2016 and 2021 were taken into account.

These data sources have advantages and limitations as described in the table below.

	List of WOAH-listed diseases that are zoonoses	
Advantages	• Based on international standards, Chapter 1.3. of both the *Terrestrial* and *Aquatic Codes*	• Data compiled and structured with metadata for the Codification Project[6]
Limitations	• Zoonotic characterisation of diseases is based on available scientific literature, as it is not described in WOAH standards	

[4] When drafting an immediate notification, Members must select from five reasons why the event should be notified immediately. Article 1.1.3. of both Codes proposes the same five reasons to notify a WOAH-listed disease (such as recurrence in a country, zone or compartment). Members also can select that the report is for an emerging disease. For this analysis, notifications of WOAH-listed diseases and emerging diseases were considered separately.

[5] Reference of Critical Competencies, from the Seventh Edition of the PVS Tool, in 2019

[6] The Codification Project is aimed at developing a a referential codification system for animal diseases and is led by the WOAH World Animal Health Information and Analysis Department.

	Immediate notifications from WAHIS	
Advantages	• Standardised information • Compulsory submission and expected from all WOAH Members when an exceptional event occurs	• Official data provided under the supervision of WOAH Delegate • Already organised in a database
Limitations	• For infection with SARS-CoV-2 in animals, not all countries submitted reports *via* the early warning module of WAHIS. Several European countries submitted information outside WAHIS *via* situational reports; those reports were not taken into consideration in this analysis. All reports of SARS-CoV-2 in animals reported to WOAH are available at https://www.woah.org/en/what-we-offer/emergency-preparedness/covid-19/#ui-id-3.	• Good indicator only if WOAH Members notify the event via an immediate notification.[7] This indicator will miss countries/territories that (i) report the disease via the six-monthly reports (rather than immediate notifications) or (ii) do not report at all • For emerging diseases, extracting information about their public health impact via the WAHIS interface requires some manual cleaning[8]

	List of Members that hosted an IHR-PVS National Bridging Workshop	
Advantages	• Standardised and updated dataset managed by WOAH PVS Team, in close collaboration with WHO	• Voluntary missions driven by official requests from Members that have an interest or identified need in improving coordination on One Health
Limitations	• Voluntary activity, not undertaken by all WOAH Members. The dataset is affected by selection bias in accordance with the factors that might have driven participation, such as funding capacity, existing or planned projects for which the activity is recommended, or existence of recent Joint External Evaluations and PVS Evaluations	• Impossible to conduct workshops in some countries despite receiving an official request due to, for example, political instability, lack of funding or the COVID-19 pandemic

	PVS Critical Competency I-6.B
Adv.	• See Section 01 on Governance and PVS
Lim.	• See Section 01 on Governance and PVS. This Critical Competency covers all external coordination capability of the Veterinary Services and Aquatic Animal Health Services. It is not specific to One Health coordination, even if One Health is nominatively specified

[7] Immediate notifications are related to exceptional epidemiological events. When diseases are endemic, they are expected to be reported via six-monthly reports.

[8] Building on a study recently conducted by WOAH using these data, the Observatory updates the dataset of emerging diseases with a public health impact by adding the most recent events.

4. Descriptive analysis

4.1. One Health contextual indicators

a) Percentage of WOAH-listed diseases that are zoonoses

The diseases listed in the WOAH *Codes* are updated every year. In 2021, 35 WOAH-listed diseases were zoonoses, accounting for 29% of all listed diseases (**Table I**). All the listed zoonoses are diseases of terrestrial animals.

Table I. Number and percentage of zoonoses amongst WOAH-listed diseases

Number of zoonoses amongst WOAH-listed diseases	Percentage of WOAH-listed diseases that are zoonoses
35	29%

b) Number and percentage of immediate notifications (for listed diseases) related to zoonoses

Out of the 3,915 immediate notifications notified by Members and published by WOAH between 2005 and 2021, 3,749 were for WOAH-listed diseases and 166 were for emerging diseases (**Figs 1** and **2**).

Amongst the 3,749 notifications of WOAH-listed diseases, 1,429 (38%) were considered to be zoonoses. There was limited variation in the proportion of zoonoses between regions, from 32% of immediate notifications of WOAH-listed diseases in Africa to 50% in the Middle East. The annual percentage of immediate notifications that were zoonoses ranged from approximately 25% to 47% from 2005 to 2021, with peaks coinciding with major episodes of avian influenza.

c) Number and percentage of immediate notifications (for emerging diseases) that were reported as having a public health impact

Similarly, of the 166 immediate notifications that corresponded to emerging diseases, 94 (57%) were reported as having a public health impact (**Fig. 2**). For this indicator, there were wider regional variations, from 20% of emerging diseases notified from Africa having a public health impact to 66% from Europe and the Americas. In 2021, SARS-CoV-2 infections in animals accounted for 100% of immediate notifications for emerging diseases having a public health impact.

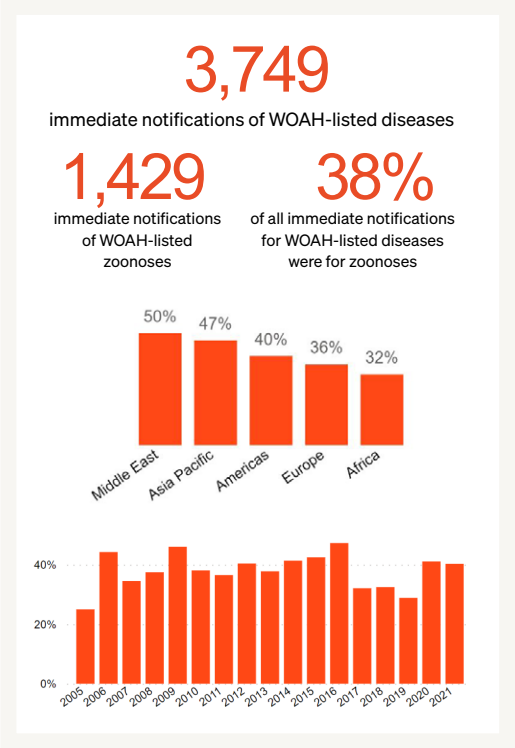

Figure 1. Number, percentage (out of all immediate notifications of WOAH-listed diseases) and percentage over time of immediate notifications of WOAH-listed zoonoses from 2005 to 2021

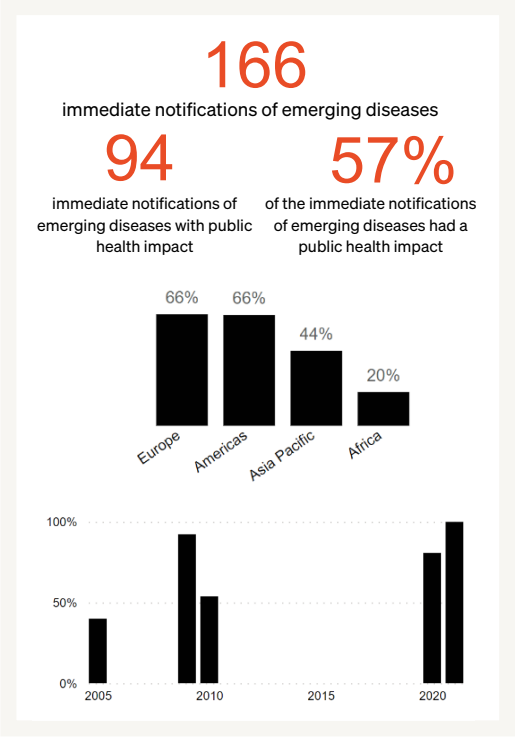

Figure 2. Number, percentage (out of all immediate notifications of WOAH-listed diseases) and evolution of the percentage of immediate notifications of emerging diseases with a reported public health impact from 2005 to 2021

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4.2. One Health implementation indicators

a) Performance of Veterinary Services regarding external coordination capability of the Veterinary Services and Aquatic Animal Health Services (including the One Health approach), as assessed by the PVS Tool during PVS missions

Between 2016 and 2021, 43 WOAH Members undertook a PVS Evaluation or Follow-up mission, and six Members a PVS Aquatic mission. Amongst all the Critical Competencies described in the PVS Tool and assessed during PVS missions, Members were assessed against Critical Competency I-6.B, 'Coordination capability of the Veterinary Services – External coordination (including the One Health approach)'.

In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

For this Critical Competency, a Level of Advancement of 3 means that 'There are formal external coordination mechanisms with clearly described procedures or agreements for some activities and/or sectors.'

Most Members (79%) that undertook a PVS Evaluation or Follow-up mission between 2016 and 2021 were assessed as having reached at least minimal capacity with respect to Critical Competency I-6.B (**Figs 3 and 4**). This percentage is 67% for the Aquatic Animal Health Services assessed during the same period.

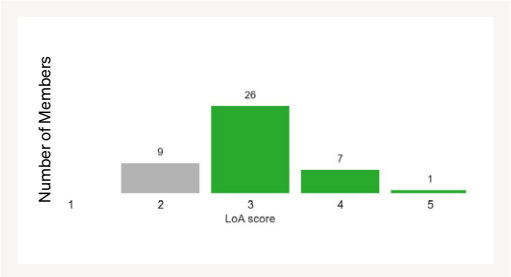

Figure 3. Distribution of the Level of Advancement (LoA) scores to the Critical Competency I-6.B related to external coordination capability of the Veterinary Services, as assessed in PVS missions between 2016 and 2021

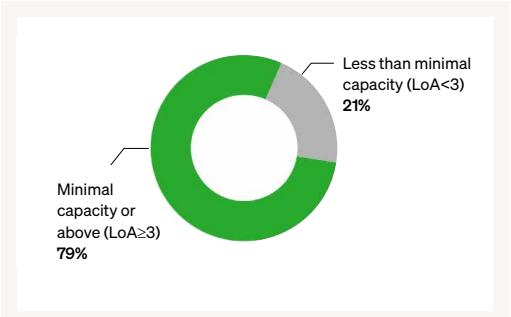

Figure 4. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for the Critical Competency I-6.B related to external coordination capability of the Veterinary Services, as assessed in PVS missions between 2016 and 2021

b) Number and percentage of Members that hosted an IHR-PVS National Bridging Workshop

Between 2014 and 2021, 36 WOAH Members (20%) conducted an IHR-PVS National Bridging Workshop to strengthen their collaboration at the human–animal interface whilst improving their compliance with international standards and regulations (**Table II**).

Table II. Number and percentage of WOAH Members that conducted an IHR-PVS National Bridging Workshop (NBW) between 2014 and 2021

Number of WOAH Members that conducted an IHR-PVS National Bridging Workshop	Percentage of WOAH Members that conducted an IHR-PVS National Bridging Workshop
36	20%

After three pilot activities in 2014 and 2016, the National Bridging Workshop methodology was finalised and proposed to WHO and WOAH Members (**Fig. 5**). As many as 11 Members hosted a workshop each year in 2018 and 2019. There was a significant decrease in 2020 and 2021 due to the COVID-19 pandemic, which prevented international facilitators from travelling and supporting the workshops. However, it is expected that implementation will return to former levels beginning in 2022.

Most of the workshops thus far (17 workshops, or 47%) were organised by African Members (**Fig. 6**).

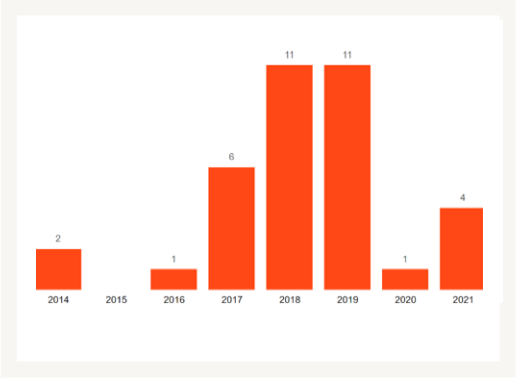

Figure 5. Number of IHR-PVS National Bridging Workshops conducted per year from 2014 to 2021

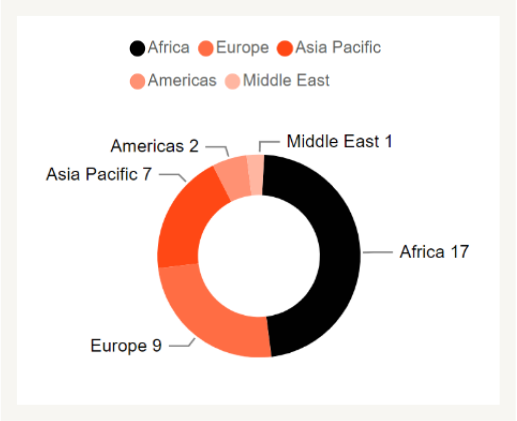

Figure 6. Regional distribution of IHR-PVS National Bridging Workshops conducted between 2014 and 2021

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5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

The contextual part of this analysis mainly focused on zoonotic diseases. No contextual information was available to provide description on the consideration of ecosystem health in WOAH Members' surveillance and notification practices. The Quadripartite is currently considering the integration of ecosystem health data provided by the United Nations Environment Programme in the Joint FAO–WOAH–WHO Global Early Warning System for health threats and emerging risks at the human–animal–ecosystems interface. This would allow such contextual analysis to be extended to cover all components of One Health.

While 29% of WOAH-listed diseases are zoonoses, it is interesting to note that zoonoses represent 38% of the immediate notifications of exceptional epidemiological events and as much as 50% in the Middle East. In addition, 57% of the immediate notifications referring to emerging diseases were considered to have a public health impact, with significant variations by region and year. Further monitoring will be needed to potentially identify trends.

A majority of WOAH Members that undertook a PVS Evaluation, Follow-up or Aquatic mission between 2016 and 2021 were considered to have formal external coordination mechanisms with clearly described procedures or agreements for some activities and/or sectors. Fewer were assessed as having such mechanisms for most or all activities, that were uniformly implemented throughout the Member's territory and periodically reviewed and updated. Members are therefore invited to progressively expand external coordination mechanisms to all activities.

Finally, only a limited number of Members have engaged in an IHR-PVS National Bridging Workshop. Members are invited to consider the benefits of organising such a workshop aimed at jointly developing a national roadmap for intersectoral coordination. More information can be found on the WHO and WOAH websites, and *via* the WHO and WOAH Regional and Sub-Regional Representations.

12 Animal Welfare

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1. Introduction

The World Organisation for Animal Health promotes animal welfare through a science-based approach and develops animal welfare standards in consultation with experts and key stakeholders to maximise their implementation worldwide.

These standards are available in Section 7 of the *Terrestrial Code* and Section 7 of the *Aquatic Code*. They cover animal transport, slaughter, killing for disease control purposes, research and species/production systems-specific topics, as follows:

Topic	*Terrestrial Code*	*Aquatic Code*
Introduction	Chapter 7.1. Introduction to the recommendations for animal welfare	Chapter 7.1. Introduction to the recommendations for the welfare of farmed fish
Transport	Chapter 7.2. Transport of animals by sea Chapter 7.3. Transport of animals by land Chapter 7.4. Transport of animals by air	Chapter 7.2. Welfare of farmed fish during transport
Slaughter/killing	Chapter 7.5. Slaughter of animals	Chapter 7.3. Welfare aspects of stunning and killing of farmed fish for human consumption
Killing for disease control	Chapter 7.6. Killing of animals for disease control purposes	Chapter 7.4. Killing of farmed fish for disease control purposes
Stray dogs	Chapter 7.7. Dog population management	
Research	Chapter 7.8. Use of animals in research and education	
Beef production	Chapter 7.9. Animal welfare and beef cattle production systems	
Broilers	Chapter 7.10. Animal welfare and broiler chicken production systems	
Dairy cattle	Chapter 7.11. Animal welfare and dairy cattle production systems	
Working equids	Chapter 7.12. Welfare of working equids	
Pig production	Chapter 7.13. Animal welfare and pig production systems	
Killing of reptiles	Chapter 7.14. Killing of reptiles for their skins, meat and other products	

WOAH launched its Global Animal Welfare Strategy in May 2017, focusing on four pillars:

(i) Development of animal welfare standards

(ii) Capacity building and education

(iii) Communication with governments, organisations and the public

(iv) Implementation of animal welfare standards and policies.

The FAOLEX database, which offers an online repository of national laws and regulations, has been used to find animal welfare-related legislation that has been passed by WOAH Members.

WOAH and the Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise Giuseppe Caporale (IZSAM) Collaborating Centre in Teramo, Italy, have prepared a self-assessment and monitoring tool (SAM Tool 1.0) in the form of an electronic questionnaire. Its purpose is to help Members better understand the situation regarding their stray dog population, and to periodically monitor the progress of their individual roadmaps toward the full implementation of Chapter 7.7. of the *Terrestrial Code* on stray dog control. It aims to provide a timeline for implementation of these standards by 2025 in the Balkans and 2030 in West Eurasia. Despite the fact that this objective focuses on specific sub-regions, the information collected in these self-assessments has also been used by the Observatory.

The objective of this section is to assess to what degree animal welfare-related standards are implemented or adhered to by WOAH Members and to support monitoring of the implementation of the WOAH strategy on animal welfare.

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2. List of monitored indicators

The following indicators have been monitored:

- Performance of Veterinary Services regarding animal welfare, as assessed by the PVS Tool during PVS missions (Critical Competency II-13 on animal welfare);
- Number of Members for which animal welfare-related legislation on slaughter, transport, stray dogs and research is captured in FAOLEX and number of animal welfare-related regulations;
- From the surveys on stray dog population carried out by the WOAH Regional Office in Europe:

  - Percentage of Members that estimate the number of owned dogs (Point 2 of Article 7.7.5. and Article 7.7.11.)

  - Percentage of Members that estimate the number of stray dogs (Point 2 of Article 7.7.5. and Article 7.7.11.)

  - Percentage of Members with a dog population control programme (Articles 7.7.2. and 7.7.3.)

  - Percentage of Members that monitor and evaluate their dog population control programme (Article 7.7.7.)

  - Percentage of Members with legislation (Point 3 of Article 7.7.5.) on:
    > Capture and return, rehoming or release
    > Control of dog movement
    > Dog removal
    > Environmental control
    > Reducing dog bite incidence as an objective
    > Commercial dog dealers
    > Reproductive control
    > Stray dog euthanasia

  - Percentage of Members that apply control measures (Article 7.7.6.) on:
    > Control of dangerous dogs
    > Control of dog movement
    > Environmental controls
    > Obligations of owners and authorities
    > Registration and identification
    > Regulation on breeding and sales
    > Vaccination against zoonotic diseases
    > Veterinary procedures.

3. Data, data sources and advantages/ limitations of the data used

The data used for this section originated from the following sources:

- Performance of Veterinary Services on animal welfare: Levels of Advancement for Critical Competency II-13.[1] The dataset was compiled and provided by the PVS Team, Capacity Building Department, WOAH. To ensure that the data to be used in the analysis are up-to-date, only the reports of PVS Evaluation/ Follow-up missions conducted between 2016 and 2021 were taken into account.

- FAOLEX is a database of national legislation, policies and bilateral agreements on food, agriculture and natural resources management. It is administered by the Development Law Service of the FAO Legal Office. FAOLEX's collection method is pro-active and initiated by FAO; countries do not submit their regulations to FAOLEX.

  The Open Data section of FAOLEX contains several databases that are publicly available. The Observatory made use of the Agriculture Dataset (3 April 2022), containing 92,898 records, which were filtered as follows. Initially, all the legislative items containing the word 'welfare' in the title were selected. Then, from this new subset of records, the words 'research', 'slaughter', 'transport' and 'stray' were independently filtered in the 'abstract' tab. This yielded four different sets of records corresponding to these four key words.

- The WOAH Platform on Animal Welfare for Europe, based on the surveys on stray dog population carried out by the WOAH Regional Office in Europe. This self-assessment was carried out by nine Balkan Members in 2015, 2018 and 2021; eight Members in the Eurasian region in 2016; and four North African Members in 2020. Information gathered in the surveys of these 21 Members has been used.

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[1] Reference of Critical Competency, from the Sixth Edition of the PVS Tool, in 2013

These data sources have advantages and limitations as described in the table below.

	PVS Critical Competency (II-13)
Adv.	• See Section 01 on Governance and PVS
Lim.	• See Section 01 on Governance and PVS

	Stray dog self-assessment and monitoring tool (WOAH Platform on Animal Welfare for Europe)	
Advantages	• Existing dataset, developed by the WOAH Sub-Regional Representation for Europe with support from a WOAH Collaborating Centre (IZSAM, Teramo)	• The survey covers Chapter 7.7. of the *Terrestrial Code* on stray dog control • For one sub-region, the questionnaire was completed three times (in 2015, 2018 and 2021), allowing the monitoring of evolution
Limitations	• Tool not rolled out worldwide • The regularity of the survey is not well established • The data derive from Members' self-assessment, and their quality therefore relies heavily on the level of understanding and training of the respondents. Sometimes Veterinary Services are not the Competent Authority on stray dog control, which poses a challenge to data quality and ease of collection • Refers exclusively to Chapter 7.7. of the *Terrestrial Code*	• Results are presented in different formats and require manual treatment prior to analysis • The design of the questionnaire allows contradictory or inconsistent responses; e.g.: a) Members that advised that they do not estimate the population of stray dogs also provided an answer to a question about changes to the size of the stray dog population b) one of the Balkan Members declared not having a control population programme but reported monitoring and evaluating such a programme • There are questions that remain unanswered, which makes it difficult to establish trends over time; e.g. Members claim to estimate the number of stray dogs but do not provide these estimates

	FAOLEX	
Advantages	• Publicly available and easy to access	• Contains information at global level
Limitations	• Difficult to filter information from this extensive database; identification of appropriate key words is required	• It is likely that some relevant pieces of legislation were not identified by the key words used in the search • Use of various languages

4. Descriptive analysis

a) Performance of WOAH Members according to PVS Critical Competencies directly related to animal welfare

In PVS missions, each Critical Competency is assigned a Level of Advancement ranging from 1 to 5. For the purpose of this analysis, a Level of Advancement of 3 is considered to indicate that Members have been assessed as reaching minimal capacity for the given Critical Competency. Members with higher levels (4 or 5) are considered as having a higher capacity and Members with lower levels (1 or 2) as having lower capacity.

Critical Competency II-13 on animal welfare is defined as 'the authority and capability of the Veterinary Services to legislate and implement the animal welfare WOAH standards as published in the *Terrestrial Code*'.

Between 2016 and 2021, 43 WOAH Members have received a PVS Evaluation or Follow-up mission. **Figure 1** shows that, for terrestrial animals, 32 of those Members have not reached a Level of Advancement of 3 or above for this Critical Competency. This indicates, as described in the PVS Tool, that 'there is limited national legislation or regulations on animal welfare covering some of the WOAH standards, with limited stakeholder or public awareness'. In this progressive scale of advancement, a minority of Members that have hosted PVS missions are at the higher end of the scale, with two Members reaching level 4 and none reaching level 5.

Of the 43 Members that have undertaken a PVS Evaluation or Follow-up mission between 2016 and 2021, 11 (26%) reached a Level of Advancement of 3 or above for Critical Competency II-13 (**Fig. 2**).

b) Number of Members for which animal welfare-related legislation on slaughter, transport, stray dogs and research is captured in FAOLEX and number of animal welfare-related regulations

As **Figure 3** shows, there were a total of 336 animal welfare-related regulations from 58 WOAH Members collected in FAOLEX at the time of the extraction.

Breaking down these figures into regions reveals that most of the pieces of legislation filed in FAOLEX correspond to Members from the European region (**Fig. 4**).

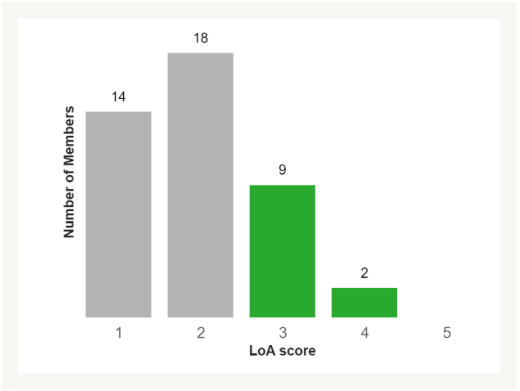

Figure 1. Distribution of the Level of Advancement (LoA) scores to the Critical Competency II-13 related to animal welfare as assessed in PVS missions between 2016 and 2021, for terrestrial animals

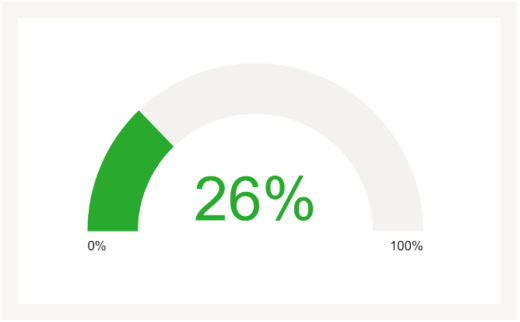

Figure 2. Percentage of Members with minimal capacity or above (Level of Advancement of 3 or more, in green), for the Critical Competency II-13 related to animal welfare, as assessed in PVS missions between 2016 and 2021

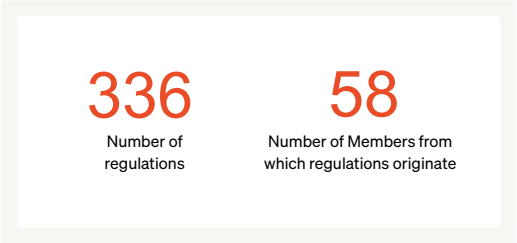

Figure 3. Number of animal welfare-related regulations filed in the FAOLEX Agriculture Dataset and number of Members from which these regulations originate

Despite some fluctuations, the collection of legislation in the Agriculture Dataset of FAOLEX on slaughter, transport, stray dogs and research has maintained an overall upward trend since the late 1990s (**Fig. 5**).

Searching FAOLEX for abstracts containing keywords provided a number of animal welfare-related regulations in the fields of research, stray dogs, slaughter and transport. Slaughter and transport were the topics for which the highest number of regulations, 63 and 68 respectively, were found.

The chapters of the *Terrestrial Code* related to animal welfare during transport were last revised in 2008 and 2011. Most of the regulations related to that subject were filed in the years leading up to the first update (2008) and the decade after that (**Fig. 6**). There could be an association between these two facts; however, there is no evidence to suggest a cause–effect relationship. The timing of these regulations may also be attributed to increased public awareness of animal welfare issues or changes to welfare-related import requirements of trading partners.

c) Percentage of Members that estimate the number of owned and stray dogs

The analysis of the questionnaire that Members from the Balkans and the Eurasian and North African regions completed reveals a significant gap between the percentage of Members that estimated the number of owned dogs (80%) and those that estimated the number of stray dogs (30%; **Fig. 7**). In other words, two thirds of these Members were not fully implementing the recommendations of Article 7.7.11., paragraph 5 of the *Terrestrial Code* regarding estimation of dog population size and demography.

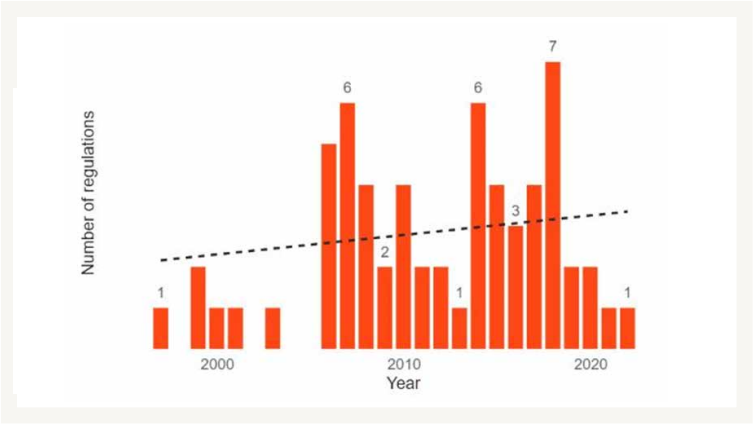

Figure 6. Number of regulations filed in the Agriculture Dataset of FAOLEX on animal welfare and transport per year, and trend line (dashed line)

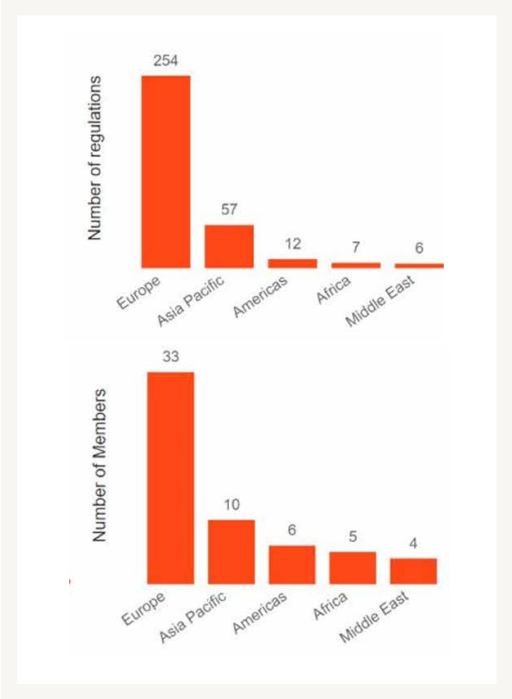

Figure 4. Number of animal welfare-related regulations (top) and number of Members from which these regulations originate (bottom) filed in the FAOLEX Agriculture Dataset, per region

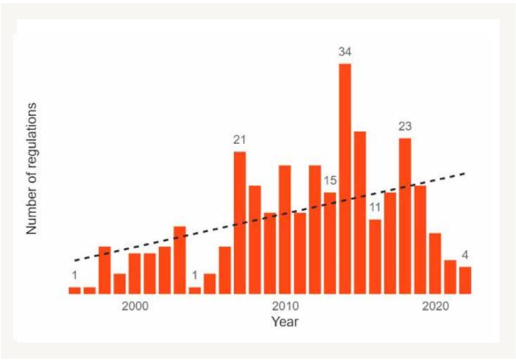

Figure 5. Number of regulations filed in the Agriculture Dataset of FAOLEX on slaughter, transport, stray dogs and research per year, and trend line (dashed line)

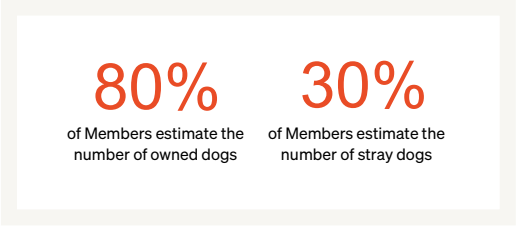

Figure 7. Percentage of Members participating in the survey that estimated the number of owned dogs (left) and stray dogs (right)

d) Percentage of Members with a dog population control programme and percentage of Members that monitor and evaluate the control programme

Of all the Members that participated in the survey, 68% had a dog population control programme in place; of those, 69% had a monitoring and evaluation (M&E) programme for their national dog population control programme (**Fig. 8**). Overall, ten Members participating in the survey reported having a dog population control programme that was monitored and evaluated. These two provisions are clearly laid down in Articles 7.7.3. and 7.7.7. of the *Terrestrial Code*, respectively.

e) Percentage of Members with relevant legislation

The same survey asked questions about the existence of a legislative framework, with provisions related to Article 7.7.5., Point 3 of the *Terrestrial Code*:

- Registration and identification
- Vaccination against rabies and other preventive measures against zoonotic diseases
- Veterinary procedures (e.g. surgical procedures)
- Control of dog movements (national and international)
- Control of dangerous dogs
- Regulation on dog breeding and sale of dogs
- Environmental controls (e.g. abattoirs, rubbish dumps, dead stock facilities)
- Regulation on dog shelter requirements
- Animal welfare obligations of owners and authorities.

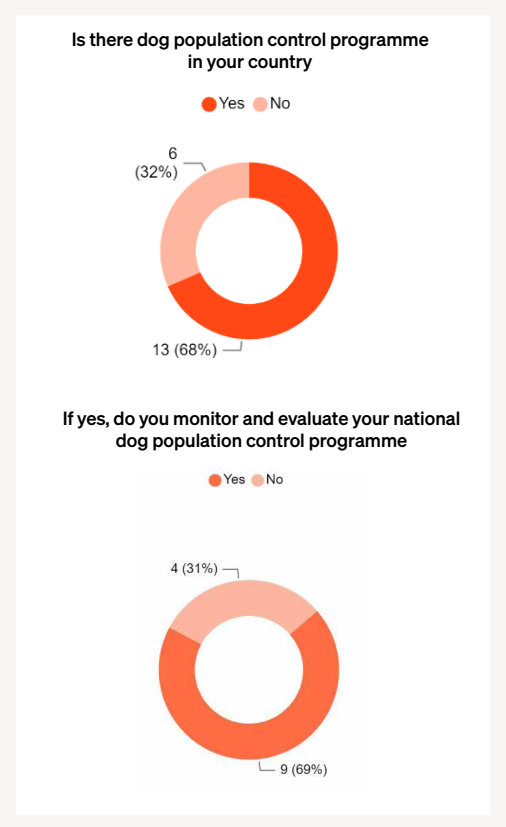

Figure 8. Percentage of Members participating in the survey that had a dog population control programme (top) and, of those, the percentage that had a monitoring and evaluation programme (bottom)

As shown in **Figure 9** in orange, these subjects were indicated as covered by legislative provisions in the majority of the participating Members, with slight variations depending on the topic. Veterinary procedures and vaccination against zoonotic agents were reported as regulated in most of the participating Members, whereas dog breeding and selling was only indicated as regulated in half of those Members.

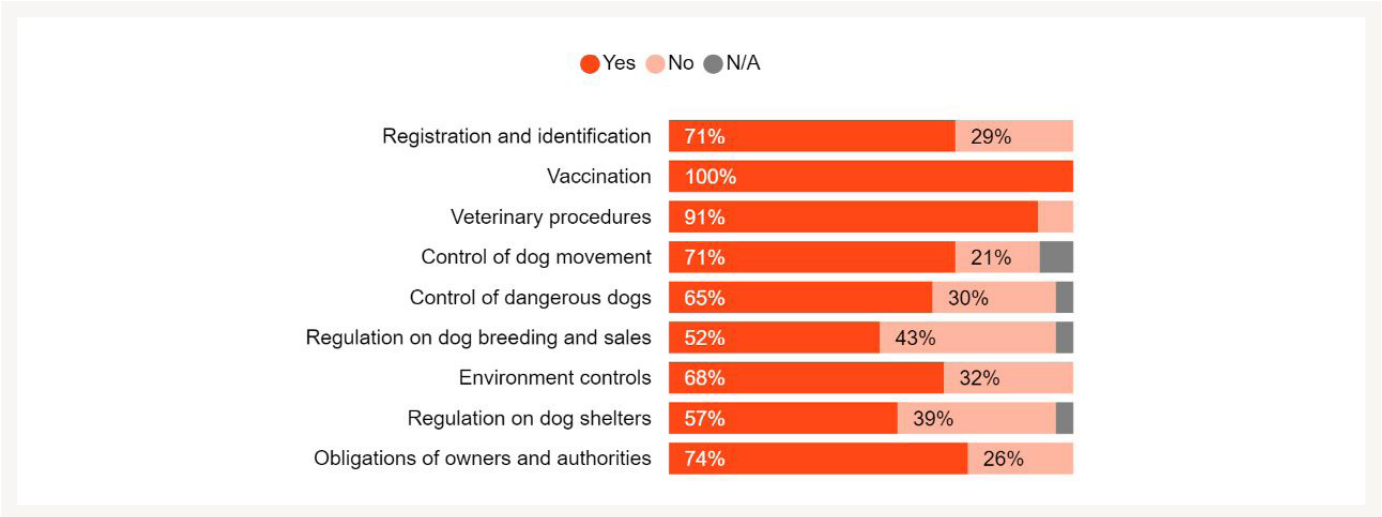

Figure 9. Percentage of Members participating in the survey that regulate on various topics recommended in the *Terrestrial Code*

f) Percentage of Members that apply the recommended control measures

The survey asked questions about the implementation of the following measures, which are mentioned in Article 7.7.6. of the *Terrestrial Code*:

- Registration and identification of dogs
- Reproductive control
- Removal and handling
- Capture and return, rehoming or release
- Environmental controls
- Control of dog movement
- Regulation of commercial dog dealers
- Reduction of dog bite incidence
- Euthanasia

As shown in **Figure 10**, most of the Members that took the survey declared they had implemented those measures, with slight variations. Recommendations about the control of dog movement, reduction of dog bite incidence and stray dog euthanasia had an adherence of around 80%, whereas measures related to environmental control were implemented by half of participating Members.

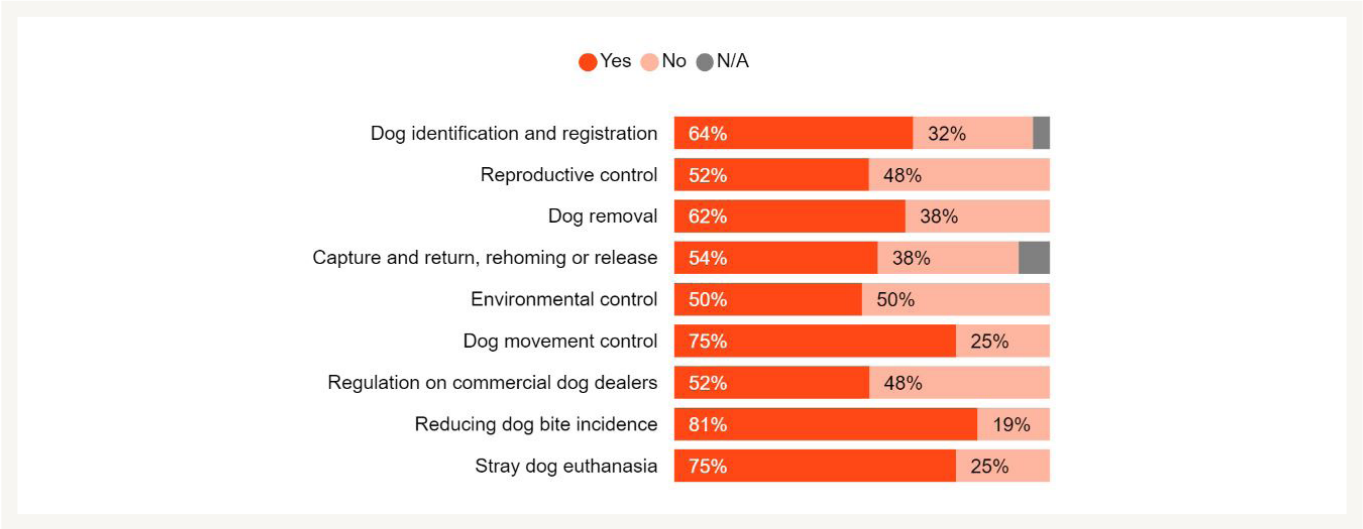

Figure 10. Percentage of Members participating in the survey that have implemented measures related to stray dogs as recommended in the *Terrestrial Code*

5. Conclusions and recommendations for improvement

The data used for the indicators in this section present limitations, as described above. The results of this analysis are not intended, therefore, to demonstrate facts. Yet, the information available can yield relevant insights into various situations from which recommendations can be made.

Compiling indicators to gauge the implementation of animal welfare standards has proved challenging. It has not been possible to touch on all the animal welfare chapters of the *Codes*, but rather only on those for which some information was available, e.g. stray dogs.

The SPS Agreement recognises the standards, guidelines and recommendations for animal health and zoonoses developed by WOAH. However, the SPS Agreement does not reference international standards, guidelines and recommendations for animal welfare. As Members do not report on this matter to WOAH, nor to the WTO, there are not many data-gathering activities that can facilitate an understanding of the level of uptake of animal welfare standards at a global level.

To monitor the application of the WOAH Global Animal Welfare Strategy (particularly the two pillars of 'communication with governments, organisations and the public' and 'implementation of animal welfare standards and policies'), WOAH could increase its efforts to collect animal welfare-related information to accurately estimate Members' adherence to these standards. To this end, it is essential that reliable and globally relevant data be collected in a manner that is replicable and acceptable to stakeholders. This could potentially be done by launching a regular survey to Animal Welfare Focal Points. It is also paramount that other sources of information, external to WOAH, be identified and validated.

Whilst acknowledging that the PVS missions carried out between 2016 and 2021 do not represent the global picture, it is still concerning that only 26% of those Members that did carry out missions have a Level of Advancement of 3 or higher for the Critical Competency related to animal welfare. Enquiries should be made to gain insight into what issues Members face in legislating and implementing the WOAH animal welfare standards.

The SAM Tool 1.0 is a useful instrument to ascertain the level of implementation of the *Terrestrial Code* articles related to stray dog control and dog population management at national level. However, this exercise is not yet far-reaching enough as, at the moment, it has only been launched in a small number of countries/territories. The findings from this questionnaire could lead to more general conclusions if it was further extended in Europe and rolled out to other WOAH regions. Having said that, it would be advisable to simplify and review the survey to counter its limitations.

A contract agreement between WOAH and the IZSAM Collaborating Centre in Teramo for the development and implementation of the new self-assessment and monitoring platform (SAM Tool 2.0) was signed in August 2022. This presents an opportunity to improve the development of this innovative web-based tool. The tool will make WOAH Members entirely self-sufficient in monitoring and assessing the progress of their own individual roadmaps, with the aim of achieving full compliance with the *Terrestrial Code* Chapter 7.7. recommendations by 2025 in the Balkans and 2030 in West Eurasia. The SAM Tool 2.0 will take the newly adopted WOAH standards on dog population management into account. Easily scalable to other WOAH animal welfare standards with minor efforts and investments, it could provide data to be analysed in future Observatory topic-based reports.

It is encouraging to confirm that most of the measures and regulations recommended in the *Terrestrial Code* to control the stray dog population were implemented by a majority of the Members that completed the various surveys. On the other hand, the surveys reveal that two-thirds of the Members do not estimate their number of stray dogs. This raises questions about how the effectiveness and follow-up of measures such as the M&E programme and the trend of the stray dog population are monitored by these Members.

Finally, with regard to the animal welfare legislation filed in FAOLEX, there is a clear gap between Europe, where most regulations are found, and the rest of the regions. The reasons for this are unclear. FAOLEX may have difficulty accessing regulations passed in non-European countries, or perhaps more animal welfare legislation is indeed passed in Europe compared with other regions.

Conclusion

The overall objective of this Annual Report is to present a global overview of the level of uptake of WOAH standards for animal health and welfare. To accomplish this, the WOAH Observatory has chosen a data-driven approach using data sources relevant to the standards in question.

As discussed in the report, the WOAH Observatory does not own or collect information for its own purposes. Rather, it relies on publicly available data from partner organisations and data gathered through established in-house channels. As a result, the findings presented in this document are not intended to demonstrate facts. They do, however, provide valuable insights into WOAH processes and Members' general adherence to international standards; as such, they are relevant to make recommendations to both WOAH departments and Members and to identify areas for further improvement.

Based on the data collected, the report contains more than 100 indicators grouped into 12 thematic sections. Some indicators were included for contextual purposes, whereas others are intended to be monitoring indicators.

Amongst the lessons learnt and recommendations for internal improvement in WOAH, the following points are worth highlighting:

- The need to reconsider what data the Organisation should collect and to improve the guidance for submitting reports and data to WOAH in order to increase consistency and quality in the data collected;
- The need to improve data storage, visualisation and visibility;
- The added value of coordination of data across the Organisation;
- The need for future tailored capacity building activities covering topics such as zoning and disease reporting.

A number of the recommendations for WOAH presented in this report have already been or are being considered. For example, WOAH created the Data Integration Department in September 2022 to improve data management and data integration within the Organisation. The Observatory now sits within this new department.

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Similarly, Members are invited to reflect on some of the key findings of this report, namely:

- The importance of submitting reports containing high-quality and consistent data, in line with WOAH guidelines.
- The value of taking advantage of the services that WOAH offers, such as publishing self-declarations, requesting official recognition of disease freedom and reporting simulation exercises, all of which help prevent the spread of animal diseases, facilitate market access and increase the visibility of the work of Veterinary Services and Aquatic Animal Health Services.
- The critical importance of providing Veterinary Services and Aquatic Animal Health Services with access to sufficient resources, including those related to budgets and workforce, bearing in mind that training and capacity-building activities are equally essential.
- The value of engaging in the PVS Pathway.
- The use for animal growth promotion of antimicrobials that are listed by the WHO as critically important for human medicine or listed by WOAH as VCIA: Members should urgently prohibit this practice and consider alternatives.
- The appropriate reporting of control measures: data suggest that some concepts (e.g. zoning, compartmentalisation) are not entirely clear and are not being reported as per the WOAH *Codes*. These findings not only invite WOAH to consider developing capacity building activities, but also call on Veterinary Services and Aquatic Animal Health Services to ensure the appropriate and consistent reporting of disease control measures.
- As a final remark on the results, it is necessary to mention the delay in notifying epidemiological events to WOAH. In general terms, most if not all WOAH Members should explore how they can reduce the time elapsed from the diagnostic confirmation of an outbreak to notification to WOAH. These efforts should also be made for the submission of six-monthly animal health information reports.

This document is the first Annual Report of the Observatory; it is expected that the format and methodology will evolve as this Observatory output improves year after year. This regular publication can also become a benchmark for WOAH to measure progression in the implementation of standards and the level of execution of the Observatory recommendations both by Members and internally within the Organisation.

To further understand the implementation of key WOAH standards and the barriers Members face, the Observatory will also conduct thematic studies on the uptake of specific standards related to particular diseases and/or topics. These deep and focused analyses on priority topics will complement the general overview offered by the annual reports.