



Wildlife Health
Survey Report

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Introduction

Pathogens circulating between wildlife, domestic animals and humans can be a threat to both human and animal health and can affect important ecosystem functions. Pathogen circulation may also lead to national or international economic disruption.

As an integral component of the global environment, wildlife is essential for the long-term preservation of animal and human health and well-being and for the integrity of ecosystems. In addition, it plays an important role at local and national level in supporting livelihoods. However, imbalances in ecosystems brought about by human population growth and competition for resources are becoming a major threat to wildlife populations.

Whilst, in general, Veterinary Services are more focused on monitoring and reducing the risk of certain zoonoses and of diseases originating from domestic animals, they are also able to play a leading role in the surveillance, early detection and control of pathogens in wildlife. Wild animals can be a source or intermediate host of emerging and re-emerging diseases, but, at the same time, they are a key element in maintaining healthy and functional ecosystems.

The OIE's mandate is to improve animal health worldwide. This cannot be achieved without fully integrating wildlife health into the OIE's overall strategy. In response to an evolving landscape, the OIE is working on a framework aimed at improving wildlife health and embracing a One Health approach – the OIE Wildlife Health Framework. In developing this Framework, it is essential for the OIE to consult its core stakeholders – national Veterinary Services – to ensure that it is fit for purpose. To this end, the OIE designed a questionnaire to collect the views and perspectives of the Veterinary Authorities of OIE Members on the role of Veterinary Services in wildlife health management. It focused especially on their role in (i) surveillance of diseases in wildlife and (ii) health monitoring of wildlife health in the context of wildlife trade, all along the supply chain.

The OIE would like to thank its Members who took the time to provide their valuable inputs.

Methodology

The questionnaire (Annex 2) was developed with inputs from staff at OIE HQ and in the Regional Offices. It was made available in the three official languages of the OIE (Spanish, English and French) on the online Survey Monkey Platform. It was also emailed to Members in a Word Format. A first call for responses was sent in June 2020 and a follow-up call was conducted in August 2020 by the Regional Offices. All the responses were entered into an Excel database: the data received through Survey Monkey were exported, and the data received by email were entered manually. Each question was then analysed, and the results were segregated by OIE Region (based on the "Note de Service" dated in 2011). The survey results were presented to OIE Members through two webinars in October 2020. Key findings will be considered in the development of the OIE Wildlife Health Framework.

Potential bias

Several biases were identified below and have been considered in the analysis:

- Question 4 (Annex 2) was missing in the questionnaire in English. This error was corrected a couple of days after the questionnaire was sent to OIE Members, but several countries had already responded and, as a result, 4% of Members did not provide a response to this question.
- Question 13 on emerging diseases did not give respondents the option to choose 'none' if none of them were relevant to their country. This was corrected after only a few days, but it may have impacted the results for this question, especially for OIE Members from the Americas Region, who were early respondents.

- Question 14 on Members' expectations of the OIE may have biased the answers by offering a few suggestions in brackets.
- With only six respondents from the Middle East Region (corresponding to 30% of the total number of Members in the region), the data are difficult to exploit. Therefore, even though they have been kept in the dataset, a regional analysis has not been conducted.

Results & Analysis

The survey was sent to 182 OIE Members, 151 of which submitted the completed questionnaire. The highest response rate was in the Europe region (Table 1).

OIE Region	Total no. of respondents	Total no. of OIE Members	% of OIE Members who responded
AFRICA	44	54	81%
AMERICAS	28	32	88%
ASIA AND PACIFIC	26	36	72%
EUROPE	47	53	89%
MIDDLE EAST	6	20	30%
Grand Total	151		83%

“This very important issue should be included in the next OIE Strategic Plan, highlighting the need and importance of international regulation to prevent the risks of zoonotic disease outbreaks including zoonotic risks from terrestrial wild markets.”

“Wildlife health management is crucial to address conflict issues at the human–livestock interface.”

Veterinary Services Involvement

Worldwide, 81% of respondents said that Veterinary Services are involved in wildlife health management and 19% said that they are not. In the Americas, however, the proportion of respondents who said that Veterinary Services are involved was almost equal to the proportion who said they are not, an almost 50:50 split. (Figure 1). A high proportion of Members from the Europe (96%), Africa (84%) and Asia & Pacific regions (85%) said that Veterinary Services are involved in wildlife health management; however, the comments provided by respondents show that the nature of this involvement is highly variable and can range from full responsibility for wildlife health to ad hoc collaboration with the wildlife sector.

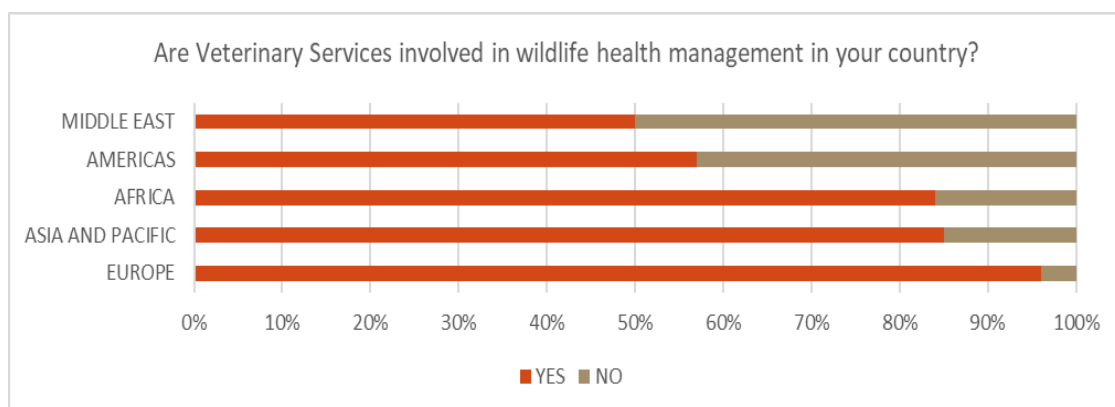


Figure 1 : Veterinary Services involvement in wildlife health management, by region

Out of the 81% of respondents who said that their Veterinary Services are involved in wildlife health management, 15% said that they collaborate with conservation organisations, charities, non-governmental organisations and/or other government departments, such as the Ministry of Agriculture, the Public Health Authority, the State Forestry Department or the Ministries of Environment, Wildlife and Tourism.

Members who replied that their Veterinary Services are not involved (19%) said that wildlife health is under the mandate of the environment sector (86%), NGOs (21%), universities (11%) or the human health sector (4%) (Figure 2).

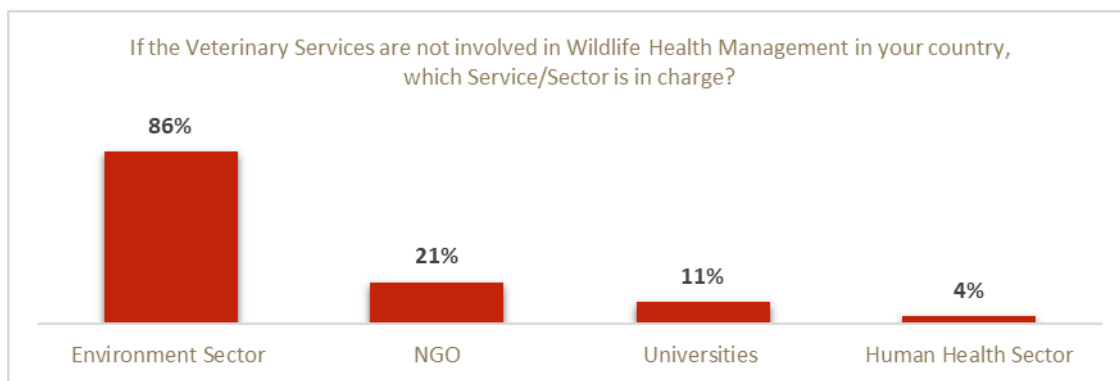


Figure 2

Wildlife is often under the responsibility of the Environment Sector (Protected Areas, Ministry of the Environment, environment agencies, wildlife management agencies...), even though this sector sometimes has no competency in animal health. Further investigation would need to be carried out to clarify the level of involvement of Veterinary Services in cases of disease/health events in wildlife.

Epidemiological surveillance

“To address the risk of transmission of zoonotic disease from wildlife to human populations, either or both public health and veterinary service should be involved in wildlife surveillance for such diseases”

Most OIE Members think that Veterinary Services should be involved in the **epidemiological surveillance of diseases in wildlife** at the human–animal–ecosystem interface (95% of respondents). It should be noted that an error in the questionnaire (English version) resulted in not capturing the responses of 4% of respondents.

Every enabling factor was chosen as one of the most important by at least one Member (Figure 3). Those most often chosen as being amongst the most important were: 1. Direct and continuous collaboration with stakeholders working in the wildlife sector (82% of responses), 2. Relevant legislative and/or regulatory framework to enable the Veterinary Services to carry out disease surveillance in wildlife (80% of responses) and 3. Sustainable governmental funding (79% of responses).

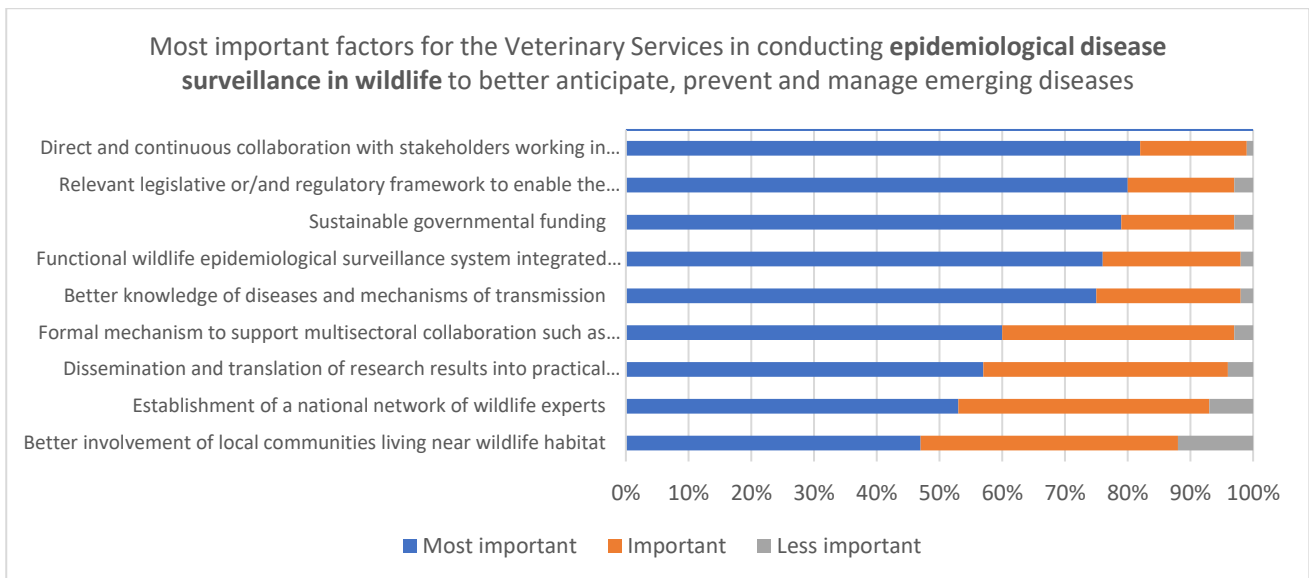


Figure 3

Each of the top three factors was considered to be amongst the most important by more than 75% of respondents in every region. For the other factors, there was more regional variation. In some cases, they were ranked very differently from region to region. For example, Collaboration via One Health Platforms was selected as being one of the most important by almost 3 in 4 respondents in the Africa and Asia & Pacific regions. In contrast, only 1 in 3 respondents in Europe said that it was one of the most important. One notable difference in the Americas region was that the establishment of a national network of wildlife experts was identified as one of the most important factors far more frequently than it was in other regions (50% more than the global percentage).

Other factors that were mentioned by respondents were: strengthening the diagnostic capacity of laboratories, collaboration through public–private partnerships, capacity building, and public awareness education.

“Knowledge of the distribution of relevant wildlife populations and the ecological population dynamics that influence interactions at the human–domestic animal–environment interface.”

“Training of qualified epidemiologists and laboratory specialists in universities - most important”

“Involvement of private veterinary professionals in wildlife disease surveillance. Involving education institutions for better understanding and knowledge about wildlife and common human, animal and wildlife diseases by the students.”

Wildlife trade and the supply chain

The vast majority of respondents (99%) think that Veterinary Services have a role to play in **health monitoring of wildlife trade and use** (which includes capture, handling, transport, wild animal farming, marketing, export/import), and most members are indeed already involved in this area. More specifically, they are involved through import/export activities (including the issuance of health certificates) (30% of responses), inspection of wildlife products and by-products (10%) and transportation of wildlife (5%) (Figure 4). For this question, the number of comments provided by Members was very high, which shows the interest of Veterinary Services in this topic.

“Yes, in wildlife trade and use Veterinary Services play vital roles. Firstly, capture (especially chemical capture) needs veterinary expertise because dose and anesthetics preference varies from species to species. Some animals are vulnerable to capture myopathy. In that case, handling techniques should be done carefully and proper steps for capture myopathy prevention are need. Secondly, during transport, veterinary consultancy is essential because animals may show stress-induced sickness during transportation. Thirdly, in wild animal farming Veterinary Services are a must because wild animals are affected by pathogens of domestic animal origin. In that case, immunisation and biosecurity measures become essential. Finally, through regulation of export and import of wild animals, Veterinary Services will stop the spread of infectious disease from one country to another. Nowadays, animal welfare activist groups are very much conscious all over the globe about animal cruelty”

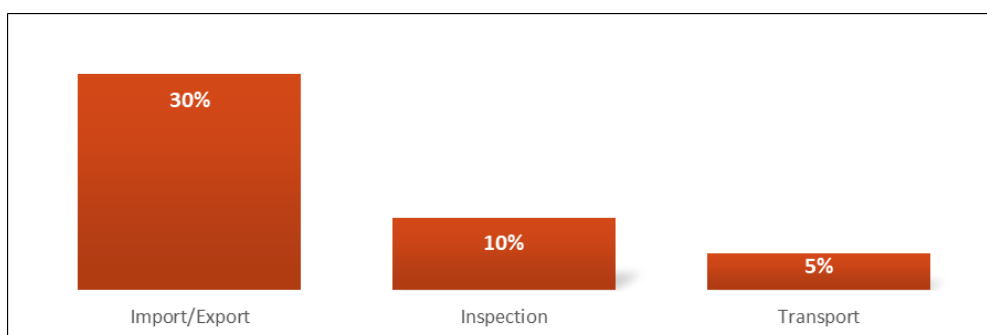


Figure 4 :Areas of wildlife trade where Veterinary Services are already involved

Every listed factor was chosen as one of the most important by at least one Member. However, those most often chosen as being amongst the most important were: 1. Establishment of a relevant and appropriate legislative and/or regulatory framework to enable Veterinary Authority to manage the health surveillance of live wildlife and safety of wildlife products in markets and game farms (83% responses), 2. Sustainable governmental funding (83% responses), 3. Direct and continuous collaboration with stakeholders from the wildlife sector worldwide (79% responses).

“Production of simple, specific and adapted disease surveillance and reporting tools for wildlife”

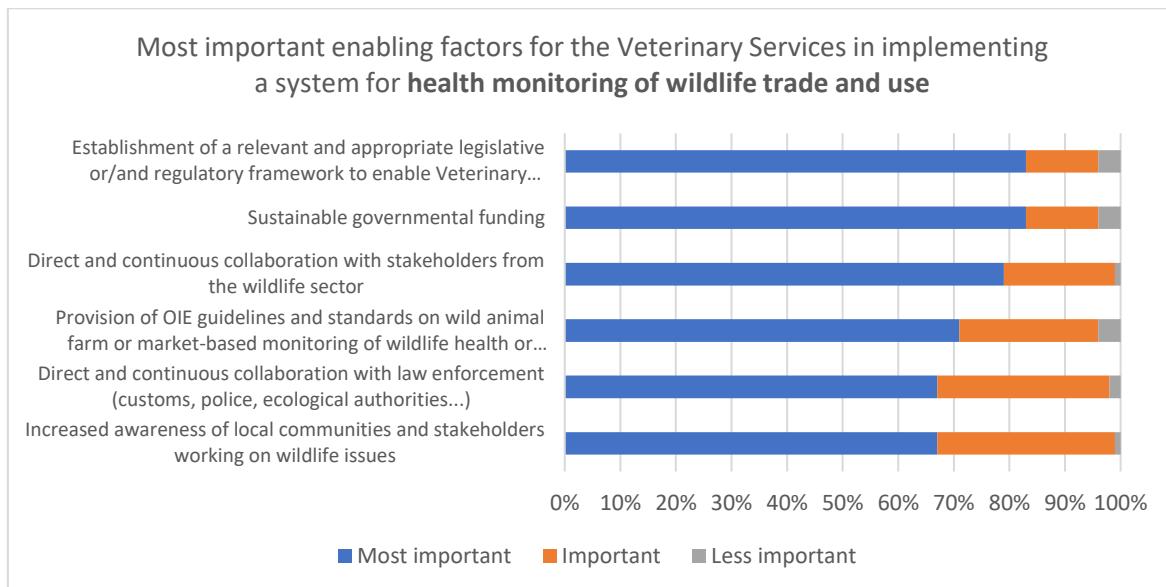


Figure 5

“In some places it is cultural, and it is necessary to work with other state agencies”

“Reinforcement of the technical platform of local laboratories, direct and continuous collaboration with reference laboratories”

“Communication to the general public on the risk of specific zoonoses in wildlife”

“Promotion of the network of wildlife experts for disease surveillance and fisheries”

In Africa, collaboration with stakeholders from the wildlife sector was the factor most frequently selected as being one of the most important, with 93% of responses. In the Asia & Pacific region, the factor most frequently selected was sustainable governmental funding, with 83% of responses. In the Americas region, the least important factor was the awareness of local communities and stakeholders working on wildlife issues, with only 54%. The rest of the factors were quite equally distributed, with a percentage of responses between 80% and 90%. In Europe, collaboration with law enforcement and the provision of OIE guidelines were the least important factors, only 20% of respondents from Europe indicated that these factors were important (far fewer than the global percentage).

It is important to underline that for both questions – wildlife health surveillance systems and wildlife health monitoring – the three factors that were chosen the most frequently were the same: legislation, cooperation with the wildlife sector and sustainable governmental funding.

Legislative framework

It is likely that this question was ambiguous. Some respondents may have answered about the need to develop a legislative framework for wildlife health in their country, whilst others may have answered it from a more general perspective of whether a legislative framework is important to support wildlife health management. Most Members (91%) stated that there is a need to have a **legislative framework** to support the implementation of veterinary best practices in wildlife trade and use. Members who said that there is no need (9%) for such legislation specified that it was because there was already legislation in place (93%). Amongst those who responded that legislation is needed, 6% said that it needs improvement.

Need to have a legislative framework to support the implementation of veterinary best practices in wildlife trade and use

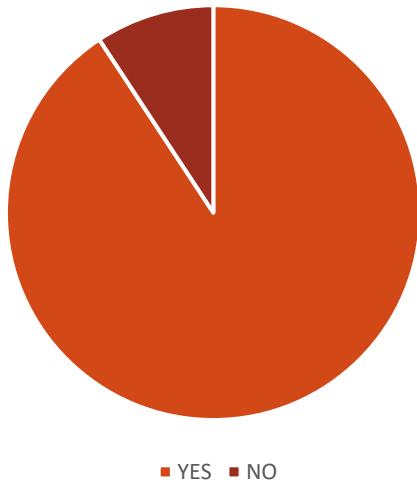


Figure 6

“There is a need to improve legislation for veterinary best practices, especially environmental regulation for wildlife sustainable use and trade, but animal protection associations are strongly against wildlife management practices for use and trade, as they consider these activities unethical. Health certificates, import/export controls, quarantines and other trading health controls are in force, as they are for domestic animals. Criteria are constantly being updated according to demand. However, Veterinary Services are not responsible for tackling illegal wildlife introductions or for defining their destinations and marketplaces control. Specific regulations for best practices in wildlife sustainable use must be defined by environmental agencies. Although veterinary services are not part of the environment agencies they could still support the development of regulations through collaboration’..”

Key Partners

Respondents worldwide identified Veterinary Services (95% of responses) and the wildlife/national park/environment sector (95% of responses) as **key partners to involve in establishing an integrated wildlife health management system** (including epidemiological surveillance in wildlife and health monitoring of wildlife trade and use) (Figure 7). Law enforcement/customs sector (35%) and universities/research institutes (33%) came in third and fourth positions, and the human health sector in fifth position, with 28% of respondents indicating that they were a key partner. Interestingly, the human health sector was not one of the top three most mentioned partners, despite the promotion of the One Health approach. While the two most mentioned key partners were the same in all regions, there were differences for the others.

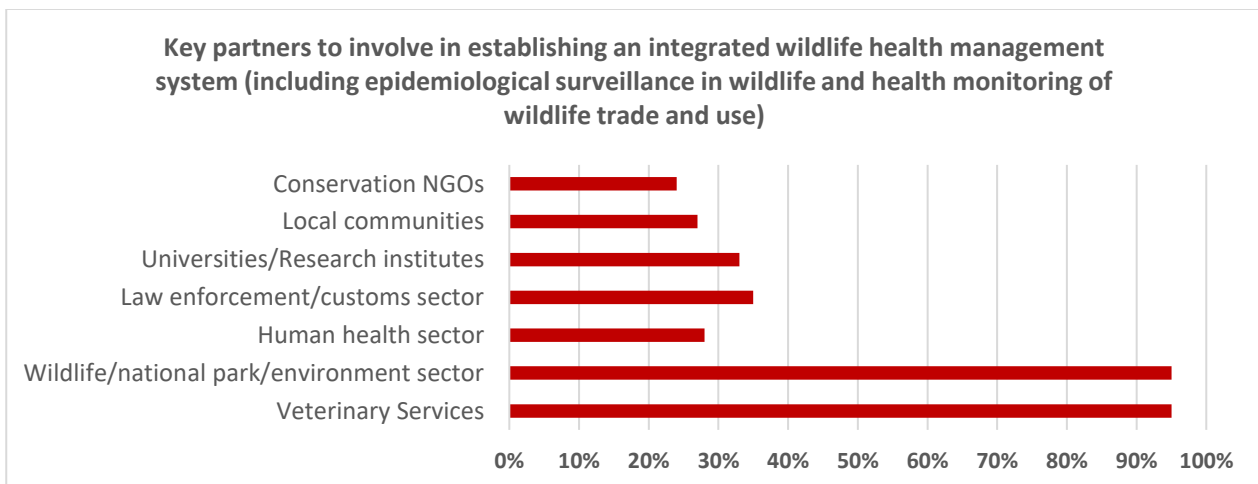


Figure 7

In the Africa region, the third most frequently cited key partner was the law enforcement sector (52%), which was the least important for the Asia & Pacific Region (19%) (Annex 1). In the Americas region, the human health sector (32%) and conservation NGOs (32%) were the third most frequently cited key partners, whereas, in the Europe region, conservation NGOs were the least mentioned key partners (11%). In the Asia & Pacific and Europe regions, the third most frequently mentioned key partners were universities and research institutes (38% and 46%, respectively), while in the Africa region they were the least mentioned (23%). These disparities between regions reflect the differences in organisation of regional stakeholders, number of partnerships already in place, and overall approach to wildlife health management.

Local communities were chosen by 1 in 3 respondents in all regions (except in the Americas region, with only 11%). This result is consistent with the results of the previous question, where better involvement of local communities in wildlife surveillance was the factor the least selected by respondents.

Key stakeholders

In regards to zoonotic risks **awareness, advocacy and engagement** in the establishment of an integrated wildlife health management system, the three key stakeholders that most OIE Members said should be a target were: national and local decision-makers on veterinary and public health policies (82% of responses), technical staff from other sectors (81% of responses) and hunters and poachers (67%) (Figure 8). The fourth and fifth most frequently cited stakeholders were livestock and game farmers (64%) and forest/rural communities (50%). Globally, high-level decisions makers, technical staff, and stakeholders located at the interface with wildlife are important groups to reach out to in terms of communication and awareness activities. It is interesting to note that if rural communities are not a priority for partnership, they still are a priority for engagement and awareness-raising activities. It could be interesting to assess what role Veterinary Services think local communities should play in wildlife surveillance systems.

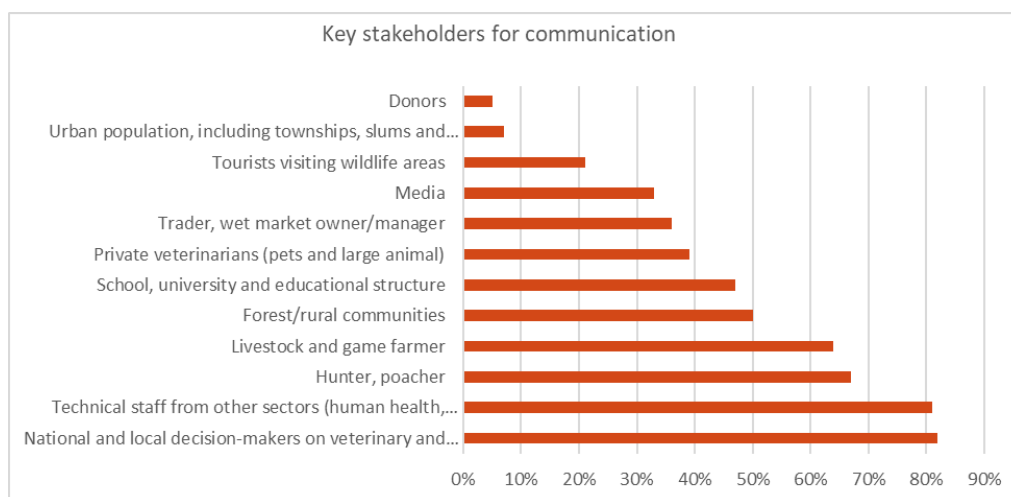


Figure 8: Key stakeholders to target by Veterinary Services for zoonotic risks awareness, advocacy and engagement in the establishment of an integrated wildlife health management system

The hunter/poacher category represents 91% of responses in the Europe Region, meaning that they were the stakeholders most frequently cited as being the most important stakeholders to engage in communication and awareness-raising activities, followed by national and local decision-makers

In the Asia & Pacific region, traders were mentioned by 59% of respondents, which is 20% more than the global average. For the Asia & Pacific, Americas and Africa regions, the most important key stakeholders were technical staff from other sectors, with almost 9 in 10 responses, whereas in Europe, only 59% of respondents indicated that they were the most important.

“Private veterinarians (pets, and large animal)” – worth considering “Private veterinarians (wildlife, zoo animals)” in this category or in a separate category. [...] If the integrated wildlife health management system includes “pathogen screening of healthy wildlife” then would add university sector as a key stakeholder.”

“One that is missing is border control agencies.”

“The buyers of wildlife for pets. Urban areas in regions with endemic wildlife (because they make the demand). Markets (because they are part of the supply chain and where the wildlife is offered)”

It is interesting to note that, worldwide, donors and the urban population ranked last, with 5% and 7% of responses respectively. Donors were not even mentioned in the Americas region, even though sustainable funding was mentioned as one of the top three criteria for ensuring proper and sustainable wildlife health surveillance. The urban population leads market demand for wildlife products and by-products, so it is indeed interesting that most respondents did not consider them important targets for communication.

Animal products

With regards to **animal products** that should be included in the health management system of **wildlife trade and use**, the most frequently selected products were: meat (92%), hides, skins, furs, feathers, scales and claws (71%) and organs and body fluids (49%) (Figure 9). Regional differences are important here, since practices in terms of human use of wildlife and wildlife products and by-products (consumption/traditional medicine/trophies) differ greatly depending on the region.

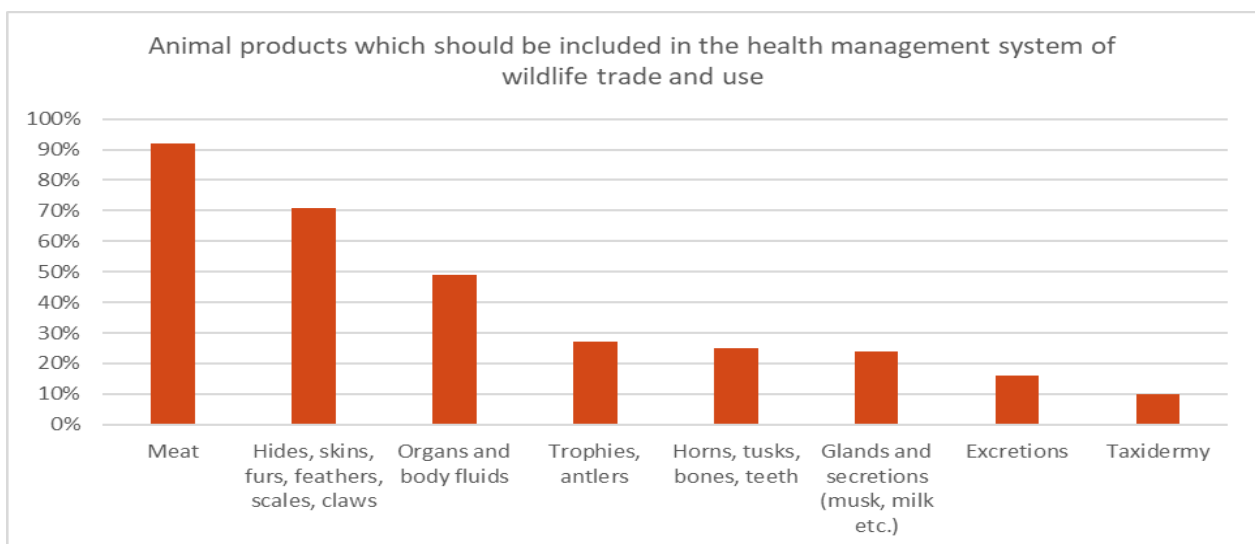


Figure 9

In all regions, meat was the animal product that most participants said should be included in the health management system of wildlife trade (Annex 1). Hides, skins, furs, feathers, scales and claws were the second most cited animal products for Africa (86%), Europe (67%) and the Americas (71%). In Asia & the Pacific, organs and body fluids (73%) were the second most cited animal product. Trophies and antlers were mentioned by 37% of respondents in the Africa region and 34% in Europe, but only 8% in the Asia & Pacific region. Taxidermy represented 21% and 11% of responses in the Americas and the Africa regions respectively. More investigation based on risks related to these different categories of products, and on the weight of trade associated with them, needs to be done to refine these results to support the development of potential guidelines.

“Taxidermy should be included with the trophies. Depending on the disease in question, it would be appropriate to make an assessment in terms of listing risk material by looking at trade volumes and trade flows for each of the products.”

“[...] Ideally a disease risk assessment would inform which animal products should be included in the health management system for each country, which will also depend on the wildlife species being traded or used.”

Wild animals

Respondents indicated that wild birds (90%), bats (49%) and wild pigs (48%) are the wild animals (families) that should be targeted by **surveillance programmes involving wildlife** (Figure 10). These numbers diverge depending on the region and on where these animals are located and if they were/are the source of an epidemic.

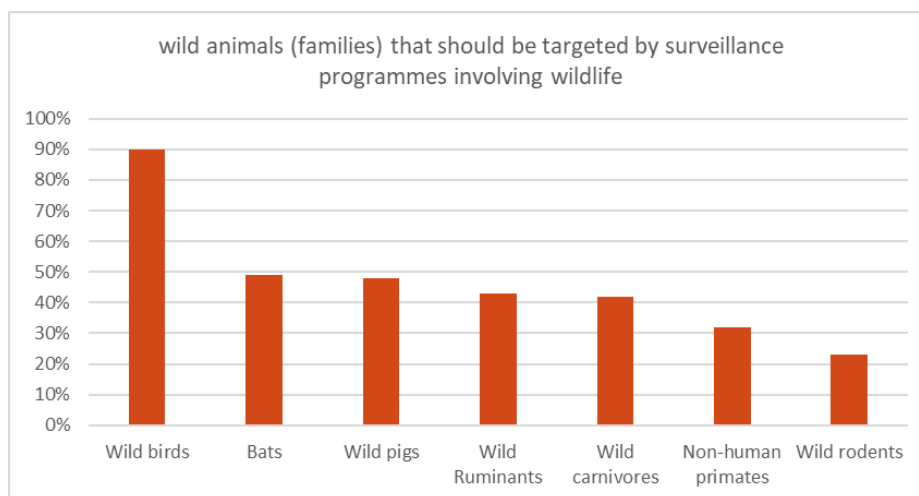


Figure 10

In all regions, the animals most frequently selected as being amongst the most important were wild birds, but for other species there was regional variation in how often they were selected. For example, the second most frequently mentioned animal in Europe was wild pigs (74% of responses compared with only 50% in the global responses), while in the Asia & Pacific region it was bats (85% of responses compared with 61% in the global responses) (Annex 1). Wild carnivores represented only 11% of responses from the Americas region, versus 43% in the global responses, and 63% in the Europe region. The non-human primate category represented 59% of responses for the Africa region, but only 4% for the Europe region, which makes sense, since non-human primates are rather rare in European forests. Ticks and mosquitoes (as vector species for vector-borne diseases), wild/feral horses, species involved in aquaculture (fish), and crocodiles were also mentioned in the comment section.

“There is no buffer zone between protected wildlife areas and riverside villages, so there is almost daily contact between fauna, animals and humans at its interfaces”

The distribution of responses is aligned with the general regional population distribution of targeted animals. It is interesting to note that rodents¹, while being recognised for being vectors of diseases (plague, lassa fever...) came last in the list. This suggests that Veterinary Services are oriented toward animals and diseases that could affect livestock and may have an economic impact on animal trade and the economy.

Emerging diseases

Worldwide, respondents indicated that influenza (89% of responses), SARS-CoV-2 (COVID-19) (60%) and Ebola Virus disease (28%) are the **emerging diseases** that pose a risk for **spill-over from wildlife to humans** and that should be, or are, targeted by surveillance programmes that integrate wildlife at the human–livestock–wildlife interface (Figure 11).

Influenza and COVID-19 were the first choices for all regions (Annex 1): influenza was selected by 9 in 10 respondents, and COVID-19 was selected by between 5 in 10 and 8 in 10 respondents. However, the disease in third position was different depending on the region: Ebola in the Africa region (6 in 10 responses); Ebola and SARS in the Americas region (2 in 10 responses); Nipah in the Asia & Pacific region (4 in 10 responses); and SARS in the Europe region (2 in 10). Hendra, which represents only 2% of the responses, was mentioned by only two regions: the Americas and Asia & Pacific.

This variation could be due to the natural history of emerging diseases in each region, how they have been affected, or how the risk of the occurrence of such disease is perceived. The interest in influenza most likely reflects the recent experiences of Veterinary Services with the H5N1 panzootic and the occurrence of other avian influenza viruses in wild birds which are perceived as a threat to poultry and public health, and the position of COVID-19 reflects worldwide concerns about the current pandemic and its consequences, even though the animal source is still unknown.

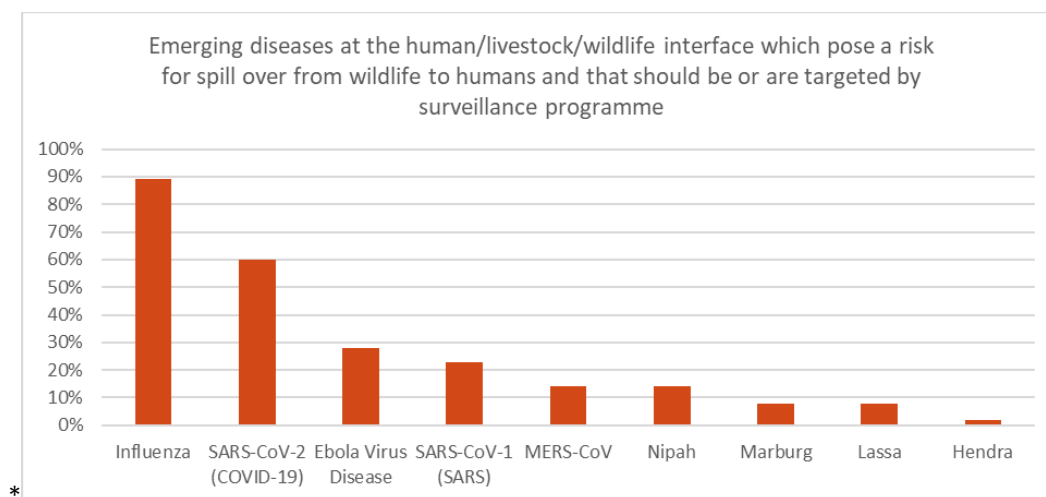


Figure 11

¹ <https://pubmed.ncbi.nlm.nih.gov/11799818/> and <https://books.google.fr/books?hl=en&lr=&id=JUtaDwAAQBAJ&oi=fnd&pg=PT113&dq=rodents+as+disease+vectors&ots=ydwkGw0En0&sig=0BPV6jC-IgRHgxqqla-6dGnfOP4#v=onepage&q=rodents%20as%20disease%20vectors&f=false>

In the comment section, several other diseases were mentioned as priorities for disease surveillance in wildlife. They included rabies (mentioned 40 times), TB (mentioned 11 times), trichinellosis (mentioned 10 times) and brucellosis (mentioned 9 times). However, not all of them are considered as emerging disease, and they primarily affect livestock.

Members' expectations

OIE Members' expectations of the OIE, in terms of support for actions related **to epidemiological surveillance in wildlife and health monitoring of wildlife trade and use** are mainly: 1. Standards and Guidelines (76%), 2. Legislation Support (48%) and 3. Training/Capacity building (36%) (see Figure 12). In all regions, they were in the top three expectations, except for the Asia & Pacific region, where PVS came in third position (28%) (Annex 1). In the Africa region, legislation (80%) came first, while it was in third position in Europe (28%). In the Asia & Pacific region, training was ranked the lowest of the top three, with 21% of responses, while in the Africa region it was ranked the highest (45%). Advocacy came in fourth or fifth position for all regions, except Asia & the Pacific.

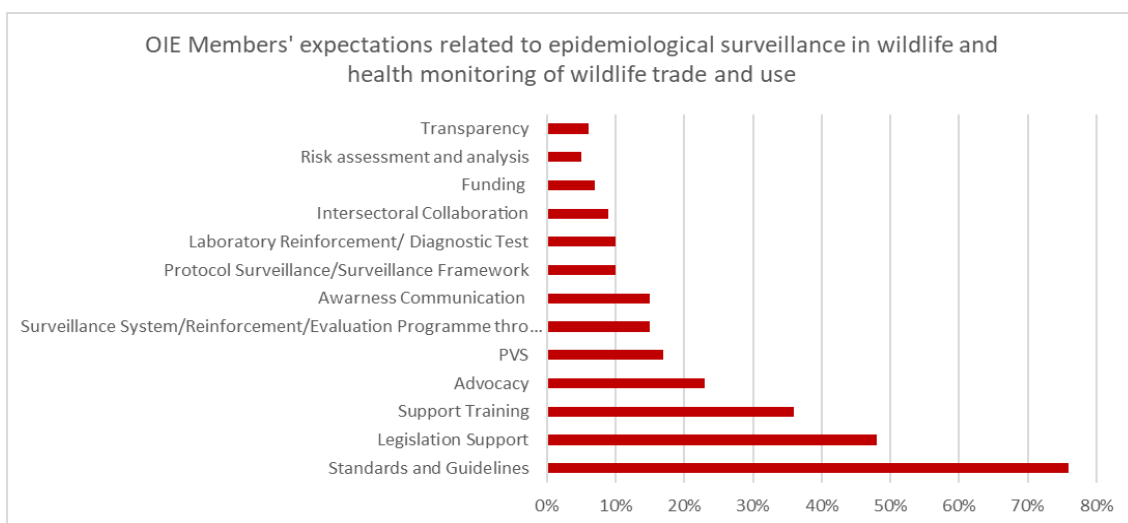


Figure 12

More investigation is needed to determine precisely what is needed, especially regarding legislation (support for legislation implementation, legislation development and legislation update were mentioned). Further investigation is also needed to identify precise training needs, since various topics related to wildlife health, from diagnostic development to epidemiology and surveillance systems, were cited. The top three expectations, and most of the others, have been included in the OIE Wildlife Health Framework.

“There is a need for continued standard setting on capacity building of Veterinary Services in the management of wildlife diseases, surveillance and control”

■ Conclusion and recommendations

While the vast majority of OIE Members agree on the importance of the involvement of Veterinary Services in the establishment of wildlife health management and surveillance systems, needs and priorities differ depending on the OIE region. Differences between regions include in ecology and geography, economies, the nature of the agriculture sector, cultures, collaboration mechanisms, the surveillance and health management systems, and the partnership landscape. It will be important to ensure that regional disparities are reflected in the OIE's activities. This will allow the OIE to better address the needs of its Members, enabling them to better integrate wildlife health issues into their core activities, while also implementing global guidelines and standards.

The interplay between Veterinary Services and wildlife authorities in managing wildlife health is complex, and varies amongst Members, particularly with regards to which entity has the mandate to oversee wildlife health. Therefore, the nature of their collaboration and the involvement of Veterinary Services in wildlife health management must also be considered when planning activities.

In terms of advocacy, communication and awareness-raising activities, the most important stakeholders for Veterinary Services and partners to target are high level decision makers and policy makers, technical experts from different sectors, and stakeholders directly in contact with wildlife (hunters, conservationists etc.). Therefore, it is particularly relevant to address the wildlife health issue at the human–animal–ecosystem interface.

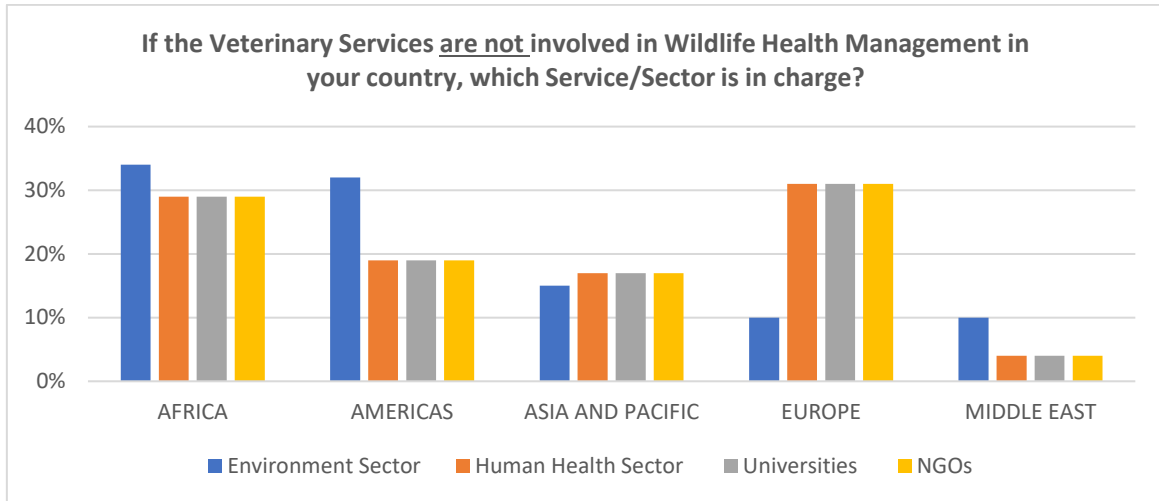
Legislation to support the implementation of the wildlife health mandate is needed by most Members and, where it is already in place, it often needs to be revised to better integrate a wildlife health mandate.

The most important enabling factors for wildlife surveillance and monitoring are sustainable funding, coordination with partners, and legislation. OIE Members' expectations of the OIE primarily concern standards and guidelines, legislation and training. The fact that birds and influenza are priorities for wildlife surveillance identifies a need to broaden the perspective on wildlife, and the fact that, for many OIE Members, wildlife is seen as a threat to livestock and public health shows that some additional work needs to be done to change this perception. Awareness and communication activities are needed to convey the message that wildlife provide tangible benefits, perform necessary functions and add inherent value to the ecosystems we share.

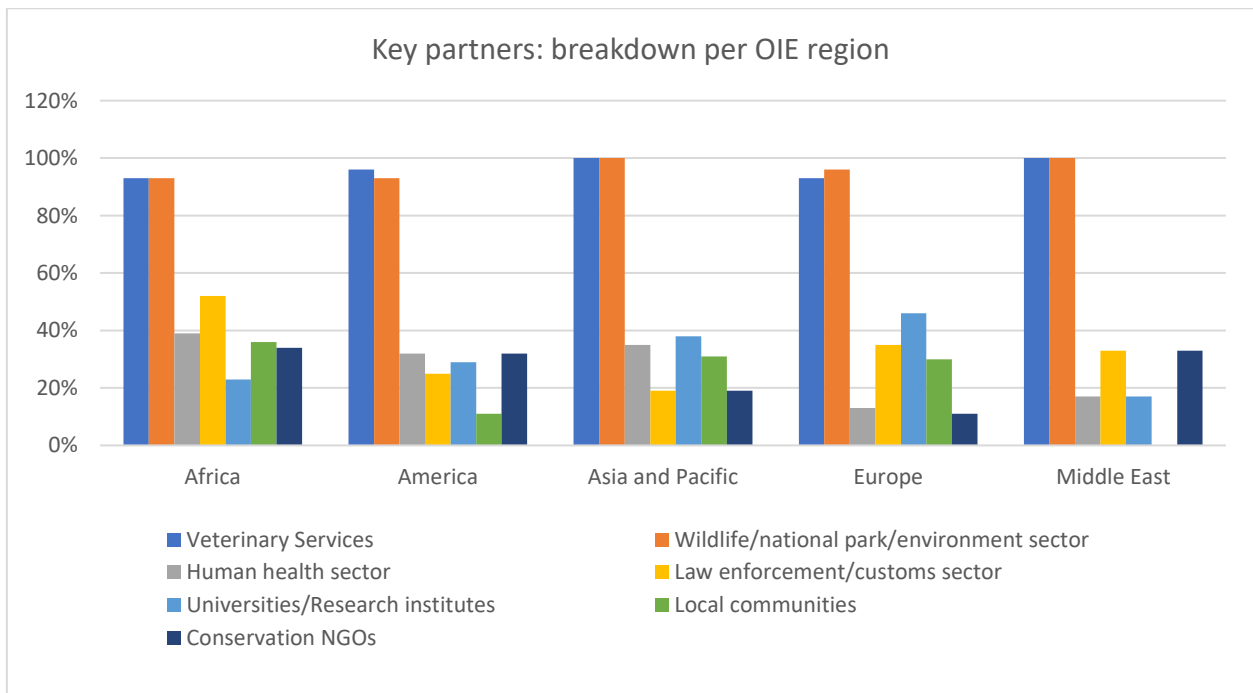
As a next step, these findings are going to be integrated into the concept note for a Wildlife Health Framework.

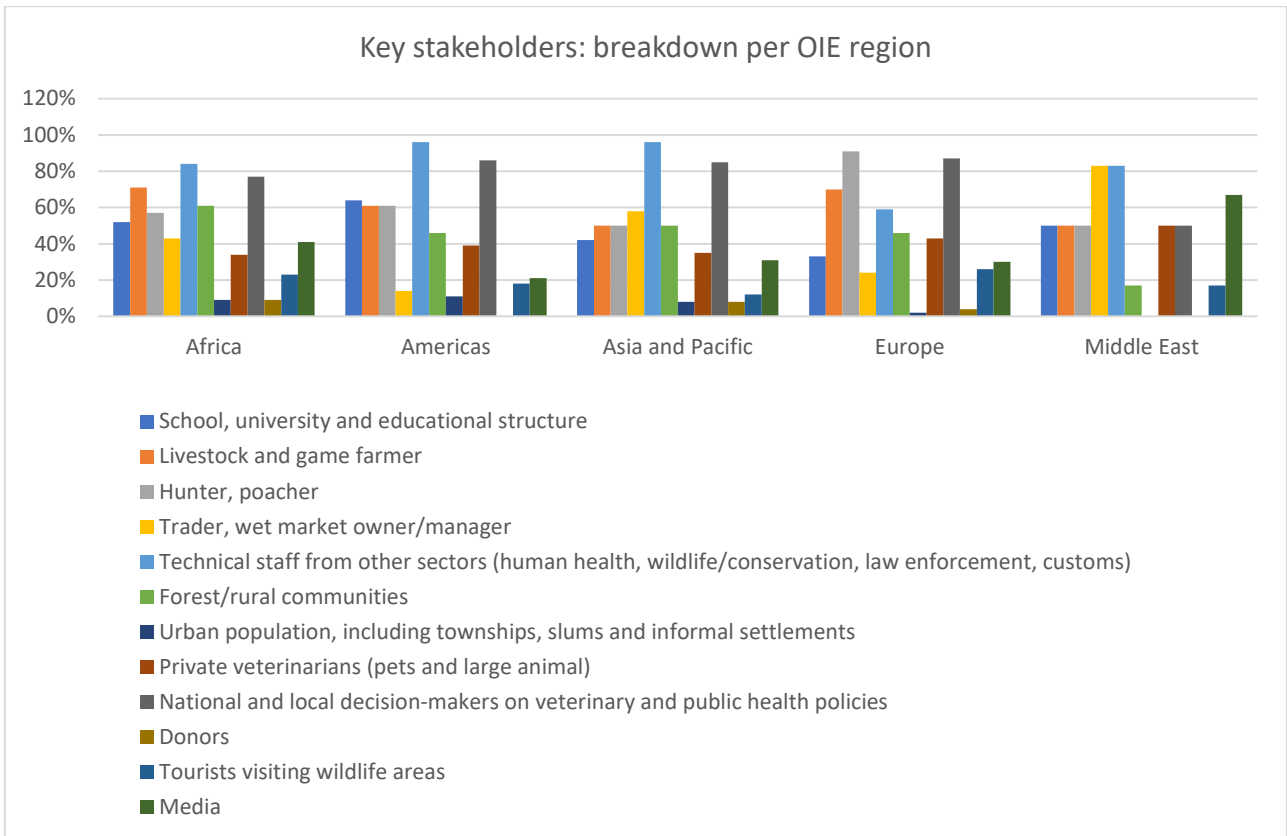
Annex 1: Results per region

Question 3: Are Veterinary Services involved in wildlife health management in your country?

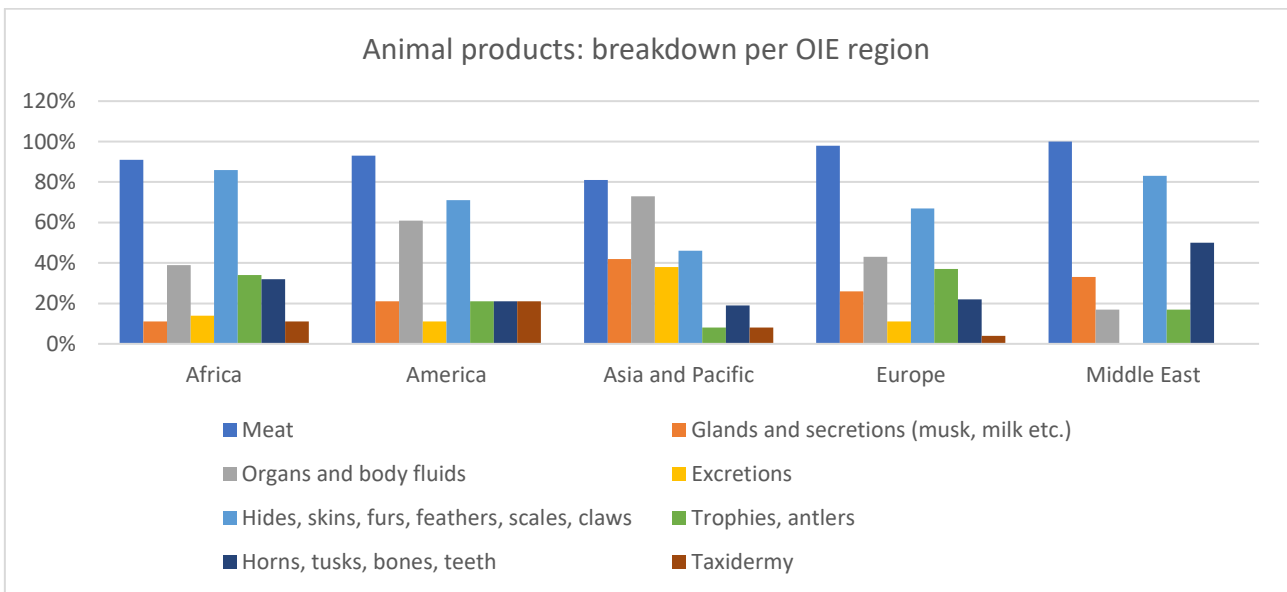


Question 10: From the Veterinary Authority's point of view, who do you think would be the key stakeholders to target for zoonotic risks awareness, advocacy and engagement in the establishment of an integrated wildlife health management system in your country? (Please select the five most important key stakeholders)

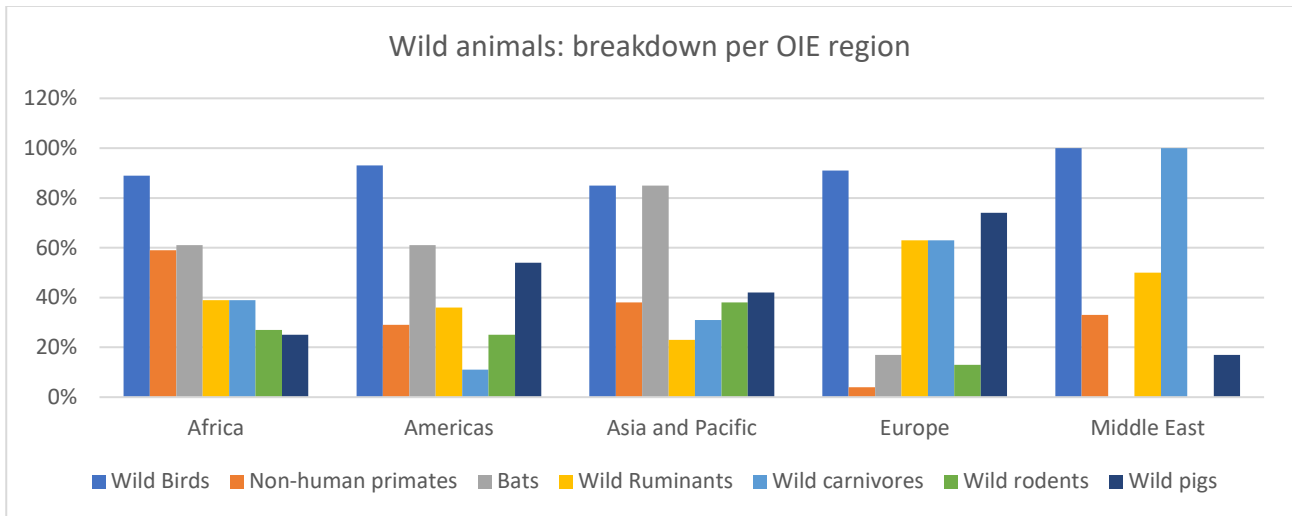




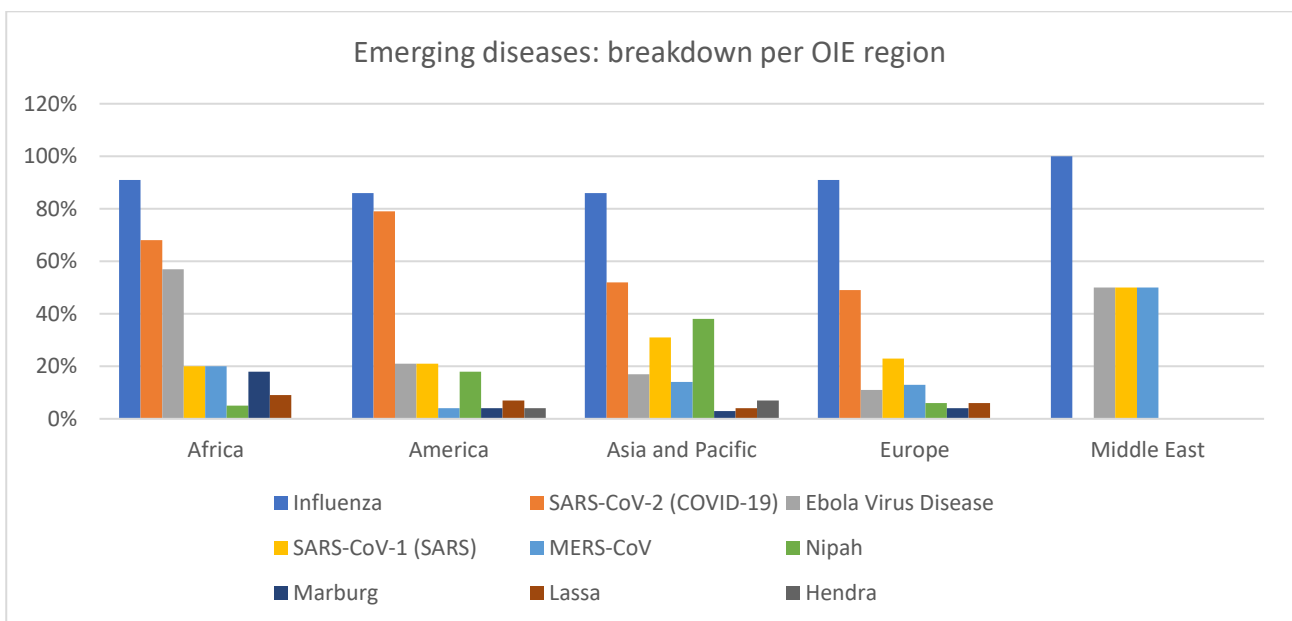
Question 11: In the context of emerging diseases in your country, from the Veterinary Authority's point of view, what are the animal products which should be included in the health management system of wildlife trade and use? *(Please select the three most important products)*



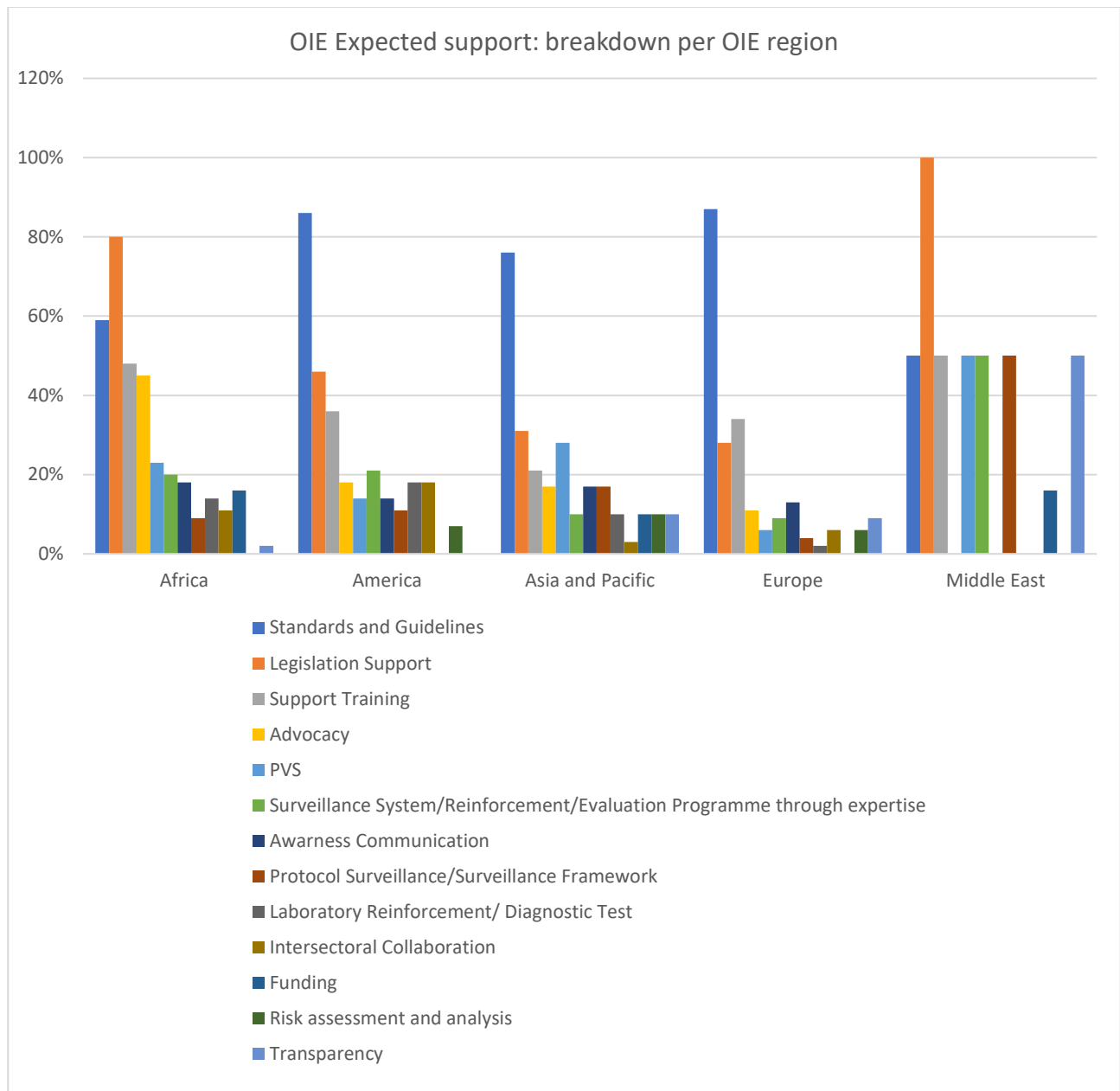
Question 12: In the context of surveillance for emerging diseases in your country, from the Veterinary Authority’s point of view what wild animals (families) should be targeted by surveillance programmes involving wildlife? *(Please select the three most important animal categories)*



Question 13: From the Veterinary Authorities’ point of view, in your country, what are the emerging diseases at the human/livestock/wildlife interface which pose a risk for spill over from wildlife to humans and that should be or are targeted by surveillance programmes integrating wildlife? *(Please select the three most important diseases)*



Question 14: How do you expect the OIE to support your actions related to epidemiological surveillance in wildlife and health monitoring of wildlife trade and use (ex. Standards and guidelines, PVS pathway, advocacy, legislation support etc...)?



Annex 2: Wildlife Health Survey questionnaire

1. Could you indicate your country?

2. Could you indicate your contact email?

3. Are Veterinary Services involved in wildlife health management in your country?

- Yes
- No (Please specify below which government authority (or other body outside government) is involved in wildlife health management?)

4. From the Veterinary Authority's point of view, do you think the Veterinary Services should be involved in the **epidemiological surveillance of diseases in wildlife** at the human/animal/ecosystem interface?

- Yes
- No (please explain why below)

5. What are the most important factors for the Veterinary Services of your country in conducting **epidemiological disease surveillance in wildlife** to better anticipate, prevent and manage emerging diseases? (Please score 1=most important to 3=less important)

	1	2	3
• Relevant legislative or/and regulatory framework to enable the Veterinary Services to carry out disease surveillance in wildlife	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Functional wildlife epidemiological surveillance system integrated with the domestic animal diseases surveillance systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Direct and continuous collaboration with stakeholders working in the wildlife sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Formal mechanism to support multisectoral collaboration such as “One Health Platforms”	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Better involvement of local communities living near wildlife habitat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Establishment of a national network of wildlife experts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Sustainable governmental funding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Better knowledge of diseases and mechanisms of transmission	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Dissemination and translation of research results into practical recommendations and relevant policies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

• Other factor (please specify):

6. From the Veterinary Authority’s point of view, do you think the Veterinary Services have a role to play in the **health monitoring of wildlife trade and use** (‘trade’ includes capture, handling, transport, wild animal farming, marketing, export/import)?

- Yes (please explain which aspects below)
- No (please explain why below)

7. What would be the most important enabling factors for the Veterinary Services of your country in implementing a system for **health monitoring of wildlife trade and use** ('trade' includes capture, handling, transport, wild animal farming, marketing, export/import)? (Please score 1=most important to 3=less important)

	1	2	3
• Establishment of a relevant and appropriate legislative or/and regulatory framework to enable Veterinary Authority to manage the health surveillance of live wildlife and safety of wildlife products in markets and game farms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Direct and continuous collaboration with stakeholders from the wildlife sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Direct and continuous collaboration with law enforcement (customs, police, ecological authorities...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Provision of OIE guidelines and standards on wild animal farm or market-based monitoring of wildlife health or wildlife products safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Increased awareness of local communities and stakeholders working on wildlife issues	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Sustainable governmental funding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Other enabling factor (please specify)			

8. Is there a need to have a legislative framework to support the implementation of veterinary best practices in wildlife trade and use (including health certificates, management of legal or illegal introductions, quarantines, market health issues...) in your country?

- Yes
- No (please explain why)

9. From the Veterinary Authority's point of view, who do you think would be the key partners to involve in establishing an integrated wildlife health management system (including epidemiological surveillance in wildlife and health monitoring of wildlife trade and use)? *(Please select the three most important key partners)*

- Veterinary Services
- Wildlife/national park/environment sector
- Human health sector
- Law enforcement/customs sector
- Universities/Research institutes
- Local communities
- Conservation NGOs
- Other (Please specify)

10. From the Veterinary Authority's point of view, who do you think would be the key stakeholders to target for zoonotic risks awareness, advocacy and engagement in the establishment of an integrated wildlife health management system in your country? *(Please select the five most important key stakeholders)*

- School, university and educational structure
- Livestock and game farmer
- Hunter, poacher
- Trader, wet market owner/manager
- Technical staff from other sectors (human health, wildlife/conservation, law enforcement, customs)
- Forest/rural communities
- Urban population, including townships, slums and informal settlements
- Private veterinarians (pets and large animal)
- National and local decision-makers on veterinary and public health policies
- Donors
- Tourists visiting wildlife areas
- Media
- Other (please specify)

11. In the context of emerging diseases in your country, from the Veterinary Authority's point of view, what are the animal products which should be included in the health management system of wildlife trade and use? *(Please select the three most important products)*

- Meat
- Glands and secretions (musk, milk etc.)
- Organs and body fluids
- Excretions
- Hides, skins, furs, feathers, scales, claws
- Trophies, antlers
- Horns, tusks, bones, teeth
- Taxidermy
- Other (please specify)

12. In the context of surveillance for emerging diseases in your country, from the Veterinary Authority's point of view what wild animals (families) should be targeted by surveillance programmes involving wildlife? *(Please select the three most important animal categories)*

- Wild birds
- Non-human primates
- Bats
- Wild ruminants
- Wild carnivores
- Wild rodents
- Wild pigs
- Other (please specify)

13. From the Veterinary Authorities' point of view, in your country, what are the emerging diseases at the human/livestock/wildlife interface which pose a risk for spill over from wildlife to humans and that should be or are targeted by surveillance programmes integrating wildlife? *(Please select the three most important diseases)*

- SARS-CoV-1 (SARS)
- SARS-CoV-2 (COVID-19)
- MERS-CoV
- Ebola Virus Disease
- Marburg
- Lassa
- Influenza
- Hendra
- Nipah
- Other (please specify)

14. How do you expect the OIE to support your actions related to epidemiological surveillance in wildlife and health monitoring of wildlife trade and use (ex. Standards and guidelines, PVS pathway, advocacy, legislation support etc...)?

15. Do you have any other comments?