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CURRENT ANIMAL HEALTH SITUATION WORLDWIDE: ANALYSIS OF EVENTS AND TRENDS

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This report has been prepared based on the notifications and reports that countries submitted to the OIE via the World Animal Health Information System (WAHIS) for the period 2020 and up to and including 25 January 2021. The report begins with an analysis of several indicators of Members' reporting and transparency. This is followed by a description of the global situation regarding four diseases and infections of major interest, for which epizootic situations were observed in 2020 and early 2021, namely infection with African swine fever (ASF) virus, infection with highly pathogenic avian influenza (HPAI) virus, infection with lumpy skin disease (LSD) virus, and infection with SARS-CoV-2 in animals. Please note that due to the transition to the new OIE-WAHIS platform, countries did not have the possibility to submit information through six-monthly reports for 2020. This report is therefore based solely on immediate notifications and follow-up reports, which are submitted to the OIE only in the context of exceptional epidemiological events. The report ends with a progress report on OIE-WAHIS updated on the 17th March 2021.

1. Indicators of Members' reporting and transparency

According to the provisions of Chapter 1.1. of the OIE *Terrestrial Animal Health Code* (*Terrestrial Code*) and the *Aquatic Animal Health Code* (*Aquatic Code*), OIE Members are required to send an immediate notification of any of the exceptional events described in the OIE *Terrestrial Code* and *Aquatic Code*. However, this requirement has not always been complied with. After an immediate notification is submitted, weekly follow-up reports are also required, to provide further information on the evolution of the event that justified the notification. Follow-up reports should continue to be submitted until the disease has been eradicated or the situation has become stable.

The new OIE-WAHIS was designed not only to increase the ease and efficiency of reporting by countries, but also to ensure the reported data are more detailed, more accurate and consequently more transparent. The new system includes functionalities that will facilitate reporting and improve the quality of the data reported. Numerous data entry fields have been standardised and business rules have been implemented to guide Focal Points when entering data. Some of these features include user-guided data entry using dropdown menus and tooltips. Interoperability features will help to facilitate reporting by avoiding the need for double data entry and will also increase data quality by decreasing the potential for human error during the process of re-entering the data.

This section of the report analyses WAHIS data using several indicators to assess the global animal health situation, evaluate transparency of reporting and identify gaps in reporting. We evaluated the trends in reporting by countries using immediate notifications and follow-up reports submitted through WAHIS from 2013 to 2020 inclusive. We also evaluated disease distribution and the quality of WAHIS data in recent years, and especially for the period between 1 January 2020 and 25 January 2021. Finally, the impact of some OIE activities on reporting is described. Several areas for improvement are also highlighted throughout the section.

Early warning reports

Over the past eight years, the OIE has seen an upward trend in the number of early warning reports (immediate notifications and follow-up reports) received each year (Figure 1). This trend can be attributed both to developments in the global animal health situation (specifically related to HPAI and ASF in recent years) and to increased transparency on the part of countries. Additionally, the *Terrestrial* and *Aquatic Codes* also allows countries to report by zone. Many European countries are currently notifying diseases by zone in order to facilitate trade.

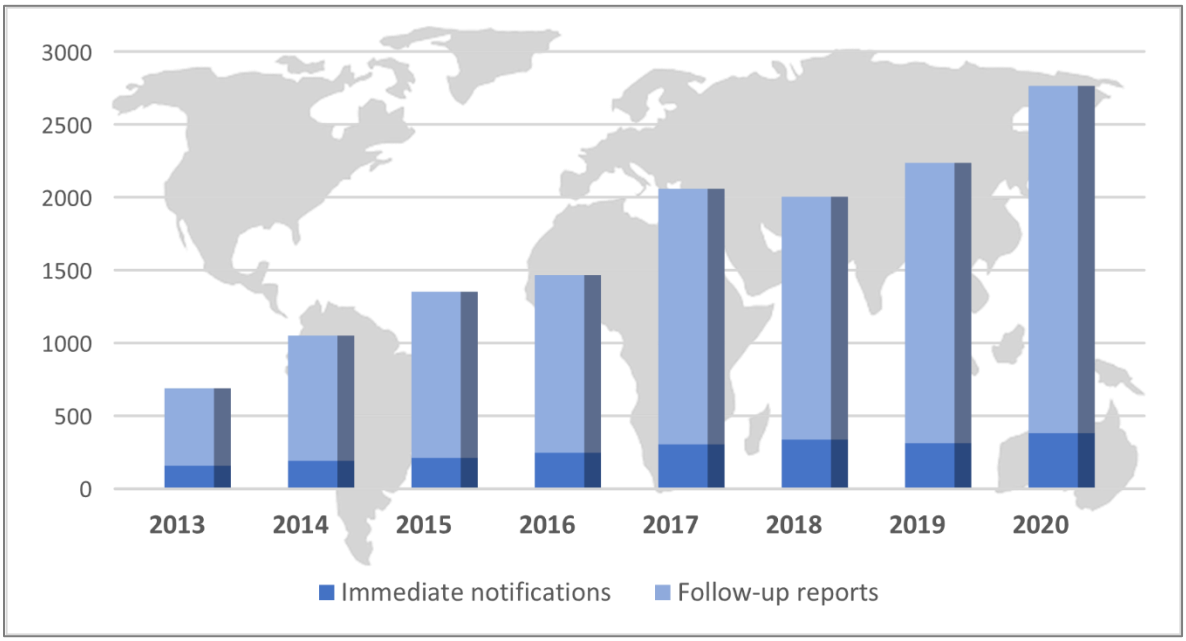

Figure 1. Number of immediate notifications and follow-up reports from 2013 to 2020.

Distribution of diseases

During the period from 1 January 2020 to 25 January 2021 alone, a total of 3 011 immediate notifications and follow-up reports from 113 countries relating to 66 different diseases were published. The majority (2 964 or 98%) were reports on terrestrial animal diseases ('terrestrial reports') while only a few (57 or 2%) were reports on aquatic animal diseases ('aquatic reports').

Of the 57 aquatic reports submitted, 20 (35%) were immediate notifications. Koi herpesvirus (5 reports) comprised 25% of all aquatic immediate notifications during this period, while epizootic ulcerative syndrome (2 immediate notifications) and crayfish plague (2 immediate notifications) each comprised 10% of all aquatic immediate notifications reported.

A single immediate notification was received for each of 11 other aquatic diseases[1], accounting for 55% of all aquatic immediate notifications reported. The low number of aquatic reports indicates the continuing need for Members to increase their efforts to report aquatic disease events through OIE-WAHIS.

The most frequently reported terrestrial diseases are shown in Figure 2. From 1 January 2020 to 25 January 2021, HPAI accounted for the most immediate notifications (38%), over half of which were reported in poultry, followed by ASF (16%), SARS-CoV-2 (5%), and bluetongue and LSD (4% each). Countries reporting SARS-CoV-2 through WAHIS did so as an emerging disease.

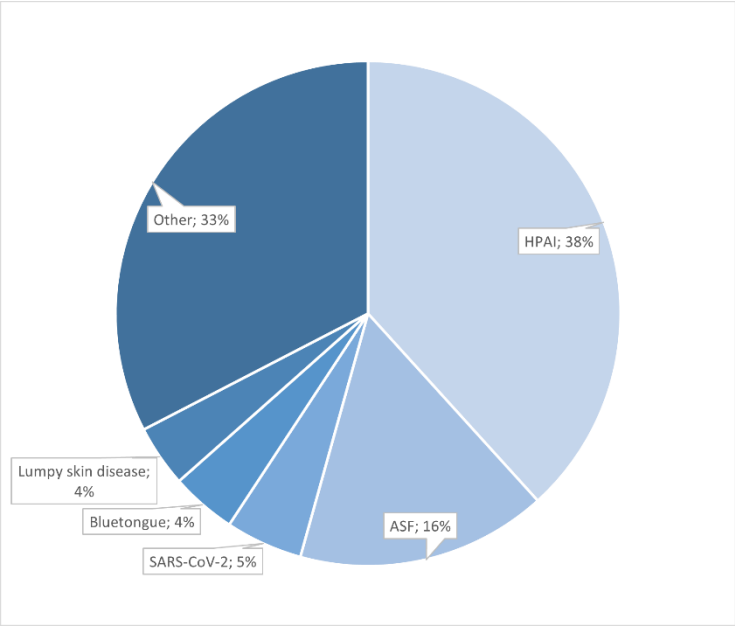

Figure 2. Terrestrial diseases most frequently reported through immediate notifications (2020 and early 2021).

The increased reporting of ASF and HPAI over the last few years resulted in the OIE deciding to prepare and publish reports on the global status of ASF, the status of ASF in Asia and the global status of HPAI. All these reports continue to be published on a regular basis and updated to reflect the current disease situation. Moreover, on a weekly basis, the OIE is also updating the "Events in animals" page on the COVID-19 Portal[2], to include the most recent reports of SARS-CoV-2 in animals received from Members.

[1] Acute hepatopancreatic necrosis disease, decapod iridescent virus 1 (DIV1) infection, infection with ranavirus, infectious haematopoietic necrosis, infectious hypodermal and haematopoietic necrosis, necrotising hepatopancreatitis, ostreid herpesvirus 1 microvariant, spring viraemia of carp, viral haemorrhagic septicaemia, tilapia lake virus, white spot disease

[2] Events in animals: OIE - World Organisation for Animal Health

Active search activities

In 2020, the OIE's active search activity for non-official animal health information was mainly transferred to the WHO Epidemic intelligence from Open Source (EIOS) platform, which has recently integrated at a trial stage the Global Early Warning and Response System (GLEWS), a Tripartite collaboration on early detection. The OIE is also using the Australian government's Intelliriver platform, to follow up on specific events. Apart from EIOS, the OIE continues to use other specific sources of information such as the European Union Animal Disease Notification System, the OIE's network of Reference Laboratories, the GLEWS network and the network of OIE regional offices. In 2020, the OIE processed information from over 100 000 media reports tracked worldwide.

In 2020, the OIE active search activity resulted in the submission of 39 immediate notification reports corresponding to 10.2% of all the immediate notifications received during the year. This active search activity resulted in the submission of 18% of all immediate notifications received by the OIE in 2019 and 10% of all immediate notifications received in 2018. As demonstrated by these data, this activity is having a significant impact by increasing the sensitivity of the OIE-WAHIS system and improving international transparency in animal health. The OIE active search activity in 2020 and early 2021 has been particularly important for monitoring the global epidemics of HPAI and ASF, as well as SARS-CoV-2 in animals.

Ultimately, the way OIE Members report animal health data, including the frequency, timeliness, completeness, and accuracy of their reporting, determines the quality and transparency of OIE data. Improvements in data quality will help to better inform animal and public health policy around the world and provide a more reliable basis for risk-based decision.

OIE Observatory

In addition to ensuring transparency of the global animal disease situation, another of the OIE's key activities is to develop international standards for animal health and welfare and to determine how these standards are used by Members through monitoring of their implementation. The OIE has consequently been devising the best means of analysing how Members implement OIE international standards and identifying the difficulties they experience with implementation, so as to assist them more effectively.

One of the main objectives of the OIE Observatory is to ensure that the standards developed are relevant and fit for purpose through defining key indicators for standardised and repeatable analysis of implementation so that the OIE can adapt its capacity-building efforts to assist Members. OIE-WAHIS will be a key source of information for the Observatory as it supports Members and other stakeholders by providing improved accessibility and visibility of data on global animal health.

The Observatory released its first prototype, a Technical Item on the "Required competencies of Veterinary Services in the context of international trade: opportunities and challenges", in 2020. A second prototype, FMD in the Americas, is currently undergoing review and finalisation before publication. In addition, the Observatory has two further prototypes for development in 2021, one on peste des petits ruminants in Africa and the other on avian influenza in Europe.

An upward trend has been noted in the number of immediate notifications and follow-up reports submitted by Members through WAHIS.

Reporting of aquatic diseases continues to be low with only 2% of all immediate notifications and follow-up reports involving aquatic diseases. The OIE encourages its Members to increase their reporting of aquatic disease events through OIE-WAHIS.

In 2020 and early 2021, over half (54%) of all immediate notifications received by the OIE were related to only 2 diseases –HPAI and ASF.

Active tracking has had a significant impact on improving countries' transparency and responsiveness. Tripartite collaboration through the GLEWS network and the use of advanced tools like the EIOS platform are allowing the OIE to improve year by year its capacity to detect and verify relevant non-official information.

The new OIE-WAHIS will facilitate reporting, improve the quality of the data reported and increase the ease and efficiency of reporting by countries, thereby enhancing transparency. Improvements in data quality will help to better inform animal and public health policy and provide a more reliable basis for risk-based decisions.

The OIE Observatory will help to define key indicators for standardised and repeatable analysis of implementation to enable the OIE to ensure that the standards it has developed are relevant and fit for purpose and to adapt its capacity-building efforts to assist Members with implementing these standards. OIE-WAHIS will be a key source of information for the Observatory as it supports Members and other stakeholders by offering improved accessibility and visibility of data on global animal health.

2. Description of the global situation regarding four diseases and infections of major interest

2.1. Infection with African swine fever virus

African swine fever (ASF) has been historically present in Africa (first described in East Africa in 1921[3]), and it has been endemic in Sardinia (Italy) since its introduction in 1978[4]. However, in 2007, an important change in ASF epidemiology occurred, as the disease was detected in Georgia. Since then, an escalation of ASF epidemics has been observed around the world. The disease has spread through Europe, reaching first Armenia and Russia in 2007, then Azerbaijan in 2008, Ukraine in 2012, Belarus in 2013, Lithuania, Poland, Latvia and Estonia in 2014, Moldova in 2016, Czech Republic and Romania in 2017, Hungary, Bulgaria and Belgium in 2018 and then Slovakia and Serbia in 2019. Since 2018, ASF has also spread in Asia. First, in August 2018, ASF was introduced into China (People's Rep. of), and then in 2019 it spread to Mongolia, Vietnam, Cambodia, Hong Kong (SAR-PRC), Korea (Dem. People's Rep. of), Laos, Philippines, Myanmar, Indonesia and Timor-Leste. This epizootic situation is a cause of grave concern for the international community. Meanwhile, ASF has continued to be present on the African continent, where several countries reported its first occurrence, such as Mauritius in 2007, Central African Republic and Chad in 2010 and Mali in 2016. According to the information collected by the OIE, the last occurrence of ASF in the Americas was in the early 1980s and the disease had never been detected in Oceania before 2020. The ASF situation in 2020 and 2021 is described below.

[3] FAO, Recognizing African swine fever, a field manual, http://www.fao.org/3/X8060E/X8060E00.htm

[4] Chris Oura, Overview of African Swine Fever, Merck Veterinary Manual, https://www.merckvetmanual.com/generalized-conditions/african-swine-fever/overview-of-african-swine-fever?query=african%20swine%20fever

The global geographical distribution of ASF, based on the information collected through WAHIS during the period from 1 January 2005 to 25 January 2021, is shown in Figure 3. In 2020 and early 2021, 20 OIE Members in Africa, Asia, Europe and Oceania reported information to the OIE through immediate notifications and follow-up reports for exceptional events, in accordance with the provisions of Article 1.1.3. of the *Terrestrial Code*.

In Africa, Sierra Leone notified the spread of ASF to a new area in the country (Western Rural) in free range backyard swine. The event started in September 2019 (it is therefore not shown in Figure 3) but was notified in 2020. Nigeria notified an unexpected increase in morbidity and mortality in 11 States, with a start date in May 2020. The outbreaks were initially observed in a village and in a large pig farm settlement that was supplying several other pig markets within and outside the country. At least 70 000 pigs died during this event. Finally, recurrences of ASF in specific areas were notified by Namibia (north of the country, starting in April 2020), South Africa (south of the country, starting in April 2020 and then the centre of the country, starting in January 2021, in each case outside South Africa's ASF control zone), and Zambia (north of the country, starting in July 2020). As of 25 January 2021, all these events were still on-going. All of the events in Africa were notified in domestic pigs.

In Asia, a further spread of the disease has been reported. India notified the first occurrence of ASF in the country in January 2020, with 11 outbreaks in villages in the east of the country. This information was communicated to the OIE in May 2020 and no further follow-up reports have been sent since then. As of 25 January 2021, this event was still on-going. Furthermore, four OIE Members each notified the spread of ASF to new areas within the country: Philippines (24 outbreaks in the south of the country, starting in January 2020), Myanmar (one outbreak in Kachin State in the north of the country, in February and March 2020), Russia (three outbreaks in Zabajkal`Skij Kray, near the border with Mongolia, between July and September 2020) and Laos (10 outbreaks in Xayabury, near the border with Thailand, starting in August 2020). As of 25 January 2021, the events in Philippines and Laos were still on-going. Finally, two Members each notified recurrences of ASF in certain areas within the country. Myanmar reported recurrences of ASF in three areas since February 2020, with five outbreaks; as of 25 January 2021, the event in Sagaing was still on-going. China (People's Rep. of) reported recurrences of ASF in 10 areas since March 2020, with 21 outbreaks. As of 25 January 2021, these events were still on-going. In Asia, most events were notified in domestic pigs. Only China (People's Rep. of) and Russia notified cases in wild boar. Even if the progression of the disease in Asia is quite worrying, some success in disease control was observed in China (People's Rep. of) and Vietnam, where the number of ongoing outbreaks and areas affected is progressively reducing.

In Europe, ASF spread to two other Members in 2020. Greece reported the first occurrence of the disease in February 2020. One outbreak was detected in a backyard farm, and control measures were implemented in accordance with European Union and national legislation. Then, Germany reported the first occurrence of ASF in September 2020, in an event consisting of 207 outbreaks in wild boar in the east of the country, near the border with Poland. Germany then notified the spread of ASF to new areas, with 10 outbreaks in Krauschwitz and Rothenburg/O.L. in the east of the country near the border with Poland and Czech Republic, starting in October 2020. As of 25 January 2021, the three events were still on-going. Furthermore, three other OIE Members notified the spread of ASF to new areas: Serbia (56 outbreaks in the east of the country near the border with Bulgaria and Romania, starting in January 2020), Moldova (28 outbreaks in the west of the country near the border with Romania, starting in January 2020) and Poland (2 outbreaks in Wielkopolskie, in the centre of the country, starting in September 2020). As of 25 January 2021, events in these three countries were still on-going. Finally, six Members notified recurrences of ASF in the country or in certain areas. Latvia reported recurrences of ASF through two events, consisting of 353 outbreaks (350 outbreaks in wild boar and 3 outbreaks in domestic pigs). The first event was from January to December 2020. The second event started in January 2021 and was still on-going as of 25 January 2021. Russia reported recurrences of ASF in Kaliningradskaya Oblast (near the border with Lithuania) in January 2020 and in Omskaya Oblast (near the border with Kazakhstan) in November 2020. The two events were notified as having been resolved within one month. Ukraine reported recurrences of ASF in 18 areas, starting in January 2020. The events consisted of 29 outbreaks; as of 25 January 2021, 19 events were resolved and four were still on-going. Poland also notified a recurrence of ASF in the east of the country starting in January 2020, an event that consisted of 658 outbreaks (567 outbreaks in wild boar and 91 outbreaks in domestic pigs). As of 25 January 2021, the event was still on-going. Moldova reported the recurrence of ASF in Hincesti (one outbreak in the centre of the country) between February and April 2020 and Bulgaria notified the recurrence of ASF in Lovec (also one outbreak in the centre of the country) starting in October 2020 and still on-going as of 25 January 2021.

During the period of interest, two Members in Europe (Bulgaria and Greece) reported cases exclusively in domestic pigs, Germany reported cases exclusively in wild boar, while the six remaining Members (Latvia, Moldova, Poland, Russia, Serbia and Ukraine) reported cases in both categories: domestic pigs and wild boar.

Finally, a very significant event in 2020 was the first occurrence of ASF in Oceania. Papua New Guinea reported this event in March 2020. The disease was detected in free-ranging pigs in a village in the centre of the country. This information was communicated to the OIE in March 2020 and no further follow-up reports have been sent since then. As of 25 January 2021, the source of the event remained unknown and the event was still on-going.

As described above, the general ASF situation deteriorated. However, 2020 was also marked by a success, as in October Belgium's self-declaration of ASF free status for all Suidae was published, in compliance with the provisions of the *Terrestrial Code*. Belgium provided documented evidence that: a) a surveillance programme for ASF had been in place for more than three years both in domestic pigs and captive wild pigs as well as wild pigs and feral pigs; b) the last case of a fresh ASF-infected carcass in wild boar (11 August 2019) and the last viral circulation were more than 1 year old; c) imports of pigs and pig products were carried out in compliance with European Union regulations and OIE standards. The country successfully eradicated the disease. Belgium became the second European country to have managed to eliminate the disease in recent years, after the successful eradication carried out by the Czech Republic in 2018. It is important to highlight that, in Europe, Estonia also submitted a self-declaration of ASF freedom in 2018, reporting the country to be free from the disease in domestic and captive wild pigs (while still present in wild boar)[5].

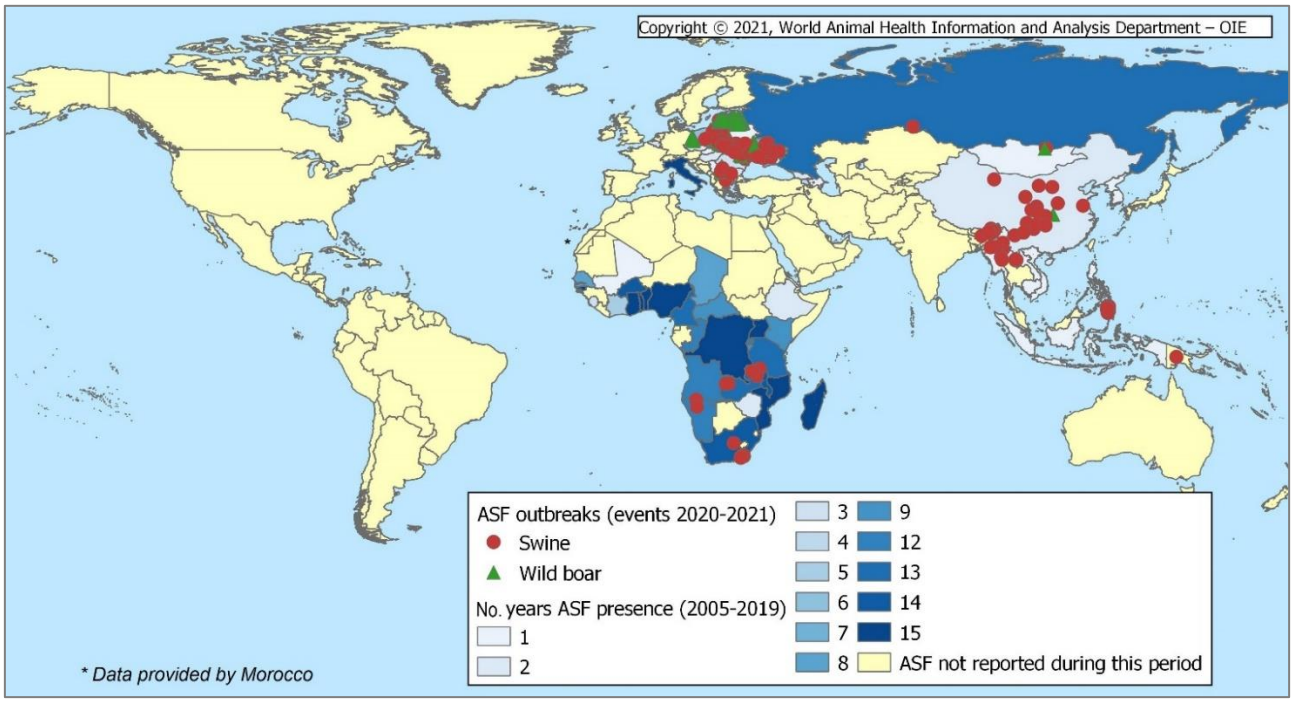

Figure 3. Global distribution of ASF in countries and territories between 2005 and early 2021 (up to 25 January 2021) – *Countries and territories are coloured according to their ASF situation between 2005 and 2019. Superimposed on this are outbreaks reported in 2020 and early 2021 through immediate notifications and follow-up reports.*

[5] https://www.oie.int/fileadmin/Home/eng/Animal_Health_in_the_World/docs/pdf/Self-declarations/2018_09_Estonia_ASF_ENG.pdf

In the current ASF international context, disease prevention, control and eradication necessarily require coordinated global actions. The Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs)[6], a joint initiative by FAO and OIE to provide coordination to achieve the prevention, detection and control of transboundary animal diseases and to address their regional dimensions, has been used first at regional level and then at global level. Under the umbrella of GF-TADs Europe, a Standing Group of Experts on ASF (SGE-ASF) was set up in 2014[7] to build closer cooperation among countries affected by ASF and to enhance transparency and address the disease in a more collaborative and harmonised manner. Based on the SGE-ASF Europe experience, similar initiatives, adapted to the regional context, were launched in Asia (Beijing, China [People's Rep. of]; April 2019[8]) and the Americas (Bogotá, Colombia; November 2019[9]). In addition to addressing their regional concerns about ASF, these initiatives also participated in bridging expertise from different regions. In the context of the European Union, the regional strategic approach was initially drafted in 2015[10] and it has been regularly revised ever since. In 2017, the Regional strategy for the control of African swine fever in Africa was launched jointly by FAO, the African Union–InterAfrican Bureau for Animal Resources (AU-IBAR) and the International Livestock Research Institute (ILRI).

In Europe, the sixteenth meeting of the SGE-ASF Europe took place in November 2020 and provided some draft recommendations on early response and emergency control measures in case of ASF detection in wild boar, known to be one of the main vehicles for disease spread in Europe. The experts pointed out that preparedness, passive surveillance, early detection and prompt reaction are essential actions when ASF is detected for the first time, whether in wild boar or in the domestic pig population. They also emphasised – as Belgium's successful eradication demonstrates – that coordination and cooperation between all relevant stakeholders is essential to control and eradicate ASF. Finally, they recommended that, in the case of the first detection of ASF in a wild boar population, a 'core zone' should be delineated and immediate actions taken to avoid further spread (ban on hunting and feeding; fencing; passive surveillance and carcass removal; reduction of any human activities; active search for carcases; reduction of the wild boar population)[11].

In the Americas, the latest meeting of the SGE-ASF Americas took place in December 2019. At this meeting, the experts recommended, among other actions, that Members in the Americas should: 1) identify potential pathways of disease entry; 2) establish integrated working and cooperation agreements among governments; 3) implement specific training and awareness-raising programmes; 4) share the results of risk assessments; and 5) establish communication and information campaigns.[12]

Finally, in Asia, the fourth meeting of the SGE-ASF Asia took place in April 2020. Several interventions were presented during the meeting and made available on the OIE Regional Representation website[13], including the experience of China (People's Rep of), Korea (Rep of) and Vietnam in ASF outbreak management, and that of Japan in the management of classical swine fever outbreaks. A second part of the meeting was dedicated to the experience of ASF outbreak management in Europe. This meeting highlighted the importance of regional coordination to share knowledge in order to improve disease management capacity at regional and country level.

The work of the GF-TADs Global Steering Committee in empowering global and regional alliances in the fight against transboundary animal diseases, providing capacity building and assisting countries with establishing prevention, preparedness and control programmes is of pivotal importance for the control and eradication of ASF at global and regional level. In this context, at the 87th OIE General Session in May 2019, Resolution No. 33 was adopted unanimously.

[6] http://www.gf-tads.org/
[7] https://rr-europe.oie.int/en/projects/gf-tads-europe/standing-groups-of-experts-on-african-swine-fever-in-europe/
[8] https://rr-asia.oie.int/en/events/launch-meeting-of-the-sge-on-asf-for-asia/
[9] https://rr-americas.oie.int/en/events/standing-group-of-experts-on-asf/
[10] https://ec.europa.eu/food/sites/food/files/animals/docs/ad_control-measures_asf_wrk-doc-sante-2015-7113.pdf
[11] https://rr-europe.oie.int/wp-content/uploads/2020/12/recommendation_sge_asf16_draft.pdf
[12] https://rr-americas.oie.int/en/events/gftads-sge-asf-1stmeeting/
[13] https://rr-asia.oie.int/en/events/meeting-of-sge-on-asf-for-asia/

This Resolution listed 15 recommendations, including that "A global initiative for the control of ASF be launched using the GF-TADs mechanism to develop, improve and harmonise national, regional and global partnerships and coordination to address ASF at the source, enhance prevention and preparedness, minimise adverse impacts on animal health and welfare, international trade, and social wellbeing"[14] . The aforementioned Resolution No. 33 tasked the OIE with working in collaboration with FAO to launch an initiative for the global control of ASF. GF-TADs was identified as the appropriate platform to develop and promote national, regional and global partnerships, to strengthen prevention and preparedness measures, and to minimise the adverse impacts of ASF on the health and welfare of pigs and on international trade. Following these recommendations, an operational plan entitled "Global control of African swine fever: A GF-TADs initiative (2020-2025)"[15] was published in 2020.

The GF-TADs platform helps to foster regional alliances and provides opportunities for synergies with existing control strategies for other transboundary animal diseases. The GF-TADs initiative for the Global control of ASF provides the structure to work towards the global control of ASF. It establishes a theory of change, translated into a logic framework that describes the outputs and indicators according to three objectives: Objective 1. Improve the capability of countries to control (prevent, respond, eradicate) ASF using OIE standards and best practices that are based on the latest science; Objective 2. Establish an effective coordination and cooperation framework for the global control of ASF; Objective 3. Facilitate business continuity.

To ensure the prevention and control of ASF at regional and global level, Members' transparency in reporting timely updates on the ASF situation is of pivotal importance. To this end, the World Animal Health Information and Analysis Department (WAHIAD) has reinforced its team actively searching for unofficial information, in order to follow-up rumours circulating on the web and contact Members when relevant. It should be noted that some delays in reporting the ASF situation were observed in 2020, especially in the Asia, the Far East and Oceania Region.

Members are reminded that information about the disease, its epidemiological situation and geographical distribution is available on the OIE website, through the latest reports on ASF[16] and through the reports on ASF in Asia[17], which are updated on a regular basis and are based on the most recent WAHIS data. The main aim of these reports is to update Members and other users on the most relevant changes in the global and regional situation of the disease. The dashboards available in the new OIE-WAHIS system will allow Members and other stakeholders to interrogate the OIE-WAHIS database and display in almost real-time the spatial and temporal evolution of the disease.

With the objective of testing and practising national contingency plans, OIE Members may implement disease incursion simulation exercises. The OIE encourages its Members to share their experiences in preparing generic and/or disease-specific national contingency plans, by writing to information.dept@oie.int. The OIE will publish and disseminate this information through a dedicated web page for national contingency plans[18]. Between 1 January 2020 and 25 January 2021, information on only one ASF simulation exercise (in Australia) was communicated to the OIE and disseminated to OIE Delegates and to subscribers to the OIE-Info Distribution List. This represents a significant drop in comparison with the 12 simulation exercises announced in 2019.

[14] https://www.oie.int/fileadmin/Home/eng/About_us/docs/pdf/Session/2019/A_RESO_2019.pdf
[15] http://www.gf-tads.org/asf/the-global-initiative-for-the-control-of-asf/en/
[16] https://www.oie.int/en/animal-health-in-the-world/information-on-aquatic-and-terrestrial-animal-diseases/african-swine-fever/reports-on-asf/
[17] https://rr-asia.oie.int/en/projects/asf/situational-updates-of-asf-in-asia-and-the-pacific/
[18] https://www.oie.int/en/animal-health-in-the-world/the-world-animal-health-information-system/simulation-exercises/2020/

In conclusion, this section provided a summary of ASF spread, emphasising the escalation of ASF epidemics around the world, with new countries affected in the Europe Regional and the Asia, the Far East and Oceania Region.

Some successes in ASF control have been registered, such as the eradication of ASF announced in Belgium and the significant reduction in viral circulation in China (People's Rep. of) and Vietnam.

The recently launched "Global control of African swine fever: A GF-TADs initiative (2020-2025)" represents an important instrument for the prevention and control of ASF spread, addressing the recommendation contained in Resolution No. 33 adopted at the 87th General Session of the OIE in May 2019.

In the current global context, it is of pivotal importance that countries continue to follow the OIE pillars of transparency and international collaboration and solidarity, in order to prevent as far as possible the further spread of the disease and to promote its control and eradication in infected areas. The OIE World Animal Health Information and Analysis Department observed some important delays in reporting in 2020, and Members are consequently reminded of their legal obligation to provide timely information, in compliance with the provisions of the *Terrestrial Code*.

Taken together, the OIE's standards and the transparency of Members' reporting through WAHIS provide the framework for Veterinary Services to implement effective surveillance, reporting and control measures for ASF. The OIE continues to closely monitor the global ASF situation and report back to its Members. The launch of the modernised OIE-WAHIS in 2021 will help to further enhance ASF reporting and information display on its modern and dynamic web interface.

2.2. Infection with highly pathogenic avian influenza virus

Infection with avian influenza viruses (AI viruses) continues to be one of the most important transboundary animal diseases. The epidemiology of avian influenza (AI) is very complex as there are several subtypes with different epidemiological characteristics and it can involve domestic and wild species[19]. AI viruses constantly evolve by mutation and re-assortment, causing the continuous emergence of new subtypes. AI is one of the main animal diseases causing a significant impact on animal health and production. Some AI subtypes can also be zoonotic and therefore pose a major threat to human health. AI subtypes H5N1 and H7N9, for example, can be transmitted to humans, resulting in a significant burden for the public health system.

AI viruses have been causing substantial losses to the poultry industry and public health concerns since the detection of A/Goose/Guangdong/1/1996(H5N1) (Gs/GD) in domestic poultry in southern China. The Gs/GD-lineage H5 has evolved into 10 genetically independent hemagglutinin (HA) clades (0–9) and subclades[20]. Wild birds, particularly wild waterfowl of the family Anatidae, are known to be a natural reservoir of AI viruses[21], and migratory wild birds have been widely recognised as contributing to long-distance transmission and re-assortment of HPAI along migration flyways[22].

[19] Awada, L., Tizzani, P., Noh, S.M., Ducrot, C., Ntsama, F., Caceres, P., Mapitse, N. and Chalvet-Monfray, K., 2018. Global dynamics of highly pathogenic avian influenza outbreaks in poultry between 2005 and 2016—Focus on distance and rate of spread. Transboundary and emerging diseases, 65(6), pp.2006-2016.
[20] WHO; OIE; FAO; H5N1 Evolution Working Group Toward a unified nomenclature system for highly pathogenic avian influenza virus (H5N1). Emerg. Infect. Dis. 2008, 14, e1.
[21] Webster, R.G.; Yakhno, M.; Hinshaw, V.S.; Bean, W.J.; Murti, K.G. Intestinal influenza: Replication and characterization of influenza viruses in ducks. Virology 1978, 84, 268–278.
[22] Webster, R.G.; Bean, W.J.; Gorman, O.T.; Chambers, T.M.; Kawaoka, Y. Evolution and ecology of influenza A viruses. Microbiol. Rev. 1992, 56, 152–179.

The capacity of the virus to spread, despite the surveillance and control efforts at international level, has once again been demonstrated by the current epidemic wave registered mainly in Europe. The first outbreaks of HPAI H5N8 in Europe in the current northern hemisphere influenza season were reported in August 2020 in Russia in both poultry and wild birds. Since then, a new wave of outbreaks of H5N8 has been reported in several European countries, but also in Asia and Africa. The H5N8 virus has also re-assorted with other wild bird influenza viruses to form new strains of H5N5 and H5N1 HPAI virus, which were also reported by several countries. From the observation of the dynamics of the current wave, it is likely that the source of introduction of most of the outbreaks was through migratory wild birds and onward local spread.

This section provides an overview of HPAI disease events (in poultry and non-poultry including wild birds) reported to the OIE's early warning system by its Members during the period from 1 January 2020 to 25 January 2021 through WAHIS. The stable situations reported in the six-monthly reports by two countries, namely Egypt and Indonesia, are not described in this report as the 2020 data collected through six-monthly reports will not be available until the launch of the new OIE-WAHIS.

The global distribution of the outbreaks reported since January 2020 is reported in Figure 4 for poultry and Figure 5 for non-poultry including wild birds. The two maps clearly show how the highest numbers of outbreaks have been reported in Europe and some parts of Asia, while Africa and the Americas have been largely unaffected by the epidemic wave.

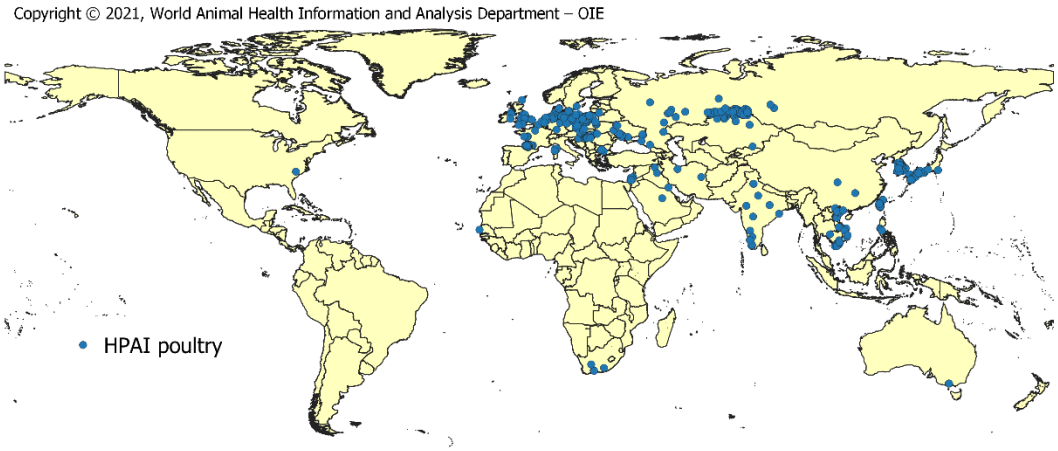

Figure 4. HPAI outbreaks reported in poultry during the period 1 January 2020 to 25 January 2021

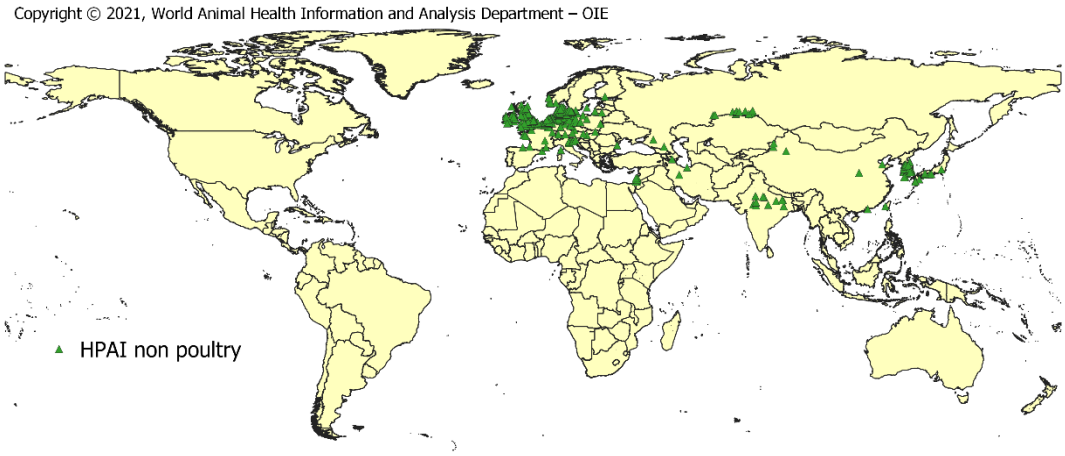

Figure 5. HPAI outbreaks reported in non-poultry including wild birds during the period 1 January 2020 to 25 January 2021

During the period 1 January 2020 to 25 January 2021, HPAI was reported by 43 countries, as described in the following paragraphs.

Three countries each reported the first occurrence of HPAI in the country, while five countries reported the first occurrence in a new zone. A new strain was reported for the first time in six countries, while two countries reported the occurrence of a new strain in a zone. Finally, 38 countries reported the recurrence of the disease.

In particular, Norway reported in November 2020 the first occurrence of HPAI in the country (subtype H5N8) in Rogaland administrative division in wild birds (a pink-footed goose [*Anser brachyrhynchus*]). The country reported that the goose was observed sick and was kept under control until it died, and was then sent for testing. As of 25 January 2021, the event was still ongoing. In consequence of the outbreak, the country set a high-risk area for HPAI H5N8 in all counties south of Nordland county, where strict preventive and control measures were put in place.

In December 2020, Ireland reported the first occurrence of HPAI in the country in poultry (subtype H5N8) in Wicklow. The country reported that on 9 December 2020, 5 turkeys out of a flock of 127 were euthanised on suspicion of avian influenza due to coughing, cyanosis and swollen eyes in 2 birds. On 10 December 2020, the Irish Central Veterinary Laboratory confirmed the presence of avian influenza subtype H5N8 in the birds. As of 25 January 2021, the event was still ongoing.

Finally, the first occurrence of HPAI in the country was reported by Senegal in January 2021 (subtype H5N1) in poultry. The country reported that the disease had been detected by the farm manager on 23 December 2020, through a drop in water consumption and the recording of high fatalities. The morbidity and mortality rates were 58% and the case fatality rate was 100%. The main clinical signs observed were oedema, cyanosis, congestion of the crests and barbs and prostration. As of 25 January 2021, the event was still ongoing.

Four different HPAI subtypes have been notified as the first occurrence of a new strain in the country. Subtype H5N1 was reported by The Netherlands and United Kingdom, subtype H5N3 by Germany and Ireland, subtype H5N5 by Russia and United Kingdom and subtype H5N8 by Hong Kong (SAR-PRC).

As highlighted above, the world is currently facing a new AI pandemic wave, caused by subtype H5N8. In recent years, H5N8 has become the main circulating AI strain, by far surpassing the previous dominant subtype H5N1. Indeed, since January 2020, out of 152 immediate notifications submitted, H5N8 was reported in 95 of them (62.5%). To better understand the recent history of the epidemic waves caused by H5N8, the activity of the subtype in terms of outbreaks reported in poultry and non-poultry since January 2014 is presented in Figure 6. As shown in the graph, the current epidemic wave is the fifth caused by H5N8. In particular, the subtype produced three minor peaks in 2014, 2015 and the beginning of 2020, and two major peaks in 2016/2017 (with a peak of 644 outbreaks – 583 in poultry and 61 in wild birds – reported in February 2017) and in 2020/2021, which up to now showed a peak in November 2020, with 565 outbreaks (70 in poultry and 495 in wild birds).

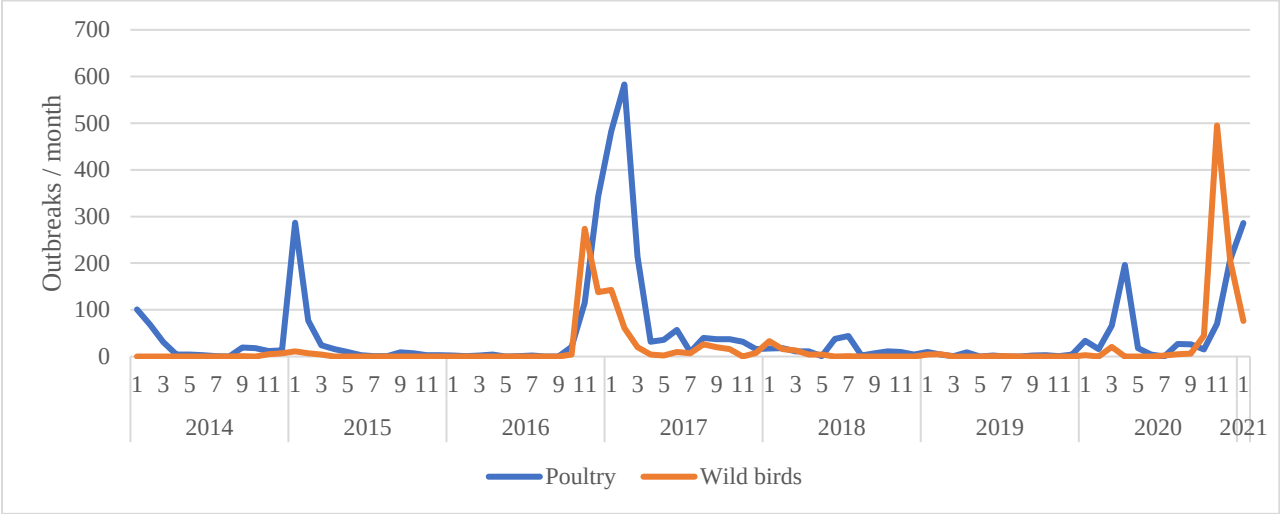

Figure 6. Monthly number of H5N8 HPAI outbreaks reported in poultry non-poultry including wild birds during the period 1 January 2020 – 25 January 2021

In view of the situation described above and the ongoing AI wave, the OIE's objectives of promoting transparency and understanding of the global animal disease situation continue to be a priority, both to protect public health and to ensure the safety of world trade in animals and animal products. For this reason, the OIE publishes on its website regular updates on the global situation regarding the circulation of AI viruses. The report is updated every three weeks and describes the main circulating subtypes, the new outbreaks reported during the period and the ongoing outbreaks. The main objective of the report is to regularly provide a detailed and updated view of the situation at global and at regional level, along with key messages from the OIE.

The analysis of HPAI outbreak dynamics described in this section shows that an epidemic wave is currently ongoing.

The current H5N8 epidemic wave and in general most of the outbreaks reported in 2020 and up to 25 January 2021 have been reported in Europe and Asia and only a few in Africa, the Americas and the Middle East.

The new AI epidemic shows once again the importance of maintaining constant surveillance of the dynamic and epidemiological status of AI as well as the genetic evolution of virus.

In particular, reports of increased numbers of outbreaks in wild birds indicate periods of heightened risk in countries due to migratory flyways during the relevant seasons. Consequently, improving on-farm biosecurity measures is a priority to reduce the likelihood of poultry being exposed to the virus. Enhanced active surveillance in poultry and in non-poultry (including wild birds) is needed to monitor the introduction, spread and re-assortment of HPAI, in order to be able to apply the appropriate prevention and control strategies.

The OIE's standards and the transparency of reporting through the OIE's World Animal Health Information System provide the framework for Veterinary Services to implement effective surveillance, reporting and controls for avian influenza.

2.3. Infection with lumpy skin disease virus

Lumpy skin disease (LSD) has been historically present in Africa and some countries in the Middle East. However, starting in 2013, important changes in LSD epidemiology have occurred, as shown by an escalation in the number of LSD epidemics observed in several regions of the world. The disease was detected in countries for the first time in the following regions: in six countries[23] in the Middle East between 2013 and 2015, and subsequently in Syria in 2019; in nine countries[24] in Europe between 2014 and 2016; and in three countries[25] in Southern Asia in 2019. This epizootic situation is a cause of concern for the international community. Meanwhile, LSD has continued to be present on the African continent. According to the information collected by the OIE, the disease has never been detected in the Americas or in Oceania.

The global geographical distribution of LSD, based on the information collected through WAHIS during the period from 1 January 2005 to 25 January 2021, is shown in Figure 7. In 2020 and early 2021, 11 countries and territories in Africa, Asia and Europe reported information to the OIE through immediate notifications and follow-up reports for exceptional events in accordance with the provisions of Article 1.1.3. of the *Terrestrial Code*.

In Africa, Djibouti notified a recurrence of LSD in the area of Dikhil (west of the country) in October 2020. One village was affected and, as of 25 January 2021, the event was still on-going.

In Europe, Russia notified in August 2020 a recurrence of LSD in the area Altayskiy Kray (near the border with Kazakhstan, where the disease had last been reported in December 2019). The disease was reported in a farm and in backyard animals, and the event was resolved in November 2020.

[23] Iraq (2013), Jordan (2013), Lebanon (2013), Turkey (2013), Iran (2014) and Saudi Arabia (2015)
[24] Azerbaijan (2014), Greece (2015), Russia (2015), Albania (2016), Armenia (2016), Bulgaria (2016), North Macedonia (2016), Georgia (2016) and Serbia (2016)
[25] Bangladesh (2019), China (People's Rep. of) (2019) and India (2019)

Finally, in Asia, an escalation of LSD epidemics has been observed. Syria first notified a recurrence of LSD in the area Al Ladhiqiyah (west of the country) in April 2020. The disease was reported in a farm, and the event was resolved in the same month. China (People's Rep. of) then reported the first occurrence of LSD in five areas in the east of the country, in June and July 2020, with six outbreaks in backyard animals and livestock markets. In June 2020, LSD was detected for the first time in Nepal, with eight farms affected. Then, Chinese Taipei also reported the first occurrence of LSD, between July and October 2020, with a total of 34 farms affected. The escalation continued with the first detection of LSD in an area in the East of Russia (two outbreaks in Khabarovskiy Kray) between August and December 2020 and in Bhutan in September 2020. Since then, seven outbreaks in small-scale backyard farms and government farms have been reported in Bhutan. In October, LSD was detected for the first time in Hong Kong (SAR-PRC) in feral cattle scattered throughout the countryside and country parks, and in Vietnam in backyard herds. In November 2020, LSD was detected for the first time in Myanmar, in a village. Then, in January 2021, LSD was detected for the first time in Sri Lanka, in cattle under an extensive management system. As of 25 January 2021, the events in China (People's Rep. of), Nepal, Bhutan, Hong Kong (SAR-PRC), Vietnam, Myanmar and Sri Lanka were still on-going. As in the case of ASF, in 2020 and early 2021 the OIE detected through its mechanism for active search for non-official information that some OIE Members of the Region had critical delays in reporting as well as a lack of compliance with the notification requirements described in Chapter 1.1. of the *Terrestrial Code.* Since 2000, no OIE Member has published a self-declaration of freedom from LSD, despite the provisions in the *Terrestrial Code* that would enable them to do so.

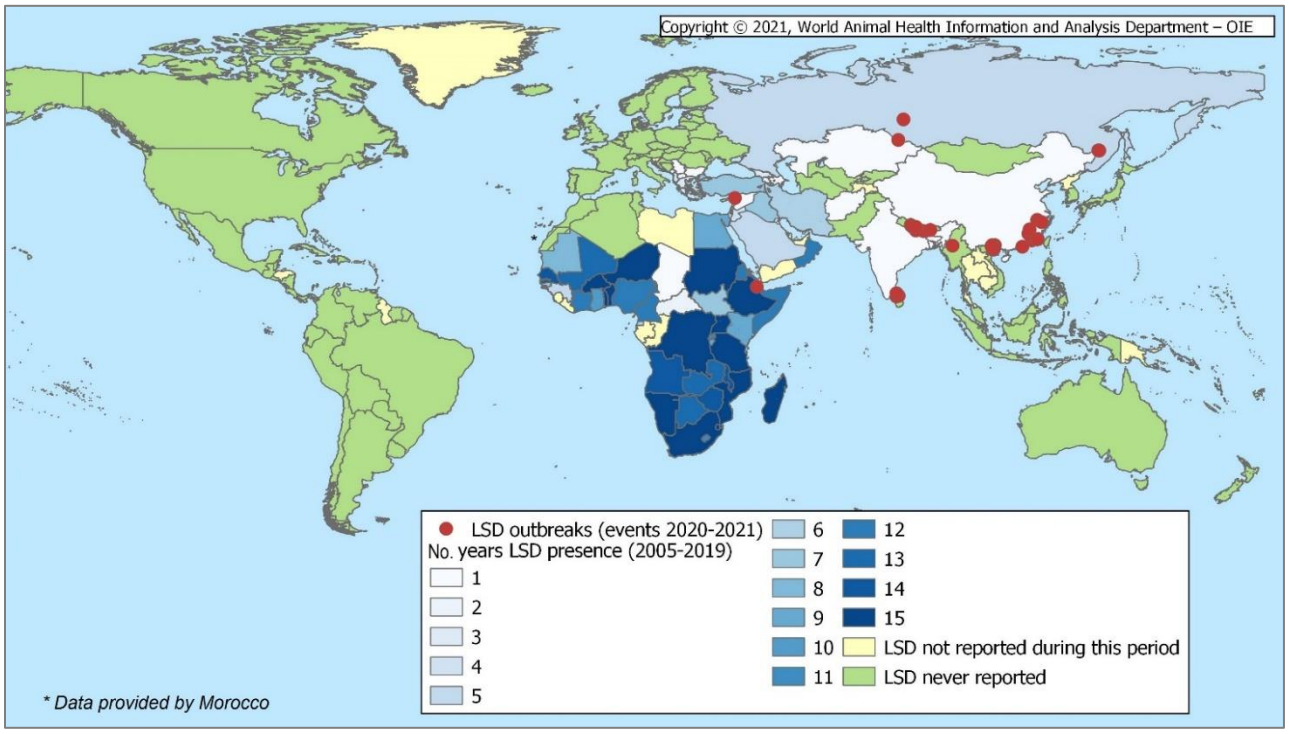

Figure 7. Global distribution of LSD in countries and territories between 2005 and early 2021 (up to 25 January 2021) – *Countries and territories are coloured according to their LSD situation between 2005 and 2019. Superimposed on this are outbreaks reported in 2020 and early 2021 through immediate notifications and follow-up reports.*

In this context, and under the umbrella of GF-TADs, the Standing Group of Experts on Lumpy Skin Disease in South East Europe (SGE-LSD), meeting in January 2021, elaborated a set of recommendations on vaccination, surveillance and other activities. Amongst these, it was highlighted that mass vaccination with homologous vaccines should be considered in countries still affected so as to eliminate the virus, and quality control of the vaccines should be carried out in line with the requirements of the OIE *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*[26]. In addition, following the recent outbreak of LSD in Chinese Taipei, reported in July 2020, the OIE organised a series of webinars on this disease[27], covering emergency response, laboratory diagnostics, general consultation and a regional situation update in Asia. In December 2020, OIE experts issued a reminder that vaccination of cattle plays a fundamental role in the control and eradication of LSD, and that no country has been able to eradicate LSD without vaccination[28]. Regionally harmonised control and eradication of LSD under the umbrella of GF-TADs are recommended.

In that regard, reporting countries and territories are required to communicate through OIE-WAHIS information on the vaccination programmes they have implemented, as per Chapter 1.1. of the OIE *Terrestrial Code*. It is interesting to note that out of the 11 countries and territories that reported LSD events in 2020 and early 2021 (up to 25 January 2021), only five communicated information on vaccination in response to the outbreaks. Chinese Taipei reported that vaccination had been applied to control the event, with details of the number of animals vaccinated and the type of vaccine implemented (6 342 cattle with live vaccine). Syria reported that vaccination had been applied to control the event in that country, but without providing further details. Bhutan, Hong Kong (SAR-PRC) and Nepal reported that vaccination was to be applied, but as of 25 January 2021 this had not yet been implemented. At the meeting of the SGE LSD in January 2021, it was highlighted that with COVID-19 restrictions in place throughout 2020, mobilising resources to respond to the outbreaks, in particular for sourcing and delivering vaccines, had been extremely challenging across Asia. Reporting countries and territories also provide information on official vaccination through their six-monthly reports. As of 25 January 2021, a total of 169 countries and territories had submitted at least one of their six-monthly reports for terrestrial animal diseases for 2019. Eighteen of them reported LSD present with implementation of official vaccination (three countries in Europe, seven countries and territories in the Middle East and eight countries in Africa). Nine countries, all in Europe, reported LSD absent with implementation of official vaccination. Twenty-one countries and territories reported LSD present without implementation of official vaccination (one country in the Middle East, two countries in Asia and 18 countries and territories in Africa).

Vaccine production information is also provided by Members through their annual reports. A total of 10 countries have reported production of LSD vaccines through their annual reports, available for the years 2005-2019 in OIE-WAHIS, following its launch on 9 March 2021– six of them in Africa, three in the Middle East and one in Europe, with the annual number of doses produced ranging from 100 000 (Iraq, 2017) to 22 852 800 (Ethiopia, 2017). This information can be useful to Members when exploring opportunities for sourcing vaccines.

Given the importance of vaccination in the regional control strategies, OIE Members are invited to use the enhanced reporting tools in OIE-WAHIS to share information on this topic. OIE Members are also reminded that the *Terrestrial Code* provides comprehensive guidance to Veterinary Authorities on surveillance for LSD as well as recommendations for importation of live animals and products of animal origin.

[26] https://rr-europe.oie.int/en/events/sge-lsd10-10th-meeting-of-the-standing-group-of-experts-on-lumpy-skin-disease/
[27] https://rr-asia.oie.int/en/events/lumpy-skin-disease-webinar-series/
[28] https://rr-asia.oie.int/wp-content/uploads/2021/01/5-lsd-prevention-gf_tads-dec-2020-eeva_-tuppurainen.pdf

In conclusion, this section provided a retrospective summary of LSD spread in Africa, Asia and Europe since 2013, emphasising the recent escalation of LSD epidemics around the world.

In response to this global threat, vaccination is a main pillar of the regional control strategy. This observation is consistent with the regional initiatives for a coordinated response implemented in recent years, especially in the context of GF-TADs.

Taken together, the OIE's standards and the transparency of Members' reporting through WAHIS provide the framework for Veterinary Services to implement effective surveillance, reporting and control measures for LSD. The OIE continues to closely monitor the global LSD situation and report back to its Members. The launch of the modernised OIE-WAHIS in the first quarter of 2021 will help to further enhance LSD reporting and information display on its modern and dynamic web interface.

2.4. Infection with SARS-CoV-2 in animals

COVID-19, caused by infection with SARS-CoV-2, is a human disease which most likely emerged from an animal source and through widespread human-to-human transmission became a pandemic. As of 25 January 2021, around 100 million confirmed human cases have been reported worldwide, with more than 2 million human deaths. The nature of this new zoonotic virus, together with its widespread distribution and the susceptibility of some animal species to infection, manifests in animal infections arising from close contact between people and animals[29]. Conversely, there is also evidence that, for some animal species, close contact with infected animals can represent a potential source of infection in humans[30].

Based on reports to the OIE, Table 1 shows the global distribution of animal infections with SARS-CoV-2. As of 25 January 2021, 24 countries in the Americas, Africa, Asia, and Europe had reported the occurrence of the disease, in nine different animal species (cats, dogs, mink, pet ferrets, lions, tigers, pumas, snow leopards and gorillas). Experimental data not reported through WAHIS have expanded the range of animal species known to be susceptible to SARS-CoV-2.[31]

Table 1. Number of outbreaks (n=454) reported worldwide, by species and region (as of 25 January 2021).

REGION	Cats	Dogs	Mink	Pet ferrets	Lions	Tigers	Pumas	Snow leopards	Gorillas
Africa							*1*		
Americas	*38*	*34*	*19*		*1*	*2*		*1*	*1*
Asia	*9*	*13*							
Europe	*13*	*2*	*316*	*1*	*2**	*1**			
Total	**62**	**47**	**335**	**1**	**3**	**3**	**1**	**1**	**1**

***Note:** One lion and one tiger in Sweden are from the same location and are therefore only represented as 1 outbreak in this table.

[29] https://www.oie.int/fileadmin/Home/MM/A_Sampling_Testing_and_Reporting_of_SARS-CoV-2_in_animals_3_July_2020.pdf
[30] https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.23.2001005#html_fulltext
[31] https://www.oie.int/fileadmin/Home/MM/EN_Factsheet_SARS-CoV-2.pdf

The most recent concern is related to SARS-CoV-2 detections in mink, particularly given the occurrence of virus mutations in this species and the detection of new variants. To date, cases of infection with SARS-CoV-2 in farmed animals have only been reported in mustelids. It is important to note that Europe, which has reported 94% of the world's outbreaks in mink, also accounts for 63% of global mink production. The policy response in some countries of Europe has been depopulation of infected farms, mink farms in surrounding zones, and in some cases the entire national industry. Thus, the presence of this virus may have significant economic impacts on a country's agricultural sector, in addition to public health impacts.

The worldwide geographical distribution of SARS-CoV-2 outbreaks in animals reported to the OIE is shown in Figure 8. Note that this map with the global distribution of SARS-CoV-2 outbreaks is also publicly available on the OIE's COVID-19 Portal and is updated weekly with any new reports.

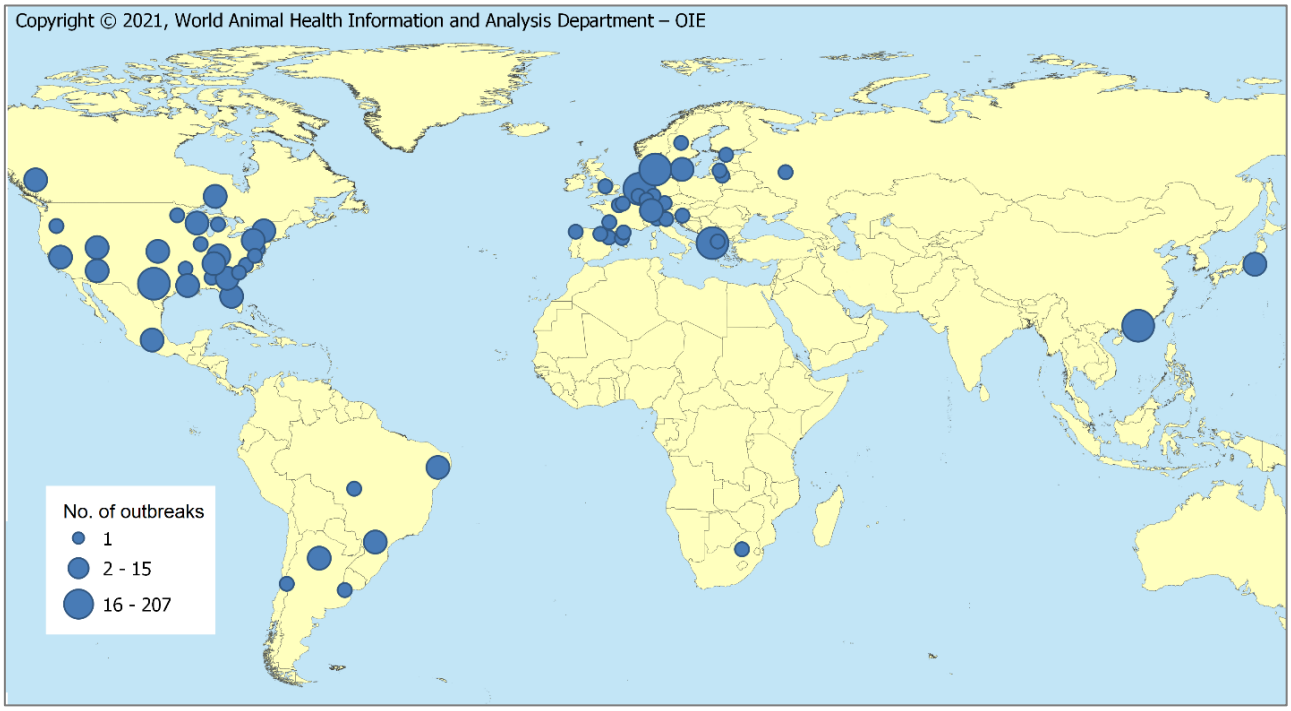

Figure 8. Worldwide distribution of SARS-CoV-2 outbreaks in nine animal species reported to the OIE (as of 25 January 2021). Note that dot size on the map is proportional to the number of outbreaks reported.

Further information on the global situation of SARS-CoV-2 in animals is available online on the OIE's COVID-19 Portal under "Events in Animals"[32]. The OIE has worked in collaboration with its network of experts to develop several guidance documents to support its Members based on their current situation and needs[33].

[32] https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/events-in-animals/
[33] https://www.oie.int/en/scientific-expertise/specific-information-and-recommendations/questions-and-answers-on-2019novel-coronavirus/

The OIE has also developed guidelines to help countries report the disease to the OIE and share information on the occurrence of animal cases of infection with SARS-CoV-2 with other Members and the international community[34]. As SARS-CoV-2 is considered an emerging disease, the OIE urges Members to submit an immediate notification through OIE-WAHIS, as per Article 1.1.4. of the *Terrestrial Code*, to report any occurrence of animal cases of infection with SARS-CoV-2 that comply with the case definition provided in the aforementioned reporting guidelines. The guidelines also include the types of information that should be shared in the notification's free text fields. Furthermore, as per Article 1.1.6. of the *Terrestrial Code*, OIE Members are also encouraged to report any other relevant information to the OIE, such as experimental studies or prevalence surveys, to help advance our understanding of SARS-CoV-2.

Immediate notification is an important One Health surveillance activity that supports the efforts of the public health sector to control COVID-19 globally. Thus, the OIE strongly encourages its Member to notify SARS-CoV-2 cases in animals through OIE-WAHIS.

The potential for transmission between humans and animals[35] also underscores the importance of timely reporting of the infection in animals. Following the detection of the disease in animals, some countries have already implemented active surveillance in their animal populations. Reports from The Netherlands on escaped farmed mink and the United States on wild mink that subsequently tested positive for SARS-CoV-2 further emphasise the potential for a virus reservoir becoming established in wildlife populations. In this regard, the OIE has partnered with the International Union for Conservation of Nature (IUCN), the IUCN Species Survival Commission (SSC) and the IUCN SSC Wildlife Health Specialist Group (WHSG) to develop guidelines relating to wildlife populations[36] to minimise the risk of transmission of SARS-CoV-2 from humans and from domestic and feral animals to non-captive wildlife species.

The OIE is also involved in numerous efforts, such as Tripartite collaborations with FAO and WHO, and several *ad hoc* groups (AHGs), including the AHG on Safe Trade, are currently reviewing the OIE's guidelines in relation to SARS-CoV-2. A large component of these efforts is the work that has gone into updating our scientific knowledge about SARS-CoV-2 and gathering information on affected populations, particularly the fur farming industry[37].

The current level of reporting on SARS-CoV-2 cases in animals through WAHIS remains limited and constitutes a critical gap in the information needed to help better guide animal and public health policy. With the launch of the new OIE-WAHIS database, the OIE anticipates an enhanced capacity to gather such data, which will help provide a more reliable basis for risk-based decisions.

While the main driver of community and international spread in the current pandemic is human to human transmission, animal cases of infection with SARS-CoV-2, though still only occasional occurrences, continue to rise.

As of 25 January 2021, 454 outbreaks in animals have been reported globally, affecting 9 species in 24 countries. Some countries have experienced a high prevalence of outbreaks in mink farms, and variant strains have now been identified in mustelids.

Currently, 71% of the outbreaks reported to the OIE on SARS-CoV-2 have been submitted as per Article 1.1.6. of the *Terrestrial Code*.

As infection with SARS-CoV-2 is an emerging disease, the OIE strongly encourages Members to report through WAHIS the occurrence of any cases in animals that comply with the case definition provided in the OIE guidelines, particularly given the threat to public health and animal production, as well as the risk of a reservoir becoming established in wildlife.

[34] https://www.oie.int/fileadmin/Home/MM/A_Reporting_SARS-CoV-2_to_the_OIE.pdf

[35] Enserink, M (2020). Coronavirus rips through Dutch mink farms, triggering culls. *Science* 368(6496), 1169 https://science.sciencemag.org/content/sci/368/6496/1169.full.pdf

[36] https://www.oie.int/fileadmin/Home/eng/Our_scientific_expertise/docs/pdf/COV-19/A_WHSG_and_OIE_COVID-19_Guidelines.pdf

[37] GLEWS_risk_assessment_fur_animals_SARS_CoV_2.pdf (oie.int) https://www.oie.int/fileadmin/Home/MM/GLEWS_risk_assessment_fur_animals_SARS_CoV_2.pdf

3. OIE-WAHIS (update on 17th March 2021)

3.1. Background and progress on OIE-WAHIS

The need for a comprehensive and responsive surveillance system is particularly acute given today's increasingly complex risk environment. Factors such as the increased movement of people, animals, goods and commodities, the intensification of animal production, and climate change, *inter alia*, mean that disease transmission progresses more rapidly and in more varied ways than in the past. The COVID-19 pandemic has demonstrated the need for transparent and rapid reporting of important animal health and public health events.

There was a clear need to improve the structural architecture of WAHIS, which underlies the acquisition, accessibility and usability of animal health data to enhance decision-making capacities at national, regional and international level (particularly relevant for transboundary animal diseases). A lack of interoperability with global, regional and national databases results in duplicative and burdensome reporting and costly time lags owing to manual data integration and analysis; this can also be a source of errors, which may lead to incorrect decision-making and negatively impact trade. The inability to harness animal health information easily has also made it more difficult to conduct research and studies, given that WAHIS is the only global source of historical animal health information from which to derive trends and conduct temporal analyses.

In view of the above, the OIE has, since 2016, embarked on the renovation of the WAHIS platform in collaboration with its users and partners. The new version of the platform is called OIE-WAHIS.

In order to facilitate the development of this multi-functional platform and make it available to users as soon as possible, it will go live in two releases:

- Release 1 (went live on 9 March 2021): this incorporates the main functionalities for immediate notifications/follow-up reports, six-monthly reports, mapping, basic interoperability, and the public interface. All the historical data of immediate notifications, follow-up reports and six-monthly reports since 2005 have been migrated. Some limitations still exist but enhancements will be included in Release 2. Feedback mechanisms are in place to consider improvements for the future. Additionally, the OIE will launch its new Alert application (app) a few weeks after the platform went live.

- Release 2 (estimated launch to be confirmed): this will incorporate the main functionalities for the annual report (AR), the voluntary report on non-OIE-listed wildlife diseases (WAR), a dedicated public interface for wildlife diseases, and enhancements to functionalities that were limited in Release 1.

The OIE and the European Commission (EC) have additionally collaborated on the development of the Animal Disease Information System (ADIS), which will be the main platform for animal disease event data entry for European Union (EU) Member States. The system will also be open to non-member states to be used on a voluntary basis.

Development progress of OIE-WAHIS was affected by the COVID-19 pandemic. Nevertheless, Release 1 development has now been completed and the platform went live on 9 March 2021. It can be accessed at https://wahis.oie.int.

Alongside the development of OIE-WAHIS, a dedicated Change Management Process has been put in place. Since October 2019, Key User meetings have been organised using digital technology and involving Members in all OIE Regions. These meetings provided an opportunity for feedback and buy-in regarding use of the new platform. This mechanism will be maintained during Release 2. New e-learning modules for OIE-WAHIS were designed and these went live in January 2020; face-to-face training sessions were organised in February 2020 in the Americas, Europe, Africa and Middle East, focusing on delivering a better learning experience for users prior to system go-live.

The face-to-face training for national Focal Points in the Asia, the Far East and Oceania Region was cancelled due to the COVID-19 pandemic and was replaced by fit-for-purpose webinars. Further e-learning modules will be developed for the AR and WAR. The OIE is also exploring opportunities for training of Aquatic and Wildlife Focal Points, as well as the use of 'bite size' webinars to support users. In addition, users encountering day-to-day issues using OIE-WAHIS will be able to count on a dedicated support desk at OIE Headquarters and assistance from the Regional and Sub-Regional Representations. A communication plan was implemented to keep all stakeholders informed about the transition and go-live of OIE-WAHIS. Regional and Sub-Regional Representation staff will function as 'ambassadors' to encourage buy-in and awareness.

Prior to the launch of ADIS/OIE-WAHIS interoperability, joint training (OIE and EC) will be organised in the second semester of 2021 to train Focal Points on the use of functionalities of both systems and their interoperability. More information will be communicated closer to that date.

3.2. Transition arrangements

The submission of six-monthly reports for 2019 via the old WAHIS ended on 15 June 2020, to enable the team to migrate these reports along with all historical immediate notifications, follow-up reports and six-monthly reports into the new OIE-WAHIS. Any six-monthly reports submitted after that date could therefore not be verified and validated, and the countries concerned were asked to wait for the new platform to be launched before re-submitting these reports. Reports that were submitted via the old WAHIS in time but could not be validated straight away were subsequently migrated and validated in the new platform. Any six-monthly reports present in the old WAHIS in draft format were not dealt with by the team; reporting users were asked to re-enter them into the new OIE-WAHIS.

The OIE carried out a registration campaign for all existing reporting users around the go-live date. A dedicated support desk function (wahis-support@oie.int) has been established to deal with any user queries. The support mailbox is monitored Monday to Friday from 8.00 AM to 7.00 PM Paris time. To accommodate time differences and assist users with any simple urgent queries, some Regional and Sub-Regional Representation staff members have been trained in the use of the new platform.

In addition to the dedicated support desk, which can be contacted by email from within the system using the 'help' section, a number of other support tools are available: an extensive user manual, frequently asked questions, and tooltips to help reporting users complete their reports. Updated notification procedures are available from the platform as well as via the Delegate Portal.

Annual reports and the voluntary report for non-OIE-listed diseases in wildlife will only become operational in Release 2. Any outstanding reports should not be submitted before the Release 2 go-live date. If any users need to gain access to historical data contained in the annual reports or wildlife reports, they should submit their request to WAHIAD (information.dept@oie.int) and one of our epidemiologists will then extract the information from the old WAHIS platform.

3.3. Highlights of the most impactful features of the new platform

When the OIE embarked on development of OIE-WAHIS in 2016 it envisaged a much improved strategic tool to address the animal and public health challenges of tomorrow. Throughout the development of the platform, these principles have been maintained as functional parameters for success:

OIE-WAHIS will:

- **Business processes**
  - Present a more intuitive and friendly user interface that is flexible and faster during data entry, thus improving disease reporting compliance and data quality;
  - Provide a flexible structure capable of evolving in time in line with OIE international standards;
  - Enable access to all the OIE's historical animal health e-data available since 1996 (after Release 2);
  - Allow for data analysis and acquisition by users through integration of business intelligence (BI) technologies;
  - Empower the OIE to increase output of high value-added work to efficiently provide appropriate data analyses and other information for decision-making;
  - Integrate the OIE's official recognition of status for priority diseases, including interaction between data and maps related to the official disease status (after Release 2);

- **IT system**
  - Be technically supported by a designated IT specialist to manage performance monitoring, tracking and resolving potential incidents and the required evolution of the system over time;
  - Be quicker, more user-friendly and include a dynamic geographic information system (GIS) with the latest up-to-date mapping technologies; this application will be the main support to display the information and provide maximum business performance;
  - Enable improved response time for queries;
  - Further interconnectivity with national, regional, global and other databases and platforms;
  - Allow for opportunities to scale up and incorporate future technological advancements through evolutive maintenance of the system;

- **Stakeholders and users**
  - Permit integration with other databases and platforms;
  - Enable extended data mining with the development of automated tools for extraction that will greatly facilitate access to WAHIS information to improve analysis and better communicate on risk;
  - Become an intelligent data entry platform embedding the capacity to gather and analyse data and assist in the data entry process, making it more intuitive for end users;
  - Comprise an online training portal, which will accommodate theoretical and practical courses oriented towards the improvement of animal disease notification to the OIE. This will strengthen the OIE's capacity-building programme and will support all change management processes;
  - Be a useful tool to inform national government decision-making processes relating to animal diseases (including zoonoses) and safe trade;
  - Include a mobile application, which will allow instant access to disease alerts and their faster dissemination to a growing number of highly mobile stakeholders internationally, thereby extending the core of the WAHIS 'early warning system'.

Of specific interest are a number of new features, with a high impact for both reporting and consulting users:

3.3.1. Redesigned public interface

The new OIE-WAHIS makes the information on the global animal health situation available to everyone through its public interface. This information can easily be consulted by country/region, by disease or by type of report in a simple and structured way. It incorporates validated data since 2005. The OIE-WAHIS homepage gives an overview of the most recent events (alert notifications), and these can also be viewed on an interactive world map. Additionally, users can access from the homepage the report management section, dedicated regular summary reports provided by WAHIAD (e.g. ASF and HPAI update reports), and an analytics section providing dedicated dashboards for analysis.

3.3.2. Analytics and dedicated dashboards

Filter capability and extraction of data have been enhanced to enable combined searches. Dedicated dashboards enable users to search by disease, country or animal species. Additionally, our OIE team of veterinary epidemiologists has been trained to use business intelligence software (Qlik Sense) to build new dashboards if required. The public interface and back office are supported by improved mapping capabilities. Enhanced analytical features are available at the back office for each country, enabling countries to analyse the evolution of events and use their own information for policy development and risk-based decision-making. All information, including maps, can be exported in a variety of formats.

3.3.3. A modern mapping system

The new platform uses Mapbox technology and data from the Global Administrative Areas Database (GADM). Advanced mapping tools will include the following: layer selection; legends; the ability to measure distance between outbreaks; the ability to draw an area around outbreaks; selection of an outbreak to view a summary of the event; annotations and exporting capabilities. Maps will be exportable in a variety of formats. In addition, from Release 2, users will be able to extract information from a layer or from a buffer zone around an outbreak.

3.3.4. A dedicated back office

A back office restricted to country-specific reporting users will not only allow for easy guided data entry and overview of reports but will also include a dashboard to enable countries to view progress in their reporting. Simplified and user-guided data entry will result in increased transparency.

3.3.5. A new Alerts app

Major enhancements for the Alerts app include an improvement in map quality. From Release 2, users will be able to consult not only by outbreak but also by event. Enhanced filters will be available for users to receive relevant alerts in a timely manner.

3.4. A focus on interoperability

The OIE has reaffirmed its commitment to implement interoperability and connectivity with national and regional systems, and with the platforms of partner international organisations (FAO, WHO, etc.). The OIE strategy to interconnect is based on principles designed to simplify the exchange of data and avoid the need for double entry, which is both burdensome and a potential source of errors. The relevant application programming interfaces (APIs) were developed and have been released to national and regional authorities with the aim of enabling them to interconnect with OIE-WAHIS.

As a proof of concept of interoperability, the OIE and the EC are currently running the ADIS project to establish connectivity between OIE-WAHIS and the EU regional animal disease platform as a single data entry point for EU Member States. ADIS will be launched in April 2021, when the new EU Animal Health Law comes into force, but interoperability between ADIS and OIE-WAHIS will only come into effect in the second semester of 2021. Until then, EU countries will need to continue reporting animal disease events in OIE-WAHIS.

The OIE has already foreseen several initiatives to interconnect OIE-WAHIS with other OIE systems or partners:

- The OIE has started its Codification project, the objective being to create an international data standard for the main concepts of animal health data, starting with transboundary animal diseases. It is foreseen that the codification principles will be integrated in future in the OIE-WAHIS platform.

- The OIE Antimicrobial Use (AMU) project foresees the setting up of a tool to collect data from Members to compile the OIE Annual Report on antimicrobial agents intended for use in animals. The aim is for this AMU tool to be interconnected with the OIE-WAHIS annual report to gather data on animal populations.

- Global Burden of Animal Diseases (GBADs) is a partnership between Liverpool University (United Kingdom) and the OIE that will work with multiple stakeholder organisations holding data on the livestock sector, animal health and economics. Several possibilities to interconnect with OIE-WAHIS are envisioned.

- The OIE Observatory is a key user of data from OIE-WAHIS. Prototypes developed by the OIE Observatory demonstrate the importance of data from OIE-WAHIS as indicators of compliance with the reporting requirements of OIE international standards and with control mechanisms implemented in response to global disease control strategies.

APIs are sets of functions and procedures allowing the creation of applications that access the features or data of an operating system, application or other service. For Release 1, simple APIs were published to enable any user or organisation to extract early warning and monitoring information from the platform. For Release 2, APIs will be adapted to add extra functionalities and allow extraction of data from annual and wildlife reports. Interoperability enabling animal health information to be pushed into OIE-WAHIS from other organisations will be developed after Release 2.

Building bridges between OIE-WAHIS and national/regional databases will be essential for the success of the new platform and ongoing financial support and commitment are required if this is to be achieved.

3.5. Conclusions

By embracing the new capabilities of the new OIE-WAHIS platform, reporting users should be able to improve transparency in reporting, including in terms of speed, improved quality of reporting and enhanced quantitative data.

OIE-WAHIS has several tools to better visualise the information provided and to enhance the use of this information for risk analysis, but this will only be possible if OIE Members continue to enter high quality data into the system.

The future integration between OIE-WAHIS and ADIS will help to improve still further countries' transparency and data accessibility.

Ultimately, the success of the new OIE-WAHIS platform depends on its users. The OIE encourages its Members to use the capabilities of the platform to their full potential to enhance decision-making. The collaborative efforts by Members in providing good quality and transparent data in a timely manner, combined with a variety of other data from partners, including public and private bodies, will underpin the OIE's data steward role in the Big Data era and enable us all to use this capability to develop the right animal health and veterinary public health policies for the public good.