

# PANORAMA

Thematic portfolio



Strengthening preparedness  
and resilience to emergencies



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# PERSPECTIVES

# DOSSIER

# AROUND THE WORLD

## EDITORIAL

### Responding to emergencies through preparedness and resilience

#### KEYWORDS

#COVID-19, #editorial, #emergency preparedness, #One Health, #resilience, #Tripartite (FAO/OIE/WHO), #United Nations Environment Programme (UNEP), #Veterinary Services, #World Organisation for Animal Health (OIE).



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*The COVID-19 pandemic has impacted almost all walks of life and it has required a multisectoral and interdisciplinary approach to respond to this global emergency.*

### **Resilience is the ability to adapt to adverse situations**

Around the world, Veterinary Services are continuing to play their essential role in society, protecting animal health and welfare and public health, while also responding to the challenges posed by the pandemic. We have seen that Veterinary Services can play an important role by providing direct support to the public health pandemic response, through:

- testing of human specimens for SARS-CoV-2
- engaging in scientific research at the human-animal interface
- donating essential equipment
- contributing epidemiological expertise to public health services.

Veterinary Services are also:

- working to manage animal health implications of COVID-19, including SARS-CoV-2 infections of companion animals and outbreaks in farmed fur animals
- conducting research to understand the susceptibility of different animal species to SARS-CoV-2;

- using risk communication to avoid inappropriate actions being taken against animals, including wildlife;
- undertaking risk management to avoid the establishment of new reservoirs in susceptible species.

In addition, Veterinary Services need to work to ensure business continuity, and particularly to ensure food safety and food security through the continuation of the safe trade of animals and animal products.

In these challenging times, the World Organisation for Animal Health (OIE) has demonstrated that, with the support of information technology platforms, it can maintain business continuity, at Headquarters, in the Regional and Sub-Regional Representations, and with its global community of Members. The OIE is continuing to share expertise and foster solidarity between Members and experts, host scientific discussions, take decisions and optimise collaboration with partners.

## **Resilience also includes learning from an event to be able to prepare for the next emergency**

To strengthen preparedness against all hazards (including 'One Health' emergencies like COVID-19), the OIE is developing and sharing scientific- and experience-based guidance with its Members to inform the development of risk-based emergency plans and procedures. As well as having sufficient trained personnel, equipment and resources, to be fit-for-purpose, plans should be tested regularly through simulation exercises.

With the strong support of its Members, the OIE is well placed to play its role in strengthening global governance mechanisms and structures to respond effectively to future emergencies and avoid disasters. We have seen first-hand the strong commitment from the highest levels, including from the G20 Agriculture Ministerial Meeting in April 2020 that called for the strengthening of the One Health approach to preparedness and response to zoonotic diseases.

| Today's challenges highlight the need to incorporate wildlife in One Health strategies

Balanced ecosystems are a key component of resilience, and disease threats (including the risk of disease emergence) can be reduced by ensuring healthy balanced ecosystems. Today's challenges also highlight the need to incorporate wildlife in One Health strategies. The OIE is engaging its Members, its wildlife experts and key partners in developing a long-term strategy to ensure that wildlife health is fully integrated into the OIE's One Health and animal health strategies.

That is why the OIE supports the Franco-German initiative to set up a One Health High-Level Expert Council aiming to assist the Tripartite (FAO-OIE-WHO), with which the United Nations Environment Programme (UNEP) will be associated, in their respective responsibilities to address future crises.

| Together we must take a multilateral, interdisciplinary and multisectoral approach

The OIE stands ready to play an active role in global dialogue and engage with the international community to ensure comprehensive resilience. Together we must take a multilateral, interdisciplinary and multisectoral approach to prepare and respond to all hazards and emergencies facing Veterinary Services in a holistic and sustainable fashion.

This edition of *Panorama* provides you with information on some of the projects, initiatives and programmes of the OIE and its partners that support the emergency preparedness and resilience of OIE Members. I wish to thank the authors for their contributions and hope you find this issue useful and informative.

**Monique Éloit**  
**Director General**  
**World Organisation for Animal Health (OIE)**

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## PERSPECTIVES

### ► OIE ACTIONS

## Exploring innovative approaches to improving the sustainable management of animal health emergencies

### KEYWORDS

#animal health, #emergency management, #emergency preparedness, #resilience, #sustainability, #workshop, #World Organisation for Animal Health (OIE).

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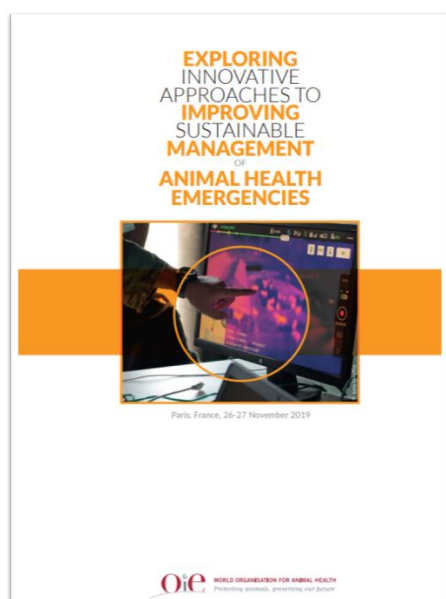
*The World Organisation for Animal Health (OIE) facilitated a dynamic, multisectoral and interdisciplinary expert discussion in November 2019, at OIE Headquarters in Paris, to share and explore approaches and models that could improve the sustainability of emergency management, particularly in lower-resource settings.*

The experts agreed that there is no 'one size fits all' for emergency management, and sustainability is a challenge to achieve in both low- and high-resource settings. However, innovative approaches could offer partial solutions.

Innovative models to support resilience include inter-country agreements to share human resources for an emergency response; public–private partnerships, e.g. shared responsibility between the government and livestock

sector; novel assessment and prediction models (using climate data and 'big data'); mechanisms to mobilise financial resources (including contingency funds); response networks (including research); insurance policies; and mechanisms to fast track the development and sourcing of vaccines.

The participants agreed that having a contingency plan does not necessarily equate to being prepared. A plan must be 'fit for purpose': it must be based on local risks and accompanied by adequate resources (including trained personnel, equipment, and finances). Preparedness must be regularly tested through well-designed and executed simulation exercises.



*Click on the image to download the report of the workshop held at OIE Headquarters in November 2019*

Networking between OIE Members supports resilience. Countries can learn from one another (in the context of planning or participating in multi-country exercises), and share personnel to support an emergency response or expertise in the field of research and development.

One example of important multisectoral collaboration is between law enforcement and Veterinary Services to prevent and respond to agro-crime and agro-terrorism. The costs of investing in multisectoral preparedness against these threats can be far outweighed by the potential socio-economic, health and political benefits. Preparedness against such threats should be integrated into animal health emergency management planning and include raising awareness with stakeholders, establishing roles and responsibilities, joint training and exercises, and seeking the input of stakeholders and other agencies when developing contingency plans.

A multisectoral approach to emergencies is essential when dealing with any animal health and welfare emergency.

**Thanks to the [Weapons Threat Reduction Program \(WTRP\)](#) of Global Affairs Canada for supporting this initiative.**

All the presentations given during the workshop are available as PDF files upon request to the corresponding author.

[Workshop agenda](#)

<http://dx.doi.org/10.20506/bull.2020.2.3141>

[OIE web portal on planning for emergencies](#)

## PERSPECTIVES

### ► JOINT ACTIONS

## Building resilience against agro-terrorism and agro-crime

### KEYWORDS

#agroterrorism, #biological threat reduction, #emergency management, #Food and Agriculture Organization of the United Nations (FAO), #International Criminal Police Organization (INTERPOL), #resilience, #simulation exercise, #Veterinary Services, #World Organisation for Animal Health (OIE).

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*The World Organisation for Animal Health (OIE), the Food and Agriculture Organization of the*

*United Nations (FAO), and the International Criminal Police Organization (INTERPOL) are partners in an international project to build sustainable global resilience against animal health emergencies caused by agro-terrorism and agro-crime.*

Established in October 2018, the project aims to foster coordination at the national, regional, and international levels. It focuses on regions where the previous work of the three organisations has identified gaps in various aspects of emergency management that may make countries vulnerable to agro-crime and agro-terrorism. The target regions include the Middle East, North Africa and South-East Asia. However, while the project concentrates on these regions, its outputs will be relevant to all countries worldwide.

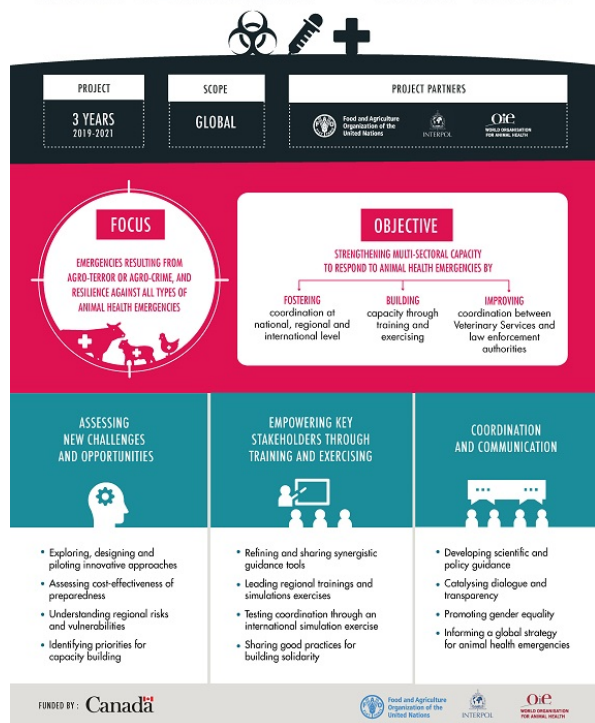
To ensure that the resulting capacity building is fit for purpose, the project is currently assessing the global situation for emergency management by identifying areas that are vulnerable to agro-crime and agro-terrorism; understanding the cost-effectiveness of investing in preparedness; and using OIE, FAO and INTERPOL tools to examine emergency management, including the relationship between the law enforcement and veterinary sectors.

Based on this evidence, the project team is designing tools, workshops, and simulation exercises to pilot in the target regions. Training will include workshops on the principles of emergency management, including how to design, deliver and learn from a simulation exercise, how to write a contingency plan, and how to command and control the situation during an agro-terrorism event. To test capacity at the national and regional levels, tabletop simulation exercises will be held, based on an agro-crime or agro-terrorism scenario. All activities will include participants from both the law enforcement and veterinary sectors.

These activities will culminate in an international simulation exercise to test coordination and communication at the national level (of selected countries), as well as at the regional and international levels. The exercise will be designed around the response to an agro-terrorism scenario in which law enforcement and veterinary sectors must cooperate.

Finally, a Global Conference on Emergency Management will be held at the end of the project to showcase the project's activities to a large multisectoral and interdisciplinary audience. The project partners hope to rally support from the international community to adopt an all-hazards approach to animal health emergencies; promote the inclusion of Veterinary Services in whole-of-government emergency and disaster frameworks by enhancing coordination between the law enforcement and veterinary sectors; and to foster a much stronger international emergency management network.

## BUILDING RESILIENCE AGAINST AGRO-TERRORISM AND AGRO-CRIME



Thanks to the [Weapons Threat Reduction Program \(WTRP\)](#) of Global Affairs Canada for supporting this project.

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## PERSPECTIVES

### ► OIE ACTIONS

## Laboratory equipment maintenance and calibration

Understanding the impact of equipment management on laboratory preparedness, surge capacity and sustainability

### SUMMARY

**Laboratory preparedness and surge capacity are critical components of planning in 'peacetime', but are difficult to ensure when emergency strikes. COVID-19 has taught us about how ready we are to face a global pandemic. Laboratory equipment needs to be prepared.**

### KEYWORDS

#biosafety, #biosecurity, #emergency management, #emergency preparedness, #laboratory, #OIE PVS Pathway, #sustainability, #World Organisation for Animal Health (OIE).

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*Preparedness is the state of readiness, in this case, in the face of an emergency. Laboratories must be aware of their ability to respond to any emergency. Surge capacity is 'the sudden and sustained increase in the volume of testing that a laboratory can perform in an emergency situation, implementing substantial operational changes and using all resources available' [1].*

Determining a laboratory's surge capacity requires the examination of all its resources, including infrastructure, staffing and finance, and operational factors such as biosafety cabinets (BSCs), reagents, costs, molecular diagnostic equipment, consumable stocks, supply chain, training, vaccinations, quality assurance, etc.

A major resource for laboratories – equipment – determines the kind of service a laboratory can provide to its clients. Veterinary laboratory equipment maintenance was the subject of a recent survey (mid-2019) undertaken by the OIE with veterinary laboratories and OIE National Focal Points for Veterinary Laboratories. A total of 136 OIE Members (75%) responded, with more than 220 laboratories participating across all OIE Regions.

## **Do OIE Members' laboratories have the equipment they need to respond to an emergency?**

Preliminary results show that, globally, veterinary laboratories possess critical equipment to detect and diagnose important animal and zoonotic diseases. Forty different types of equipment were included in the survey, with roughly half of those reported being pipettes, about 4%: PCR machines, and 4%: BSCs.

## **Is that equipment in good working order?**

Of the more than 68,000 items of equipment reported, approximately 21% were not properly maintained and 48% were not properly calibrated (Fig. 1). In the Africa Region, the situation is more serious: nearly 58% of items were not properly maintained and 76% were not properly calibrated. Among the PCR machines reported globally, nearly 20% were not properly maintained and 50% were not properly calibrated. Among the BSCs reported, the picture is similar: approximately 24% globally and 59% in the Africa Region were not properly certified.

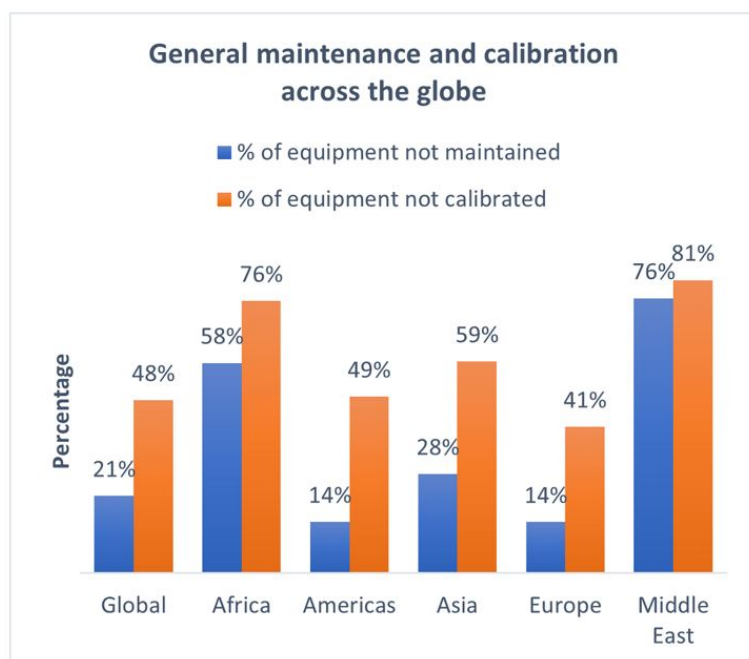


Fig. 1. Equipment maintenance and calibration status

These results call into question the safety, security and reliability of the results produced by veterinary laboratory equipment.

## How accessible is expertise to get equipment into good working order?

Unfortunately, competencies to maintain, repair and calibrate highly specialised equipment are not easily accessible in all OIE Regions. Globally, competencies to maintain and calibrate equipment exist in-house for 18% of equipment, and within the same country for 73% of equipment. However, in the Africa Region, competencies to maintain and calibrate equipment exist in-house for only 10% of equipment, and within the same country for 47% of equipment.

Globally, 49% of laboratory equipment is donated, and that figure rises to 84% in the Africa Region. This often means that the operating budget required to ensure maintenance, calibration, repair and replacement is not built into laboratory budgets.

The OIE is working to build awareness of these challenges to laboratory preparedness and sustainability through generous support from [Global Affairs Canada](#) for the Sustainable Laboratories Project [2]. The enhanced [PVS Sustainable Laboratories Tool](#) will assist Members to address challenges to the sustainability of their laboratory systems. Final results will be published.

The current global context has shown us that better laboratory preparedness is essential, and that the right laboratory equipment, maintained and calibrated on a regular basis, is a critical component of a laboratory preparedness plan.

<http://dx.doi.org/10.20506/bull.2020.2.3143>

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## PERSPECTIVES

### ► OIE ACTIONS

## The OIE response to COVID-19

What does COVID-19 have to do with animal health? And what has the OIE been doing?

### KEYWORDS

#COVID-19, #emergency management, #emerging pathogen, #emerging viral disease, #emerging zoonosis, #One Health, #World Organisation for Animal Health (OIE).

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*SARS-CoV-2 almost certainly emerged from an animal source [1] and, unsurprisingly, several mammalian species have been shown to be susceptible to the virus and to transmit it [2]. For example, the virus has begun to circulate in farmed mink. This, alongside other animal infection events and the response (sometimes disproportionate) to those events, impacts animal health and welfare, biodiversity, national economies and public health. There is also a real danger that new wild or domestic animal reservoirs of the virus could become established due to anthropo-zoonotic introduction from humans. Considering these risks, it is important that the veterinary sector remain vigilant and active.*

As early as January 2020, the World Organisation for Animal Health (OIE) started to communicate on the

implications of SARS-CoV-2 at the human–animal interface.

## | SARS-CoV-2 infection in animals is reportable to the OIE

Since SARS-CoV-2 infection in animals is reportable to the OIE as an ‘emerging disease’, the OIE has been sharing the latest findings through a [dedicated web page](#). The OIE continues to provide guidance on research priorities in accordance with the World Health Organization (WHO) R&D Blueprint for COVID-19, which details surveillance and preventative measures to avoid further spillover from humans to animals and vice versa. The OIE’s advice aims to inform risk communication.

## | The OIE has issued guidance and advice for veterinary diagnosticians, officials and practitioners

The success that some countries have had in flattening the epidemic curve was influenced by their ability to rapidly deploy mass testing of suspected human cases. In several of these countries, [veterinary laboratories played an important frontline role](#) in supporting their public health partners to meet the surge in demand by testing human samples. Veterinary laboratories are well set up to do this because they are used to ‘scaling up’ testing capacity for animal disease outbreaks. In collaboration with WHO, the OIE compiled lessons learned from veterinary laboratories involved in the public health response to COVID-19, and developed and disseminated guidance to help and encourage other veterinary laboratories to support the response [3]. Veterinary Services supported the public health response in other ways too; by providing much-needed equipment (when there were shortages), contributing epidemiology expertise, and facilitating inter-agency cooperation at border entry points. In addition to issuing guidance for veterinary laboratories, the OIE has issued advice for Veterinary Services and veterinary practitioners. This covers the sampling, testing and reporting of SARS-CoV-2 in animals [4] and considerations on the application of sanitary measures for international trade related to COVID-19 [5].

In the longer term, Veterinary Services must play a central role in reducing the risks of future pandemics by assessing the risks of disease emergence from animals, including wildlife, and managing those risks through better surveillance and regulation of high-risk practices, and enforcement. The OIE is developing an ambitious, transformative programme of work to reduce the risk of future pandemics from disease spillover events and aims to build a comprehensive wildlife health risk management core programme.

### [OIE Web Portal on COVID-19](#)

<http://dx.doi.org/10.20506/bull.2020.2.3144>

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## PERSPECTIVES

### ► OIE ACTIONS

## Disseminating emergency management best practices through new technologies

### KEYWORDS

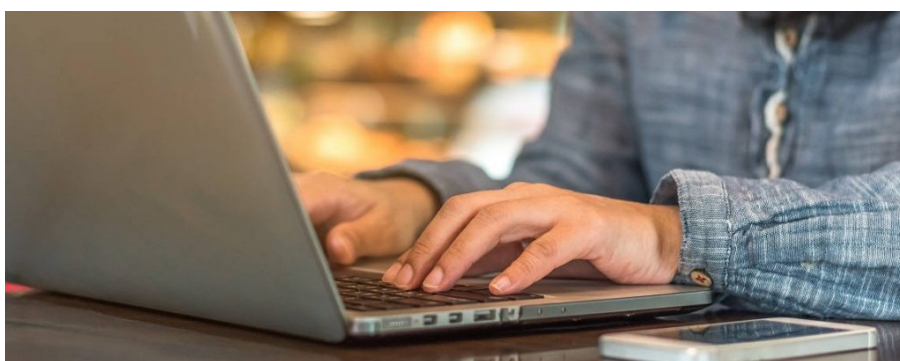
#capacity building, #communication, #emergency management, #emerging viral disease, #webinar, #World Organisation for Animal Health (OIE).

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*While engaging stakeholders is key to effective animal disease detection, prevention and control, reaching them can be tricky, especially during a crisis. In the past two years, the OIE South-East Asia Sub-Regional Representation has been exploring new technologies to engage its stakeholders more efficiently and effectively, such as the use of online meeting platforms.*

Disseminating information is key to detecting, preventing and controlling emerging animal diseases. The OIE Sub-Regional Representation for South-East Asia is using new technologies to reach and engage all its stakeholders swiftly and in the middle of a crisis.

In the past two years, South-East Asia faced the introduction of two exotic transboundary animal diseases: **African**

**swine fever (ASF)** and **African horse sickness (AHS)**. A third, **lumpy skin disease (LSD)**, also threatens the sub-region. As these diseases had never been reported in this area before, farmers, animal owners and veterinarians had limited knowledge of their epidemiology or of effective prevention and control measures. In addition to the crisis created by the introduction and spread of these diseases, their emergence has, in some instances, coincided with the restrictions imposed as a result of the COVID-19 pandemic.



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While available information and regular updates were compiled on the OIE Asia–Pacific website, practical information was disseminated via a series of virtual meetings or webinars. Experts from different regions shared their experience and time was allocated for participants' questions. These webinars were recorded and are available on the OIE Asia–Pacific website:

- [Webinars on African swine fever \(ASF\)](#)
- [Webinars on African horse sickness \(AHS\)](#)
- [Webinars on lumpy skin disease \(LSD\)](#).

The webinars have allowed the OIE to reach a large number of stakeholders, from public Veterinary Services to private veterinarians, representatives of the industries involved and non-governmental organisations. Best practices were circulated in a short period of time, allowing key staff to stay informed and deployed during the crisis, despite travel restrictions. The webinars also facilitated the participation of key experts who have been in high demand during this period. Finally, they helped regional stakeholders to identify key experts in their region or at the global level who could be contacted to explore topics further.

This series of webinars should be seen as a vital part of the set of activities undertaken by the OIE and its partners to provide knowledge for the effective prevention and control of these diseases.

## PERSPECTIVES

### ► OIE ACTIONS

## Emergency preparedness for ASF in the Americas

### KEYWORDS

#African swine fever (ASF), #Americas, #capacity building, #communication, #emergency preparedness, #Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADs), #Standing Group of Experts (SGE), #survey.

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*In June 2019, the offices of the World Organisation for Animal Health (OIE) in the Americas and the Delegate of Canada to the OIE jointly conducted a survey of OIE Members and non-members to better understand the current level of preparedness for African swine fever (ASF) introduction*

*into the region [1].*

ASF is a contagious viral disease of domestic and wild pigs that can cause devastating economic and production losses. The dramatic change in the global epidemiology of ASF since 2018 has heightened concerns that the virus might spread to disease-free regions, such as the Americas, home to approximately 177 million domestic pigs.

Given the variability in the level of oversight and veterinary capacity to deal with emerging animal diseases in the region, a coordinated approach to prevent and respond to the threat of ASF is required. To address this need, a Standing Group of Experts on ASF (SGE-ASF) for the Americas was established in September 2019 [1].

Below is a summary of the results from two questionnaires on the matter, and action is being taken to address the findings.

## **The first questionnaire on risk pathways for ASF included questions regarding live pig imports, pork and pork products, and contaminated fomites**

A descriptive analysis of the binary responses (yes/no) was conducted. The key findings were:

- Introduction through live pigs and fomites is unlikely since no country imports pigs from infected countries or has personnel working on infected farms abroad.
- Should the virus enter, spread could occur through inadequate controls of the disinfection and use of vehicles for imported pigs/pig products, which was reported in 59% of countries.
- The biggest risk is through personal imports of pork and pork products, a practice reported by 28% of countries. This risk is compounded by swill feeding and unprotected landfills reported in over half of countries.
- Awareness-raising to discourage imports from infected countries was reported by 90% of countries.

## **The second questionnaire assessed 42 emergency preparedness measures**

The variables were classified into four categories:

- legal authority
- human resources
- infrastructure
- preparedness planning.

The percentage of positive responses within each category was calculated and categorised as:

- green (more than 80%)
- yellow (60%–80%)
- pink (less than 60%).

Countries were grouped by sub-regional level (North America, Central America, Caribbean, South America). The category of preparedness planning was further divided into response plans, training and exercises to inform where capacity-building should be directed.

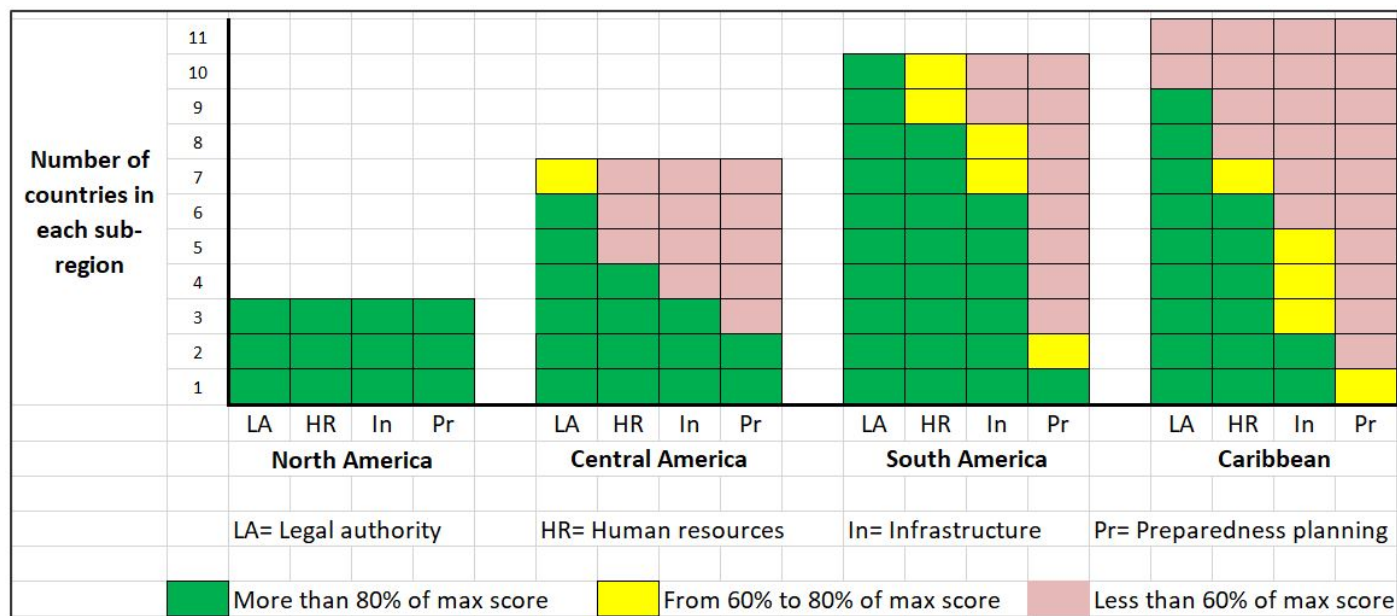


Fig. 1. Analysis of African swine fever emergency preparedness in the Americas by sub-region

The results showed a mixed state of preparedness in all sub-regions, with the exception of North America, where all countries scored above 80% (Fig. 1). In the other sub-regions, most countries reported having the legal authority to control ASF and scored well for human resources. Infrastructure capacity, such as national incident management systems, emergency funding, laboratories, equipment and supplies for investigations, showed more variability.

Preparedness planning was the weakest area. Closer analysis showed that, while some countries have undertaken training in emergency preparedness, this has not been translated to the development of response plans and training exercises.

We aim to keep the Americas ASF-free through capacity-building and coordinated action

Several capacity-building activities have taken place to address key areas identified through the survey. The first two meetings of the SGE-ASF focused on best practices for strengthening border controls and the analysis of risk pathways [2, 3]. Training of OIE Laboratory Focal Points on ASF diagnostics and surveillance was conducted in December 2019, with OIE Communication Focal Points receiving training in August 2020. The Food and Agriculture Organization of the United Nations (FAO) provided broad training on ASF in Central America and the Caribbean.

<http://dx.doi.org/10.20506/bull.2020.2.3145>

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## PERSPECTIVES

### ► OPINIONS AND STRATEGIES

## Does insurance/reinsurance have a role in mobilising resources in lower-resource settings?

### KEYWORDS

#emergency preparedness, #insurance, #resilience, #resource mobilisation, #risk, #risk analysis, #risk assessment, #socio-economic impact.

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*Insurance is a contract (the policy) in which an insurer indemnifies another party against losses from specific contingencies and/or perils in return for a payment (the premium). Reinsurance is insurance by another insurer of all or part of the risk assumed by an insurance company. Any company that provides cover for producers/farmers against losses associated with an outbreak*

*of highly infectious animal disease will almost certainly have reinsurance in place.*

Outbreaks of serious disease are rare but, when they do occur, they can affect large sections of the industry and result in significant losses. Insurance companies usually buy reinsurance against these large loss events to protect their balance sheets.

The challenges involved for an insurance company to provide effective, affordable and sustainable insurance against an animal disease are significant, particularly in an environment of low resources. One such challenge is the producer's ability to pay the premium when incomes and margins are low. This is often where the government can help through directly or indirectly subsidising premiums. Perhaps the greatest challenge is the ability to create a good insurance product in such an environment. A lack of credible data to quantify risk, limited or no infrastructure to administer and deliver an insurance programme, an unskilled workforce, and limited access to capital are just a few of the challenges that face insurers in these circumstances.

| An effective insurance programme improves the preparedness and resilience of the industry in the event of an animal disease outbreak

Notwithstanding such obstacles, the introduction of an effective insurance programme can result in many benefits. Apart from protecting against unpredictable loss, the mere existence of a programme can lead to significant changes in the industries involved. As producers begin to understand risk, the insurer can mandate change to reduce and mitigate it. Changes such as improved biosecurity and responsible animal management will, in turn, improve herd health. Over time this collective responsibility will lead to improvements in the risk profile of the industry. This not only reduces the probability of a disease event occurring, but it will reduce its volatility if an event does occur. Both key attributes will lead to reduced premiums and improved coverage.

As a further and very important benefit of making material changes to the way that farmers manage risk, an effective insurance programme will, in itself, improve the preparedness and resilience of the industry in the event of an animal disease outbreak.

[DH AgRisk Services Ltd in The Parliamentary Review](#)

<http://dx.doi.org/10.20506/bull.2020.2.3146>

## PERSPECTIVES

### ► OPINIONS AND STRATEGIES

## Including veterinarians in preventing and preparing for bioterrorism

### Law enforcement and veterinary cooperation to combat deliberate biological attacks

#### KEYWORDS

#agroterrorism, #bioterrorism, #emergency management, #emergency preparedness, #Guinea, #International Criminal Police Organization (INTERPOL), #One Health, #resilience, #Veterinary Services.

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Project RHINO on strengthening multi-agency preparedness to biological risks. © INTERPOL

*With the spectre of bioterrorism looming larger, due to major disruptions caused by recent infectious disease outbreaks [1], we must make plans and develop strategies to prevent and respond to the deliberate spread of disease now. The impact of disease on both human and animal health makes it crucial for governments to adopt a One Health approach in all aspects of prevention, preparedness and response to such events [2]. Yet, to date, few countries have*

*looked at how prepared their Veterinary Services are to monitor and identify disease events linked to agro-crime and agro-terrorism or to coordinate with law enforcement agencies on their response.*

Steps have already been taken with public health services to make this cooperation a priority and the same should be done with Veterinary Services. Thus, there is a serious lack of integration of veterinarians into the law enforcement-led response and in the ability of all agencies to cooperate effectively in the emergency management cycle of such events.

## **Major challenges to cooperation between law enforcement and animal health services**

Building resilience to a deliberate disease outbreak means fully integrating veterinarians into the disease response, whether or not animals are directly involved in the incident.

While some degree of cooperation exists between the law enforcement and veterinary sectors in relation to criminal behaviour, they are guided by very different perspectives. As such, cooperation is often hindered by a lack of understanding of each other's roles, responsibilities and constraints, combined with poor awareness of how both sectors can support each other in fulfilling a common goal: 'to protect the health and safety of the public'. This overarching goal is a powerful inducement to overcome these obstacles and bring both communities together (Figs. 1, 2, 3).

## **Initiating dialogue between veterinary and law enforcement agencies**

Project RHINO (an INTERPOL project to strengthen its member countries' capacity to combat biological threats) in Guinea [3] began the necessary conversation between veterinary and law enforcement agencies to collaborate in an 'all-hazards strategy' to control disease outbreaks.

An understanding of each other's mandates and of the benefits of cooperation formed the cornerstone of mutual trust required to increase resilience to animal disease emergencies. Joint training, training across sectors, and participating in joint exercises to demonstrate the value of a multi-agency approach, even in smaller incidents, have strengthened this process (Figs. 4, 5). However, resilience, in the form of continuing the sustainable networks developed through this project, also depends on strong political support. This can only be guaranteed by governments who are well informed of the One Health approach, understand its importance and are committed to its implementation.

[Watch INTERPOL video on Project RHINO](#)



Fig. 1. Roles and responsibilities of law enforcement and animal health services in a biological incident.

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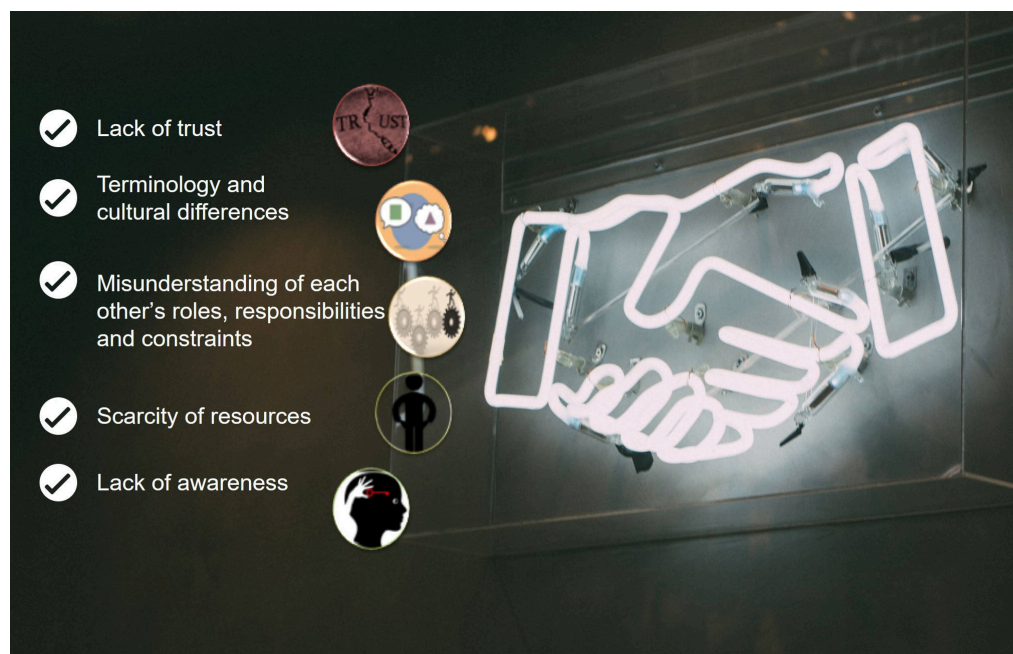


Fig. 2. Challenges to law enforcement and veterinary services cooperation. © INTERPOL



Fig. 3. Addressing law enforcement-veterinary services cooperation challenges. © INTERPOL | Photo on the right by CDC on Unsplash



Fig. 4. Law enforcement and veterinary services joint training on use and limitation of personal protective equipment for emergency response. © INTERPOL

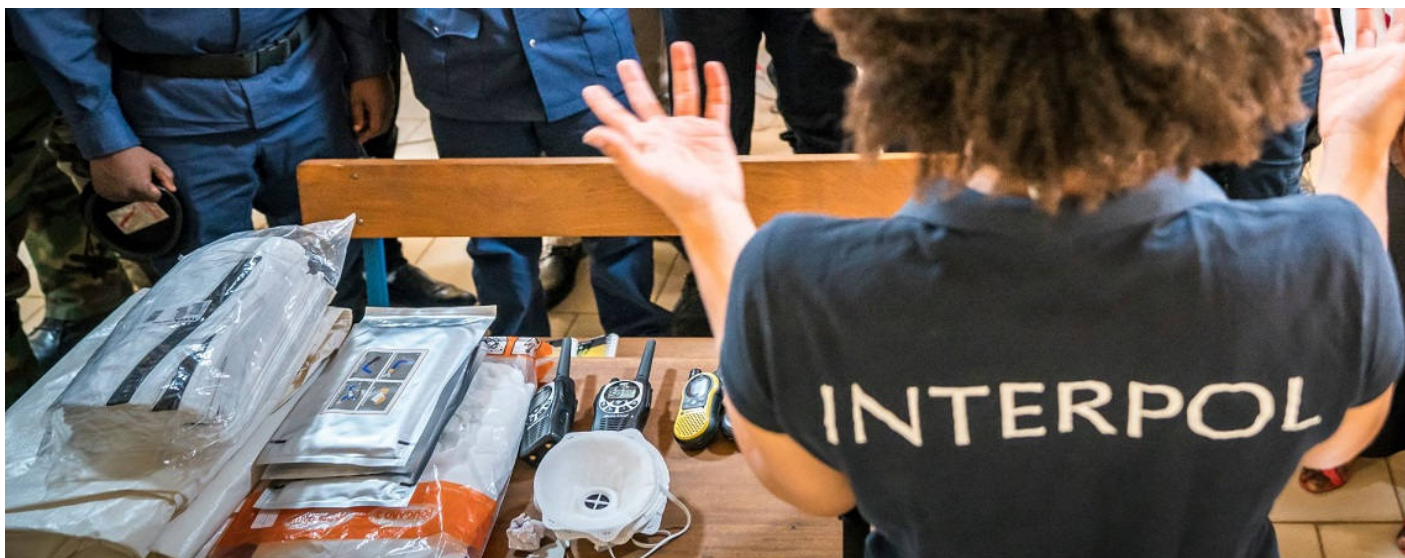


Fig. 5. Joint exercising to deliberate incidents involving biological substances affecting animals. © INTERPOL

<http://dx.doi.org/10.20506/bull.2020.2.3147>

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## PERSPECTIVES

### ► OPINIONS AND STRATEGIES

## The importance of linking animal health emergency response to government frameworks when mobilising resources

### Botswana's story

#### KEYWORDS

#Botswana, #emergency management, #emergency preparedness, #OIE PVS Pathway, #public-private partnership, #resource mobilisation, #Veterinary Services.

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*Animal health emergencies can arise at any time. Therefore, Veterinary Services need to have adequate resources in terms of funds, staffing capacity and capability, response plans and supporting legal instruments to enable the timely implementation of their response. All these efforts must be well coordinated at the government level and should be science based.*

There should be government frameworks, legal instruments, resources and capabilities to support and guide the response to animal health emergencies. These should be centrally coordinated through government structures, with regular disease surveillance and continuing animal health preparedness plans. Veterinary disease management policies, strategies, contingency plans and response plans should be aligned to national and international standards.

The Government of Botswana has a National Disaster Office, which is guided by the national disaster management policy, composed of personnel from across the sectors, and is adequately funded. The Department of Veterinary Services is also adequately funded to deal with animal health emergencies through its annual recurrent and development budgets.

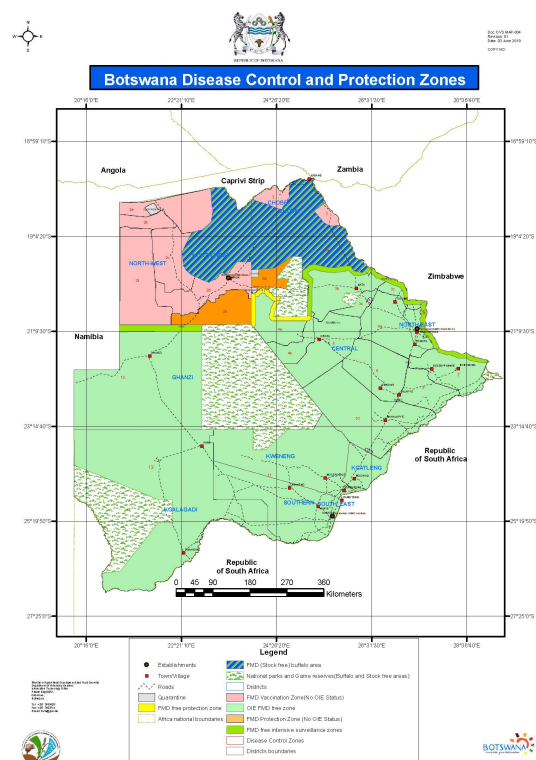


Fig. 1. FMD control and protection zones in Botswana  
(please click to enlarge the map)

Emergency funding can be sourced whenever the need arises through a memorandum with the Cabinet of Botswana, although the emergence of other sectors of the economy can present challenges to the usual funding. Through this mechanism, Botswana has managed to control foot and mouth disease (FMD), with only the northern part of the country still requiring FMD control (Fig. 1). This success is also attributable to good governance, excellent capabilities and capacities in the Department of Veterinary Services and prompt resource mobilisation during emergencies, as detailed in the OIE report of a Performance of Veterinary Services (PVS) Evaluation follow-up mission in Botswana, conducted in 2019 [1].

So that Botswana can further improve its response to animal health emergencies, the country is developing its engagement with stakeholders and is also exploring public–private partnerships. This will improve the efficiency and funding of Botswana’s preparedness and response to animal health emergencies, with similarities to the

Animal Health Australia model [2].

<http://dx.doi.org/10.20506/bull.2020.2.3148>

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## PERSPECTIVES

### ► OPINIONS AND STRATEGIES

## Good Emergency Management Practice: The Essentials

A guide to preparing for animal health emergencies

### KEYWORDS

#animal health, #capacity building, #contingency planning, #emergency management, #Emergency Management Centre for Animal Health (EMC-AH), #emergency preparedness, #Food and Agriculture Organization of the United Nations (FAO), #guidelines, #One Health, #risk analysis, #training, #Veterinary Services.

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*Infectious diseases and other threats, including hazards that are intentionally released, have increasing potential to spread rapidly within a country or around the world, due to growing*

*populations, more concentrated animal populations, market intensification, human and animal movements and global trade.*

Animal health emergencies can have serious socio-economic and public health consequences. The success of emergency management systems depends on the commitment of all key decision-makers to mobilise needed resources, take rapid and relevant decisions, coordinate all mobilised national capacities, and communicate adequately to all stakeholders.

To respond to this challenge, [the Emergency Management Centre for Animal Health \(EMC-AH\)](#) of the Food and Agriculture Organization of the United Nations (FAO) first developed a guide in 2011, entitled [Good Emergency Management Practice: The Essentials](#).

| The Good Emergency Management Practice manual has become an international reference

The *Good Emergency Management Practice* (GEMP) manual describes how an animal health emergency management system should establish the elements necessary to achieve the required level of preparedness, and plan for the implementation of appropriate strategies and actions, in particular through the development of preparedness and response plans. The GEMP manual has become an international reference and is used to organise awareness and training workshops and enhance the capacities of Veterinary Services, in coordination with the relevant public health, environmental and law enforcement authorities, by taking a One Health approach. These workshops help to review countries' experiences with animal health emergency management. They can identify key information gaps and the best strategies to address them. A format that encourages participants to take an active role and diversified sessions enable participants to learn from a range of different modules and share their in-country practices. A simulation exercise or after-action review allows participants to practise what they have learned by collaborating in small groups.

| An updated version of the Good Emergency Management Practice manual is being developed

An updated version of the GEMP manual is being developed to take into account the different phases of an animal health event and the actions that should be implemented. GEMP's scope is not confined to emergencies related to naturally occurring infectious diseases; it also covers natural disasters and the intentional use of biological pathogenic agents.

The EMC-AH aims to support all components of emergency management at the national, regional and international levels, creating a progressive pathway for emergency preparedness.

## PERSPECTIVES

### ► OPINIONS AND STRATEGIES

## A global partnership to mitigate biological threats

### SUMMARY

**Threats posed by bioterrorism and biological weapons are very real. Collaboration at the animal–health–security interface can play a key role in mitigating all manner of biological threats, whether natural, accidental or deliberate in origin.**

### KEYWORDS

#biological threat reduction, #biological weapon, #Canada, #COVID-19, #emergency management, #emergency preparedness, #G7, #G8, #Ghana, #Global Partnership against the Spread of Weapons and Materials of Mass Destruction, #Kananaskis, #weapon of mass destruction, #World Organisation for Animal Health (OIE).

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*The COVID-19 pandemic has shown that infectious disease outbreaks – whether natural, accidental or deliberate – have the ability to paralyse the planet and cause unparalleled, whole-of-society impacts.*

As the international community comes together to fight COVID-19, it must also heed the warning issued by UN Secretary-General António Guterres, that ‘the weaknesses and lack of preparedness exposed by this pandemic provide a window onto how a bioterrorist attack might unfold – and may increase its risks’ [1].

Bioterrorism and bio-weapons threats are daunting but not new. And therein lies the good news: as an international community we know how to meet them. For nearly two decades, **Canada’s Weapons Threat Reduction Program (WTRP)** and other members of the G7-led **Global Partnership against the Spread of Weapons and Materials of Mass Destruction (GP)** have been working at the health–security interface to deliver capacity-building programmes and mitigate global biological threats.

We are pleased that the programming implemented by Canada and other members of the 31-country GP is currently supporting the global response to COVID-19. This includes a long-standing partnership between Canada’s WTRP and Ghana’s Veterinary Services Directorate, supported by the Canadian Food Inspection Agency, which has paved the way for COVID-19 testing in Ghana [2].



An employee working on COVID-19 samples in Ghana (2020)

The World Organisation for Animal Health (OIE) has played an instrumental role in enabling successes like this. For more than a decade, the OIE and GP have collaborated to strengthen global biosecurity. Together, we have worked to maintain global freedom from rinderpest [3], to convene global conferences on biological threat reduction [4], to protect countries from agro-terrorism [5] and to design more sustainable laboratories [6].

The veterinary and security sectors have accomplished much together, but much more remains to be done to achieve our common goal of preventing, detecting and responding to all manner of disease threats.

For more information, please visit the [Global Partnership against the Spread of Weapons and Materials of Mass Destruction \(GP\) website](#)

<http://dx.doi.org/10.20506/bull.2020.2.3149>

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## DOSSIER

### OIE actions on emerging diseases of aquatic animals

#### The example of tilapia lake virus

##### KEYWORDS

#animal disease, #aquatic animal, #biosecurity, #emergency preparedness, #OIE Ad hoc Group, #OIE Aquatic Animal Health Standards Commission, #OIE Collaborating Centre, #risk, #tilapia, #World Organisation for Animal Health (OIE).

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Tilapia farming on Lake Volta, Ghana. © E. Peeler

*New diseases of aquatic animals emerge frequently and may threaten aquaculture, fisheries and the environment. There are numerous examples of emerging diseases that have negatively*

*impacted food security, profitability, livelihoods and biodiversity [1].*

Infection with tilapia lake virus (TiLV) is an emerging disease of particular concern because tilapia are the second most important group of farmed fish worldwide and critical for food security in many countries. The TiLV was first described in 2014 after it was found to be the cause of mass tilapia mortalities in Israel [2]. The disease has since been reported from countries in Africa, Asia and the Americas.

Emerging diseases are challenging because so little is known about them when they first occur. However, for responses to be effective, prompt (and perhaps costly) actions are required.

The OIE aims to assist its Members by identifying important new diseases and sharing available information to reduce their spread. Through the [OIE Aquatic Animal Health Standards Commission](#), new disease threats are routinely identified and brought to the attention of OIE Members.

**An excellent example of how the OIE community can work together to combat the threat of emerging diseases of aquatic animals**

For TiLV, the OIE Aquatic Animals Commission advised OIE Members of the threat soon after it became known to science. The Commission developed a disease card [3] and OIE Members were encouraged to report any detections so a clear picture of its distribution could be developed.

Listing a disease on the OIE List of diseases is an important step to initiate the development of trade standards that support OIE Members in maintaining freedom from a disease. An assessment for listing TiLV was prepared. However, TiLV did not meet the requirements for listing because the diagnostic methods had not been sufficiently evaluated. To address this issue, the OIE formed an *ad hoc* group to further evaluate the available diagnostic methods. This group, led by the [OIE Collaborating Centre for New and Emerging Diseases](#), in Australia, has brought together laboratories from across the world. It is an excellent example of how the OIE community can work together to combat the threat of emerging diseases of aquatic animals.

<http://dx.doi.org/10.20506/bull.2020.2.3150>

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## DOSSIER

### Rift Valley fever and the challenges of remaining fully prepared for this periodic emergency

#### KEYWORDS

#animal health, #climate change, #emergency preparedness, #One Health, #public health, #Rift Valley fever (RVF), #vaccination, #vector control.

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*Rift Valley fever (RVF) is an acute viral disease of domestic animals (cattle, buffalo, sheep, goats, and camels) and humans. It is endemic to sub-Saharan Africa, the Arabian Peninsula (Saudi Arabia and Yemen), and Madagascar. RVF poses a threat to public health and the*

*livestock trade in affected countries, with estimated trade losses of US\$ 250 million caused by outbreaks since 2006. It has the potential for introduction into new areas through imported livestock or virus-infected mosquito vectors. Epizootics and epidemics are associated with periods of above-normal rainfall (for more than 60 days), allowing multiple generations of infected vectors to propagate and infect livestock and human populations.*

The prevention, control and mitigation of RVF in endemic countries and regions require effective surveillance measures, both passive and active. While passive RVF surveillance relies on general animal health surveillance conducted by Veterinary Services, including reports from livestock keepers and other affected sectors, active surveillance includes measures taken by Veterinary Services to specifically monitor the possible circulation of the RVF virus, and also to collect and analyse data on factors that directly influence the occurrence of RVF, such as climate and competent insect-vector pressure. Control measures thus consist of medical and sanitary prophylaxis. Medical prophylaxis consists of vaccination and the implementation of an appropriate vaccination strategy. Sanitary prophylaxis focuses on climate surveillance systems that feed early-warning systems. It uses these early-warning systems to conduct targeted vector surveillance and control and, when at-risk areas have been identified, puts livestock movement controls and zoning in place to mitigate the risk of human and animal outbreaks.

Coordination between the human and animal health sectors is of the utmost importance

At present, RVF tends to be first noticed when human cases appear. This must change. Measures that alert both the veterinary and public health sectors when RVF first appears in livestock have the potential to greatly mitigate the disease's impacts on both animal and human health.

## Climate surveillance and early-warning systems

Current early-warning systems gather data on various climate measurements, including sea-surface temperatures as an indicator of the phase and amplitude of El Niño/the Southern Oscillation (ENSO), rainfall, and vegetation conditions. The data are then used to map areas at potential risk of outbreaks [1] (Fig. 1). These early-warning systems can provide three to six months' lead time before a possible outbreak (Fig. 2). Such early warnings need to be accompanied by on-the-ground vector surveillance and control in areas deemed to be at potential risk, and by vaccination and public awareness campaigns [2].

In addition, emergency preparedness and resilience during inter-epidemic periods is vital. Under changing climate conditions, accompanied by extreme rainfall, the risk of outbreaks is elevated [3]. It is important to employ a risk-based approach to control strategies, including seasonally and geographically targeted vaccination and health promotion campaigns.

## Vaccination strategy

The RVF livestock vaccines currently available have clearly demonstrated their effectiveness in controlling RVF in

enzootic and epizootic situations. At present, vaccination approaches to RVF [4] are still limited and should be expanded to other endemic and at-risk countries. The costs of not vaccinating, shown by a number of recent outbreaks, should demonstrate the need for national and regional vaccination strategies, which may include the establishment of regional vaccine banks.

## Conclusions

Countries need to pay attention to early-warning systems and implement vector control, while establishing effective RVF vaccination strategies. Regional approaches to RVF control, which should also involve public health, are of the utmost importance in high-risk areas if there is to be an efficient response to RVF alerts and outbreaks.

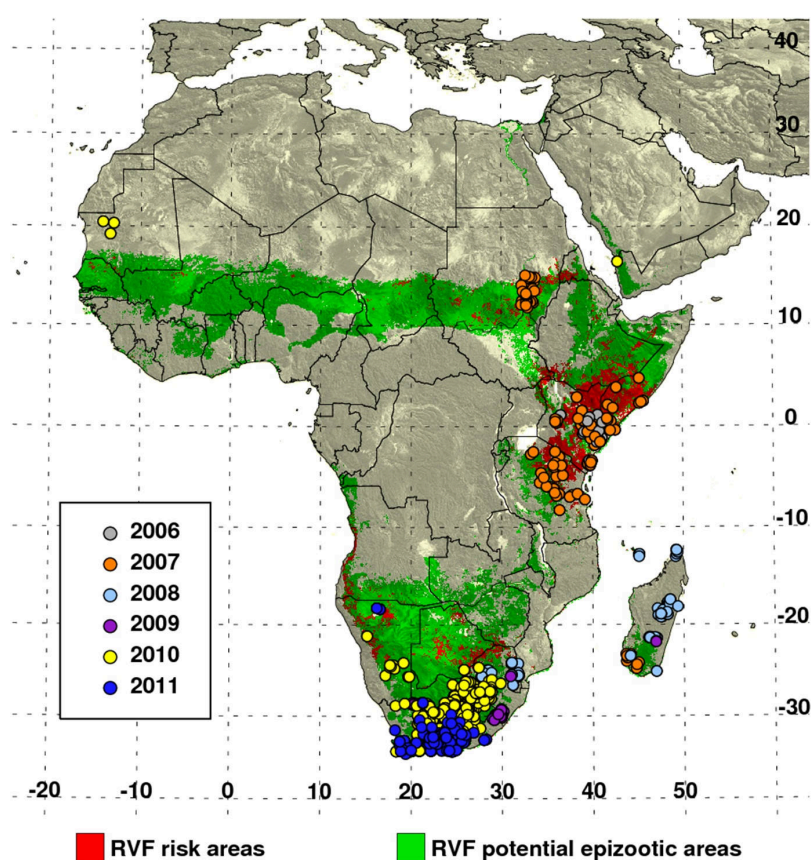


Fig. 1. Composite Rift Valley fever risk map showing areas at risk in red and locations of various outbreaks between 2006 and 2011. Regional epicentres of outbreaks are in Eastern Africa and Southern Africa modulated by rainfall variability associated with El Niño and La Niña phases of the El Niño/Southern Oscillation.

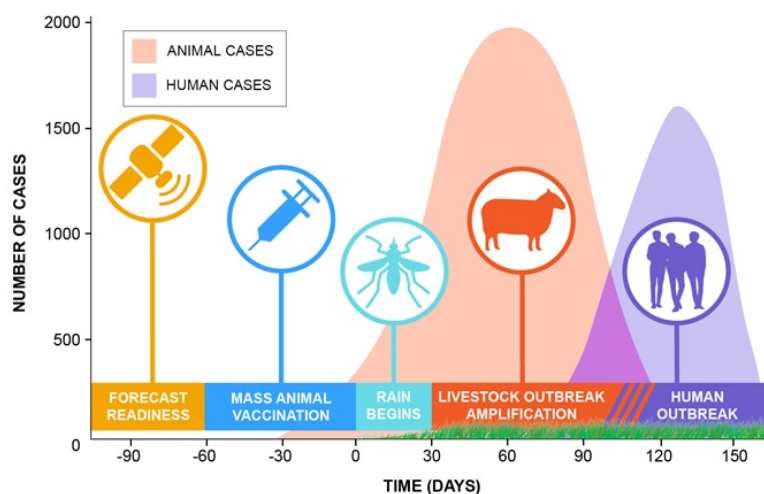


Fig. 2. Idealised Rift Valley fever early warning timeline based on data from Eastern and Southern Africa.

Concept by Assaf Anyamba, design and art by Heidi Tubbs, Universities Space Research Association (USRA) & NASA/Goddard Space Flight Center.

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## DOSSIER

### OFFLU collaboration in the WHO influenza vaccine virus selection process

#### KEYWORDS

#avian influenza, #emergency preparedness, #equine influenza, #Food and Agriculture Organization of the United Nations (FAO), #OIE/FAO Global Network of Expertise on Animal Influenza (OFFLU), #One Health, #pandemic, #Tripartite (FAO/OIE/WHO), #vaccine, #World Health Organization (WHO), #World Organisation for Animal Health (OIE), #zoonosis.

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*OFFLU is the World Organisation for Animal Health (OIE)/Food and Agriculture Organization of the United Nations (FAO) global network of expertise on animal influenza, working to reduce the negative impacts of avian, swine and equine influenza viruses by promoting effective collaboration between animal health experts and the human health sector.*

One of the main objectives of OFFLU is to collaborate with the World Health Organization (WHO) on issues related to

the animal–human interface, including pandemic preparedness for the early preparation of human vaccines.

## | The threat of an influenza pandemic persists

Over the past four decades, sporadic transmission of influenza viruses between animals and humans has occurred. These sporadic zoonotic infections remind us that the threat of an influenza pandemic persists.

The WHO [Global Influenza Surveillance and Response System \(GISRS\)](#) is the global mechanism of surveillance, preparedness and response for seasonal, pandemic and zoonotic influenza. It also recommends the strains that should be used in human influenza vaccines. The periodic review and updating of viruses contained in influenza vaccines is necessary for the vaccines to remain effective, due to the constant evolution of influenza viruses, especially those circulating in and infecting humans.

Twice each year, WHO organises consultations with an advisory group of experts to analyse influenza virus surveillance data and issue recommendations on the composition of the influenza vaccines for the following season. These recommendations are used by the national vaccine regulatory agencies and pharmaceutical companies to develop, produce and license influenza vaccines [1]. Since January 2011, OFFLU's contribution to the biannual WHO influenza vaccine composition meetings for zoonotic animal influenza data has been formalised among the Tripartite organisations. Under this collaboration, OFFLU provides for every biannual meeting a summary of epidemiological, virological and antigenic data for the previous six months on the circulating zoonotic animal influenza viruses, including H5, H7 and H9 avian influenza events and H1 and H3 swine influenza events. These data are collected from OIE/FAO Reference Centres and national animal health laboratories in countries representing Asia, Africa, Oceania, Europe and the Americas. This contribution allows crucial information from the animal health sector to be used by WHO to determine and update pre-pandemic candidate vaccine viruses for human vaccines against zoonotic viruses of concern [2].

This collaborative effort between the human and animal health sectors under the One Health approach serves to strengthen the data available for analysis and contributes to the process for updating influenza vaccine selection.

For more information, please visit the [OFFLU website](#)

<http://dx.doi.org/10.20506/bull.2020.2.3152>

[OIE web portal on interagency cooperation for emergency management](#)

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## DOSSIER

### Risk assessment to inform targeted surveillance at airports and prevent the introduction of African swine fever

#### SUMMARY

**Risk assessment can identify higher risk periods and routes of entry of ASF through smuggling of animal products in air passenger luggage. The use of such models would facilitate the implementation of targeted surveillance and other preventive measures.**

#### KEYWORDS

#African swine fever (ASF), #animal movement, #risk assessment, #smuggling, #surveillance, #transboundary animal disease.

#### AUTHORS

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*Illegal smuggling and transport of animal products in passengers' luggage is a demonstrated pathway for the spread of transboundary animal diseases around the world. This route is especially important for African swine fever (ASF) because of the high resistance of the virus (ASFv) in infected products.*

Risks can be reduced through targeted interventions, e.g. communication campaigns, so that passengers understand the risks of their actions and the penalties if they get caught, and surveillance at ports of entry (detection dogs, luggage inspections, self-declarations, interviews, etc.). These interventions are most effective when targeted towards high-risk passengers during high-risk periods and at high-risk ports of entry. Therefore, risk

assessment can help to target communication campaigns and surveillance activities to make them more effective. A targeted approach supports greater efficiency, making it particularly applicable and useful in low-resource settings.

Existing data sources and new methodologies (for example machine learning methods and interconnection of databases) allow faster and better-quality assessments. A quantitative stochastic risk assessment model has been developed to estimate the risk of ASFv introduction into the United States of America by illegal swine products carried by air passengers [1]. The results showed that it was possible to identify the countries of origin, airports and months that presented a higher risk for the introduction of infected products. The model can be adapted to other settings and easily updated with new data (as demonstrated by the authors after the introduction of ASF into the People's Republic of China [2]) to implement and feed real-time surveillance systems. This could potentially help customs to increase the detection rate of smuggled products, by indicating when and where to look for them.

Without targeting of activities and resources, controlling this route can be very difficult because of the numerous limitations (personnel, resources, low sensitivity of detection, time for controls, etc.).

<http://dx.doi.org/10.20506/bull.2020.2.3153>

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## AROUND THE WORLD

### ► NETWORK INITIATIVES

## Nordic–Baltic emergency preparedness through cooperation between authorities

The Nordic–Baltic Veterinary Contingency Group increases harmonisation in the response to epizootics

### KEYWORDS

#cooperation, #emergency preparedness, #Nordic–Baltic Veterinary Contingency Group (NBVCG), #One Health, #simulation exercise.

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*The Nordic–Baltic Veterinary Contingency Group (NBVCG) was established in 2006 after an initiative from the Nordic Council of Ministers.*

The primary objective is to improve cooperation, communication and the exchange of information and experience between veterinary authorities within the Nordic–Baltic region and at the international level, in the context of

contingency planning and during animal disease crises.

## Spreading knowledge

The secondary objectives are to increase awareness of epizootic diseases and zoonoses among professionals and stakeholders within the region, to identify areas for improvement in contingency planning and also to obtain and spread knowledge related to fighting infectious animal diseases.

## Harmonisation and sharing of resources

Through regional simulation exercises and workshops, the NBVCG shares experiences and harmonises its strategies in contingency planning and during animal disease crises. Through a memorandum of understanding, it is also possible to share personnel between countries in case of a major disease outbreak. Since every single country is small, such cooperation is vital for emergency preparedness.

## Epizootics in a wider perspective

Due to climate change and challenges to security in northern Europe, epizootic diseases must be seen in a wider perspective in the future, including the partnership between human and animal health, One Health, agro-crime and globalisation. These changing circumstances will have an impact on contingency planning and the need for cooperation and the exchange of experience and knowledge between adjacent countries.



FMD simulation exercise conducted in 2019 by the NBVCG



For more information, please visit the [NBVCG website](https://www.nbvvg.org/)

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## AROUND THE WORLD

### ► NETWORK INITIATIVES

## Biosafety Level 4 Zoonotic Laboratory Network (BSL4ZNet)

An example of how established trust and scientific diplomacy have contributed towards efforts to overcome global health crises

#### KEYWORDS

#biosafety, #Biosafety Level 4 Zoonotic Laboratory Network (BSL4ZNet), #laboratory, #zoonosis.

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Biosafety Level 4: under the microscope. © Canadian Food Inspection Agency

*Science plays a critical role in moments of crisis, when leveraging scientific knowledge, creativity and innovation can not only solve current challenges, but also drive a clear path forward for future preparedness. However, 'working in silos' in scientific institutions, as*

*individual nations often do, can slow down developments and result in delayed emergency responses. Scientific diplomacy is crucial for the world's preparedness and response strategies, and it is critical in the fight against the current COVID-19 pandemic and other zoonotic disease outbreaks as they emerge.*

In 2016, Canada took a leading role in addressing global bio-surveillance capabilities and established the Biosafety Level 4 Zoonotic Laboratory Network (BSL4ZNet), with an objective to strengthen international coordination and improve knowledge sharing. The BSL4ZNet aims to enhance preparedness for current and future emerging pathogens, applying a One Health approach to zoonotic diseases, and has been steadily working towards this goal ever since.

| The principles and actions of BSL4ZNet are demonstrative of the potential impact of a strong scientific international network, as we enter the pandemic era

The Network's strong international consortium is built on trust and established best practices of open and transparent scientific information sharing. Rising to the challenge, partners from 17 government organisations across five countries, Australia, Canada, Germany, the United Kingdom and the United States of America, quickly responded to the emerging threat and established a strategic COVID-19 response group. Emergency meetings have been held since early January 2020 to facilitate prompt and efficient intelligence sharing on organisational responses, laboratory protocols and other actions to improve COVID-19 diagnostic methods. Research studies were quickly established to examine animal models, transmission and disease dynamics, and many important discussions were held to enhance global awareness and understanding of risks associated with the human-animal interface.

The BSL4ZNet organised the COVID-19 International Scientific Symposium mini-series. During six virtual sessions, scientists from academia, government and industry presented cutting-edge research on the biology of SARS-CoV-2, COVID-19 epidemiology, animal studies, diagnostics, vaccines and therapeutics. With approximately 2,000 registrants, these events served as a dynamic forum encompassing the full ecosystem of COVID-19 science in an open and transparent manner to advance global response capabilities.

The BSL4ZNet is a true example of an international network coming together during a crisis to support global resources in order to better understand disease transmission patterns and assess risks, aiming to develop and apply situational awareness to help manage this evolving pandemic.

Overcoming a global zoonotic crisis requires transparency, openness and trusted international collaborations. The actions of BSL4ZNet have contributed a body of knowledge towards the global fight, and its principles and actions are demonstrative of the potential impact of a strong scientific international network, as we enter the pandemic era.

For more information, please visit the [BSL4ZNet website](#)



## Biosafety Level 4 Zoonotic Laboratory Network

2020

**VISION:** BSL4ZNet is a Network of government-mandated organizations with national level responsibility for protecting animal and human health by working together to enhance knowledge, competency and capacity to meet current and future high containment needs.

**MISSION:** To establish & sustain trusted BSL4 partnerships to strengthen international coordination, improve knowledge sharing and leverage capacity for diagnostics, research & training.

### 4 Established Working Groups: key achievements & outcomes



#### TRAINING WORLD-CLASS PERSONNEL

- To strengthen high containment laboratory personnel training through identification and creation of training opportunities, building a highly trained, collaborative workforce able to respond to emerging procedures.



#### SCIENTIFIC EXCELLENCE

- To promote scientific collaboration and learning within the Network, enhancing diagnostic capabilities, scientific collaborations & collective advice for decision makers.



#### INSTITUTIONAL COOPERATION

- To promote institutional cooperation and knowledge sharing within the network to allow efficient mechanisms for harmonized exchange of laboratory-based information, such as latest advances in infrastructure and research.



#### INTERNATIONAL RESPONSE

- To strengthen laboratory preparedness and response to potential outbreaks through knowledge sharing activities, leading to a better understanding of the hazards, exposure and vulnerability.

**A Networking Opportunity:** Recognizing the global need, emerging threats and the timeliness of the opportunity to re-define the current state, decision-makers and subject matter experts from key international organizations came together face to face in Winnipeg, MB (March, 2016) to develop a common vision for the future. A unanimous decision was reached to move forward with a strategic framework for an international Network. Since then, BSL4ZNet has flourished into a productive group that meets virtually through quarterly Steering Committee Meetings and regular Working Group discussions.



- Co-Chairs:  
**Dr. Primal Silva** – Chief Science Operating Officer, Canadian Food Inspection Agency (CFIA) &  
**Dr. Jeffrey Silverstein** – Office of National Programs Deputy Administrator USDA, Agricultural Research Service
- **Dr. Olga Pena** – Science Specialist (CFIA)
- **Funding:** through the Canadian Food Inspection Agency (CFIA); the Canadian Safety and Security Program, Defence Research Development Canada (DRDC) and the Agricultural Research Service, USDA

## PARTNERS

### COVID-19 Rapid Collaborative Response

**COVID-19 Update Meetings (January 2020 - To Date):** BSL4ZNet facilitated prompt sharing of knowledge concerning SARS-CoV-2 laboratory diagnostic protocols, survival and spread potential, susceptibility of animal species and countermeasures to control the virus. Sharing COVID-19 research plans has been a main outcome of institutional cooperation during these meetings. An inventory of coronavirus experts across the Network was generated to enhance collaboration among partner organizations.

**COVID-19 International Symposium (August - September 2020):** A six-part scientific program focused on different COVID-19 topics, including virology, epidemiology, animal studies, diagnostics, vaccines and therapeutics, was organized by BSL4ZNet involving high quality presentations by well recognized experts. This highly successful event attracted an international audience of over 1200 regulatory scientists, academia, government officials, non-profit organizations and industry.

Integrated global capacity to respond to current and emerging high consequence bio-threats through strengthened partnerships.

Australia	Organization	Laboratory
	Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Australian Centre for Disease Preparedness
Canada	Canadian Food Inspection Agency	National Centre for Foreign Animal Disease
	Public Health Agency of Canada	National Microbiology Laboratory
	Department of National Defence	Canadian Safety and Security Program
Germany	Global Affairs	Threat Reduction Program
	Frederich Loeffler Institut	Novel and Emerging Infectious Diseases
	National Research Institute for Animal Health	Centre for Biological Threats and Special Pathogens/ Biosafety Level 4 Laboratories
United Kingdom	Robert Koch Institut	
	State Technology and Biological Sciences Research Council	The Pirbright Institute
	Animal and Plant Health Agency	Weybridge Veterinary Laboratories
United States	Public Health England	Burnton Down Laboratory
	Ministry of Defence of the United Kingdom	Defence Science and Technology Laboratory
	United States Department of Agriculture	Animal and Plant Health Inspection Services
United States	Centers for Disease Control and Prevention	Agriculture Research Services
		National Bio and Agro-Defense Facility
	Department of Homeland Security	Emerging Infectious Disease Laboratory
		National Biodefense Analysis and Countermeasures Center Science & Technology Directorate

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## AROUND THE WORLD

### ► NETWORK INITIATIVES

## GET Prepared

### A toolbox for emergency preparedness

#### KEYWORDS

#emergency preparedness, #European Commission for the Control of Foot-and-Mouth Disease (EuFMD), #Food and Agriculture Organization of the United Nations (FAO), #foot and mouth disease (FMD).

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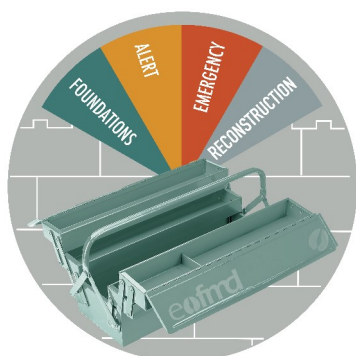


*The European Commission for the Control of Foot and Mouth Disease (EuFMD) is developing a toolbox called 'GET Prepared'. This toolbox will contain resources for contingency planners to assess and address gaps in different areas of preparedness for animal disease emergencies. GET Prepared is also aimed at facilitating networking between contingency planners.*

## The user interface

The user interface is shown as a wall (Fig. 1). Each component of emergency preparedness is represented by a brick in the wall. The wall conveys the idea of building preparedness, and the bricks indicate that the process is continuous. The coloured layers represent the foundations and different epidemiological phases of the animal disease event (alert - emergency - reconstruction).

## The tools



The tools include resources already developed by EuFMD, such as the EuFMDis model (a multi-country, FMD outbreak simulation model), an FMD impact calculator and e-learning courses. New tools will be developed within the EuFMD workplan in collaboration with the European Commission and EuFMD Member Nations. During audits carried out in Member Nations, the European Commission (SANTE.DDG2.F.2) has identified good practices and resources, and countries are asked to share these. While existing tools focus mainly on FMD, many of the new tools will be generic and able to be adapted for similar transboundary animal diseases. A number of the tools will be of use to countries other than EuFMD Members, although some will be tailored to meet European Union legislative requirements.

## Assessment tools

The GET Prepared toolbox will also include assessment tools to facilitate the identification of gaps and areas for improvement in preparedness, such as rubrics (scoring guides), online tools including calculators and questionnaires, or checklists.

## Timeline and prioritisation of components

The development of the different components will be prioritised according to the needs of EuFMD Member Nations. The GET Prepared toolbox is expected to be fully available online by October 2021. Resources will be progressively added, and initiatives to promote the use of the tool will be launched.

## Access to the toolbox

These resources will be accessible by all EuFMD members and other countries, taking into consideration intellectual

RECONSTRUCTION		RECONSTRUCTION RECOVERY				Vaccination Exit Strategy		Recovery of Free Status		Resilience					
EMERGENCY		COORDINATION COOPERATION COMMUNICATIONS				Public-Private Partnerships		Coordination with operational partners		Cooperation with other stakeholders		Communication			
		SUPPORT FUNCTIONS				Legal		Financial		Procurement		Psychological Support			
		EMERGENCY MANAGEMENT				National Emergency Management		Central Decision-Making Unit		National Disease Control Centre		Expert Groups			
		RESOURCES				Personnel		Equipment		Facilities		Logistics		Resource & Impact Calculators	
		ADDITIONAL MEASURES						Vaccination		Preventive culling		Welfare slaughter			
		ZONES				Control Zones		Movement control		Zone Surveillance		Wildlife Controls			
		INFECTED PREMISES				Valuation		Killing		Disposal		Cleaning & Disinfection		Restocking	
ALERT		SUSPECT INVESTIGATION				Personal Biosecurity		Clinical Examination		Sampling		Epidemiological Investigation			
		EARLY DETECTION				Risk Assessment		Surveillance		Awareness		Farm Biosecurity			
FOUNDATIONS		FOUNDATIONS				Training		Simulation Exercises		Models		Information Management Systems			
		FOUNDATIONS				Outline Contingency Planning		Outline Operations Manual		Format for SOPs		Self Assessment		Prevention	
		FOUNDATIONS				Identification Registration & Traceability		Value Chain Analysis		Stakeholder Engagement		Laboratory			

## AROUND THE WORLD

### ► NETWORK INITIATIVES

## Camel Middle East Network (CAMENET)

### KEYWORDS

#Camel Middle East Network (CAMENET), #Camelid, #emergency management, #Middle East, #reference centre, #transmissible spongiform encephalopathy (TSE).

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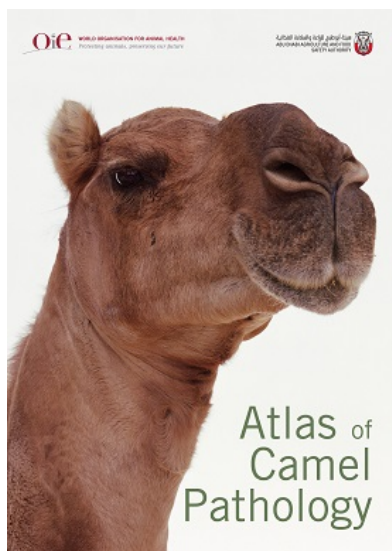
Omani men walking and dancing following a traditional camel race. ©Katiekk2/Getty Images

*The Camel Middle East Network (CAMENET) was established as a result of successive regional and international discussions on the importance of collaboration to improve our knowledge of camel diseases. CAMENET assists its Members to develop their camel sector, focusing on the control of camel diseases.*

The network enables the pooling of expertise and knowledge to improve scientific and technological capacities in the epidemiology and diagnosis of camel diseases in the sub-region. It also coordinates and facilitates scientific

collaboration between CAMENET Members and Reference Centres on specific topics and disseminates knowledge.

Developing scientific networks facilitates communication and collaboration, two of the most important components in emergency management



Networking is one of the most important tools in emergency management and plays an effective role in enhancing emergency response capacity and the dissemination of knowledge. The past Middle East respiratory syndrome coronavirus (MERS-CoV) emergency in the sub-region and the current COVID-19 pandemic clearly demonstrate the importance of harmonised scientific collaborations, studies and research to aid emergency response and minimise the disease's impact.

Although CAMENET focuses particularly on camel diseases, it plays a similarly important role in coordinating and harmonising research efforts, risk assessment and knowledge-sharing for emergency preparedness and response. For instance, when positive cases of camel prion disease were first reported in North Africa, CAMENET started an initiative to address the main issues, such as case definition, epidemiological surveillance, biosafety, capacity building, early warning and response, risk factors and knowledge gaps [1]. This initiative was aimed at publishing a working document that clearly details the procedures to be followed when facing an outbreak, to assist Members to develop their formal contingency plans. To this end, CAMENET began a collaboration with the [Italian National Institute of Health](#) and the OIE Reference Laboratory, [Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta](#), to prepare the [Working Document on Camel Prion Disease \(CPrD\)](#). In brief, this collaboration clearly demonstrates that developing scientific networks facilitates communication and collaboration, two of the most important components in emergency management.

For more information, please visit the [CAMENET website](#)

<http://dx.doi.org/10.20506/bull.2020.2.3157>

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## AROUND THE WORLD

### ► SUCCESS STORIES

## Emergency preparedness through strategic partnerships

### KEYWORDS

#emergency preparedness, #Namibia, #public-private partnership, #Veterinary Services.

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*Namibia is an arid country situated in the south-west of Africa. This region is rich in wildlife, including the African buffalo (*Syncerus caffer*), a known carrier of foot and mouth disease (FMD). A large proportion of the Namibian people depend on livestock for their livelihoods. With a*

population of 2.4 million people, and 90% of agricultural land suitable for livestock, the Namibian livestock and meat sectors have, over a number of years, developed into a successful export-orientated industry. The Directorate of Veterinary Services (DVS) has long been recognised as playing a crucial role in safeguarding both animal health and international trade. The outcome is a strategic collaborative partnership between industry and the DVS.

## Background

The Meat Board of Namibia (MBN) was established in 1981 by the livestock industry, with the mission of promoting the interests of the industry in Namibia and elsewhere, and is fully funded through the payment of levies by producers and traders of livestock and livestock products. Representatives of the livestock and meat industry are members of the MBN.

An Emergency Animal Health Fund was established by the MBN in 1994 for the sole purpose of providing resources that can be mobilised quickly during animal health emergencies which threaten Namibian livestock and meat export markets. This partnership was driven by the industry's need for market access, i.e. by the private partner.

## The partnership

In 2015, an FMD outbreak in the FMD protection zone of Namibia (Fig. 1) required swift action from the public-private partnership to prevent spillover into the part of Namibia that is recognised by the World Organisation for Animal Health (OIE) as an FMD-free zone [1], and the possible suspension of export markets.

The role of each partner during the outbreak is set out in the table below.

### Public partner (DVS) input

Technical expertise and activation of the FMD contingency plan

The DVS mobilised financial resources – NAD 180 million was approved by Cabinet – and implemented outbreak control measures, such as intensified disease surveillance, a mass vaccination and tagging campaign, and establishing and staffing road blocks to enforce movement restrictions and disinfect vehicles.

Provision of personnel and appointment of temporary staff

A total of 826 temporary staff were recruited and trained to augment veterinary personnel for the disinfection of vehicles at road blocks and the vaccination campaign.

Emergency disease control measures

As stated above.

### Private partner (MBN) input

An animal health consultation forum to establish the situation, identify needs and coordinate and mobilise assistance

This included the procurement of equipment, creating awareness campaigns, appointing expert consultants, hiring veterinarians to conduct post-vaccination surveys, providing rations to temporary staff and managing the maintenance of the veterinary cordon fence.

Early mobilisation of finances to the amount of NAD 7 million

Personnel assistance

## The outcome

Through this partnership, a 'win-win' situation was created for both the public and private partners. For the public partner, funds were available immediately, with buy-in and support from producers to contain the outbreak. The

result was a swift implementation of emergency control measures and the containment of the outbreak. For the private partner, fast action and containment of the outbreak resulted in the maintenance of the FMD-free zone and access to livestock and meat export markets.

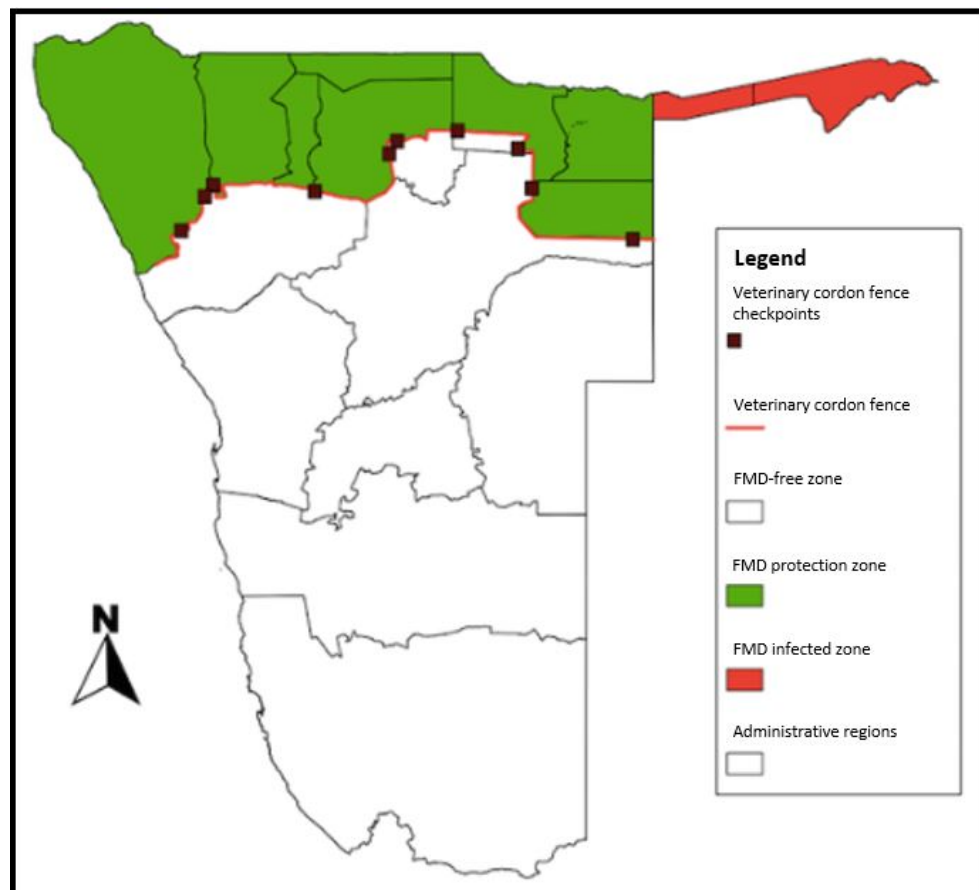


Fig. 1. FMD control zones in Namibia. © Directorate of Veterinary Services, Namibia.



Fig. 2. Roadblock on the Namibia-Angola border. © Anja Boshoff



Fig. 3. Ring vaccination against FMD. © Anja Boshoff



Fig. 4. Recordkeeping. © Anja Boshoff

<http://dx.doi.org/10.20506/bull.2020.2.3158>

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## AROUND THE WORLD

### ► SUCCESS STORIES

## Simulation exercises: a valuable tool in biopreparedness

### Highlights from the CELULEX exercises in Portugal

#### KEYWORDS

#army, #biological threat reduction, #emergency preparedness, #One Health, #Portugal, #simulation exercise.

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*In Portugal, biopreparedness field-training exercises form part of a series of chemical, biological, radiological and nuclear (CBRN) simulation exercises. These 'CELULEX' exercises are civil support exercises, organised and conducted on an annual basis by the Portuguese Army. They*

*involve several institutions in a multisectoral context, and adopt an 'all-hazards' approach and a One Health perspective as main pillars for the construction of scenarios.*

## The value of simulation exercises in biopreparedness

Regular simulation exercises are essential tools in building and sustaining an effective national and international capability to contain the consequences of natural or deliberate disease outbreaks, restore confidence and make a rapid recovery, with minimal loss of life and disruption to daily life and the economic well-being of a country. They enable countries to validate plans and systems thoroughly, test coordination among national and international institutions, train frontline responders and highlight vulnerabilities [1].



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With a view to drawing on realistic scenarios and further enhancing multisectoral coordination, relevant stakeholders in biopreparedness and response take part in the annual CELULEX exercises, especially aimed at the health–security and human–animal interfaces.

The national institutions involved in these exercises include the following, the: Directorate General for Health, Directorate General of Food and Veterinary Affairs, National Institute of Health, National Institute for Agrarian and Veterinary Research, National Authority for Emergency and Civil Protection, Navy, Army, Air Force, National Republican Guard, Public Security Police, Lisbon Firefighters Regiment, Instituto Superior Técnico of the University of Lisbon, Portuguese Environmental Agency, National Institute of Medical Emergency, National Institute of Legal Medicine and Forensic Sciences, Portuguese Criminal Police, Public Prosecution Service and hospitals from the National Health Service [1, 2, 3, 4].

Outreach and dialogue with the international community constitute an important component of the CELULEX exercises

International experts from the following institutions were invited to take part in the exercises and participate as training audience and observers: the World Organisation for Animal Health (OIE); World Health Organization (WHO); Food and Agriculture Organization of the United Nations (FAO); United Nations Office for Disarmament

Affairs (UNODA); Instituto de Defesa Química, Biológica, Radiológica e Nuclear (Brazil); Institut für Mikrobiologie der Bundeswehr (Germany); Instituto Gulbenkian de Ciência (Portugal); King's College London (United Kingdom); Ministério da Agricultura, Pecuária e Abastecimento (Brazil); Regimiento de Defensa NBQ (Spain); Robert Koch Institute (Germany); Scuola Interforze per la Difesa NBC (Italy); Statens Serum Institut (Denmark); and NATO's Joint Chemical, Biological, Radiological and Nuclear Defence Center of Excellence. As part of their visit, the international observers were also given tours of the BSL3 laboratories of the National Institute of Health, the National Institute for Agricultural and Veterinary Research, and the Biodefense Laboratory of the Portuguese Army [1, 2].

<http://dx.doi.org/10.20506/bull.2020.2.3159>

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2. United Nations (2019). – Investigating alleged use of biological agents against agriculture, livestock and the natural environment: A practical approach. Submitted by Portugal. Document [BWC/MSP/2019/WP.4](#). In Meeting of the States Parties to the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction.
3. World Organisation for Animal Health (OIE) (2016). – [Simulation exercise: Foot and mouth disease in Portugal](#).
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## AROUND THE WORLD

### ► NETWORK INITIATIVES

## The OIE Collaborating Centre Network on Veterinary Emergencies (EmVetNet)

### KEYWORDS

#biological threat reduction, #Centro Nacional de Sanidad Agropecuaria (CENSA), #emergency management, #Institute for Infectious Animal Diseases (IIAD), #Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise 'Giuseppe Caporale' (IZSAM), #OIE Collaborating Centre, #World Organisation for Animal Health (OIE).

### AUTHORS

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(2) [Institute for Infectious Animal Diseases \(IIAD\)](#), College Station, Texas, United States of America; OIE Collaborating Centre for Biological Threat Reduction.

(3) [Centro Nacional de Sanidad Agropecuaria \(CENSA\)](#), San José de las Lajas, Provincia Mayabeque, Cuba; OIE Collaborating Centre for the Reduction of the Risk of Disasters in Animal Health.

\* Corresponding author: [emvetnet@izs.it](mailto:emvetnet@izs.it).

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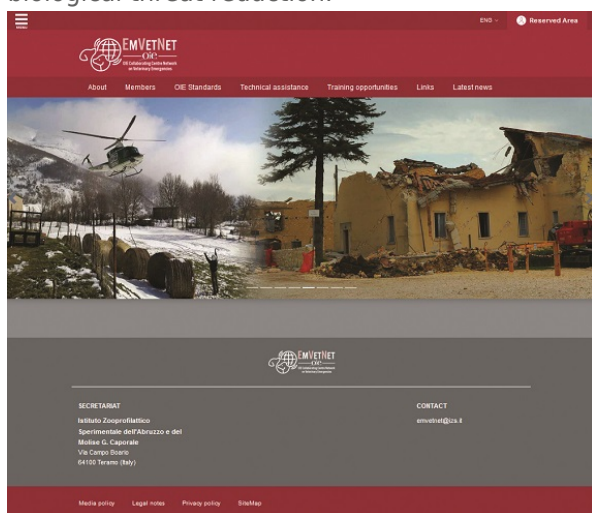
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*Disasters of all types, including natural ones, may cause severe loss of human and animal life,*

*have direct and indirect adverse impacts on public health and badly affect the sustainability of important agri-food sectors. Veterinary Services should play a leadership role in advising the various authorities on animal health and welfare and veterinary public health in disaster situations and should provide sufficient and appropriate support to ensure that animal health policies bring all the disparate components of disaster management together in a cohesive response, using a multidisciplinary approach.*

To better address the continuing challenges posed by a growing number of large- and small-scale disasters, the World Organisation for Animal Health (OIE) Collaborating Centre Network on Veterinary Emergencies (EmVetNet) was established in 2018, comprising the [Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise 'G. Caporale' \(IZSAM\)](#) in Italy, focused on veterinary training, epidemiology, food safety, and animal welfare; the [Centro Nacional de Sanidad Agropecuaria \(CENSA\)](#) in Cuba, focused on the reduction of the risk of disasters in animal health; and the [Institute for Infectious Animal Diseases \(IIAD\)](#) at Texas A&M University in the United States, focused on biological threat reduction.



Together, the EmVetNet members have decades of experience managing biological threats, responding to natural and human-made disasters and assisting OIE Members to promote a culture of prevention and preparedness among their Veterinary Services and relevant stakeholders. EmVetNet's mandate is to ensure that the health and welfare of livestock, wildlife and companion animals are protected during emergencies and to provide veterinary public health assistance [1].

The worldwide EmVetNet network aims to:

- provide technical advice and support for training, exercises and evaluation throughout the emergency management cycle for all hazards, and to facilitate multidisciplinary approaches to emergency management
- share knowledge on best practice (including models and case studies, e.g. model legislation, contingency/emergency plans, communication)
- make recommendations on research needs to support veterinary emergency management
- identify and coordinate with stakeholders (OIE Members, non-governmental organisations, public health authorities, the private sector), and seek to extend and diversify the network
- support operational activities, e.g. those of the [OIE](#), [Tripartite \(WHO, OIE, FAO\)](#), [Global Outbreak Alert and Response Network \(GOARN\)](#) and [Emergency Management Centre for Animal Health \(EMCAH\)](#).

For more information, please visit the [EmvetNet website](https://www.emvetnet.org/)

<http://dx.doi.org/10.20506/bull.2020.2.3160>

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## AROUND THE WORLD

### ► SUCCESS STORIES

## The Australian Emergency Animal Disease Response Agreement

### KEYWORDS

#animal disease, #Australia, #contingency planning, #emergency preparedness, #training.

### AUTHORS

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(2) [Animal Health Australia](#), Canberra, Australia.

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*The Australian Emergency Animal Disease Response Agreement (EADRA) is a unique, legally binding contractual agreement, ratified in 2002 between the Australian state and territory governments and livestock industries, that provides for the sharing of preparedness and response responsibilities, including response costs for emergency animal disease*

## *(EAD) outbreaks.*

The primary intentions of the EADRA are to reduce the risk of disease incursions through biosecurity planning, and to effectively and efficiently manage the response to an outbreak, including eradication, so that the affected sectors can return to business and trade in the shortest possible time.

The main benefit of the Agreement is the ability to respond quickly and effectively to an EAD incident while minimising uncertainty over management and funding arrangements. The Agreement prescribes the animal diseases and categories of response costs that are eligible for cost sharing. These have been agreed and committed to by all parties.

In addition to the arrangements for funding a response, the EADRA also provides certainty on and collective responsibility for:

- mitigating biosecurity risks to prevent incursions
- preparedness to respond to an incursion
- decisions regarding the effective management of incursions
- training personnel involved in the incursion response.

The EADRA is part of a wider range of response arrangements that facilitate Australia's preparedness to respond to disease incursions, including the Australian Veterinary Emergency Plan (AUSVETPLAN), and training programmes and simulation exercises to ensure that government and industry response personnel have the appropriate level of expertise and training [1].

For all diseases listed in the EADRA, there is a corresponding AUSVETPLAN response strategy, with an agreed approach to dealing with an outbreak. AUSVETPLAN comprises a series of manuals that set out the agreed national policy and guidelines for agencies and organisations involved in outbreak response. AUSVETPLAN also contains a wide variety of other resources, including operational manuals, enterprise manuals, management manuals, guidance, and resource documents.

Australia has used the EADRA, along with AUSVETPLAN, in multiple events since its ratification, and it has proven to be an essential and robust tool that supports collaborative EAD planning and response efforts. The EADRA is regularly reviewed to incorporate experiences and lessons learned from its implementation, and AUSVETPLAN manuals are also subject to a process of continuous review.

For more information, please visit the [Animal Health Australia \(AHA\) website](https://www.ahaustralia.gov.au/)

<http://dx.doi.org/10.20506/bull.2020.2.3161>

## REFERENCES

1. Animal Health Australia (2020). - [Emergency Animal Disease](#).

## AROUND THE WORLD

### ► THEMATIC EVENTS

## Notification of simulation exercises to the OIE

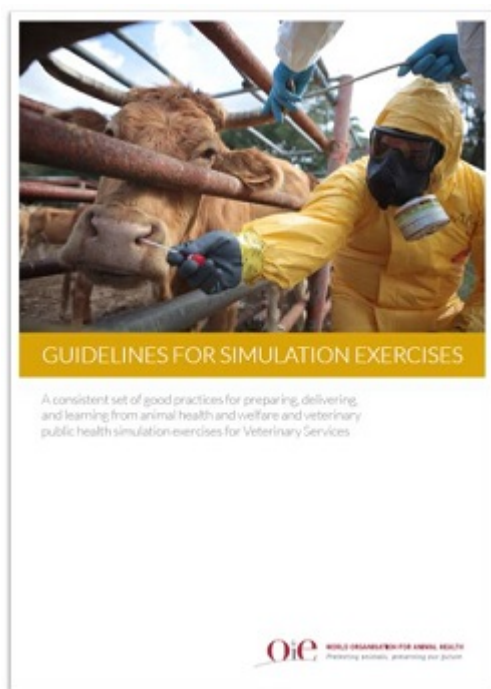
### KEYWORDS

#emergency preparedness, #simulation exercise, #World Organisation for Animal Health (OIE).



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*The World Organisation for Animal Health (OIE) encourages its Members to notify the OIE of their Veterinary Services' intent to hold an animal disease simulation exercise, whether at the national, regional or international level. The information will be posted as [an announcement on the OIE website](#) and shared with OIE Member Delegates and the subscribers of the [OIE Info distribution list](#).*



TO RECEIVE SIMULATION EXERCISE ALERTS,  
AS WELL AS ANIMAL HEALTH ALERTS,  
PLEASE REGISTER ON THE OIE WEBSITE.

## RESOURCES

### ► OIE PUBLICATIONS

## Disaster prevention and preparedness

### KEYWORDS

#biological disaster, #emergency preparedness, #OIE publication, #prevention, #Scientific and Technical Review, #World Organisation for Animal Health (OIE).



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### **Scientific and Technical Review, Vol. 39 (2)**

Editor: G.A. Vroegindewey

World Organisation for Animal Health (OIE)

August 2020

321 pages

ISBN: 978-92-95115-57-6

DOI: 10.20506/rst.issue.39.2.3084

This issue of the *Scientific and Technical Review* covers strategies aimed at building sustainable capabilities for national contingency planning and response, engaging with future technologies to enhance disaster resilience, promoting animal welfare and protecting responders. Case studies are also included that provide examples of previous disaster events, their impacts on animal populations and the responses by Veterinary Services to these events. These serve to provide lessons learned from such events so veterinary preparedness and response capabilities can be improved for the future.

[ [Order the printed version](#) ]

## Contents:

- **Preface** – Disaster prevention and preparedness
- **Introduction** – Disaster prevention and preparedness
- [Best practices for after-action review: turning lessons observed into lessons learned for preparedness policy](#)
- [Best practices in veterinary personal protective equipment](#)
- [Case study: the animal health sector's response to Hurricane Irma in Cuba](#)
- [Climate change and other risk drivers of animal health and zoonotic disease emergencies: the need for a multidisciplinary and multisectoral approach to disaster risk management](#)
- [Detecting national human enteric disease outbreaks linked to animal contact in the United States of America](#)
- [Emergency management at the health and security interface](#)
- [Emergency operations centres: models and core principles](#)
- [Emergency preparedness and response to African swine fever in the People's Republic of China](#)
- [Genomics and climate change](#)
- [Good emergency management practices: a review of the core principles, with a focus on preparedness](#)
- [Inclusion of Veterinary Services in national emergency management plans](#)
- [Innovating at the human-technology interface in disasters and disease outbreaks](#)
- [Integrating animal welfare into disaster management using an 'all-hazards' approach](#)
- [Legislative framework for national contingency planning and response](#)
- [Managing complex emergencies](#)
- [Preparing for animal health emergencies: considerations for economic evaluation](#)
- [Prevention and preparedness: biosecurity, early warning and contingency planning](#)
- [Provincial Veterinary Services respond to drought in South Africa](#)
- [Securing access to personnel and materials in transboundary animal disease responses](#)
- [Technological disasters and Veterinary Services](#)
- [The gulf between emergency plans and the resources needed: a global review](#)
- [The role of Veterinary Services in areas of conflict](#)
- [The role of laboratories in animal-related disasters and emergencies](#)
- [The role of military forces in emergency management \(civil-military interaction\)](#)
- [The role of vaccine banks in resilience, response and recovery in respect of animal diseases](#)
- [Veterinary Services: health, safety and wellness for veterinary professionals in disaster preparedness and response](#)
- **Conclusions** – Disaster prevention and preparedness: observations from the coronavirus pandemic

## RESOURCES

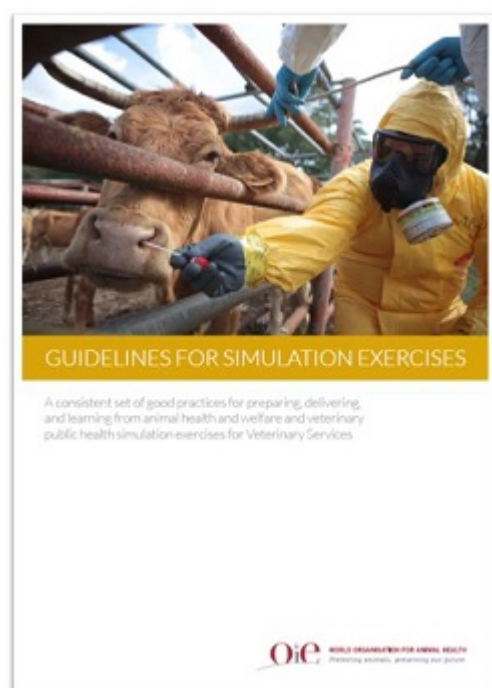
### ► OIE PUBLICATIONS

### Guidelines for simulation exercises

A consistent set of good practices for preparing, delivering, and learning from animal health and welfare and veterinary public health simulation exercises for Veterinary Services

#### KEYWORDS

#emergency preparedness, #guidelines, #OIE publication, #simulation exercise, #Veterinary Services, #World Organisation for Animal Health (OIE).



World Organisation for Animal Health (OIE)  
2020

ISBN: 978-92-95115-83-5  
27 pages

The OIE has developed these guidelines for simulation exercises with the goal of strengthening the capacity of Veterinary Services in OIE Members for preparedness against all hazards that affect animal health and welfare, and veterinary public health.

The guidelines are designed to be scalable to all levels of capacity and resources. They are also intended to be adaptable so that they can be used by countries of different animal disease status.

The primary target audience for these guidelines is Veterinary Services, however, they can be applied to the domestic, wildlife and livestock sectors, and affiliated stakeholders, academia, law enforcement authorities, emergency services, non-governmental organisations and other international bodies. The guidelines can be used at the producer, sub-national, national, regional and international level.

**[ [Download the OIE guidelines for simulation exercises](#) ]**

These guidelines complement other international guidelines, including:

- [WHO Simulation Exercise Manual](#)
- [Sendai Framework for Disaster Risk Reduction 2015-2030](#)
- [Good Emergency Management Practice: The Essentials](#).

## RESOURCES

### ► OIE PUBLICATIONS

## Guidelines on disaster management and risk reduction in relation to animal health and welfare and veterinary public health

### Guidelines for national Veterinary Services

#### KEYWORDS

#animal health, #animal welfare, #biological disaster, #biological threat reduction, #emergency management, #guidelines, #OIE publication, #One Health, #public health, #World Organisation for Animal Health (OIE).



World Organisation for Animal Health (OIE)

May 2016

8 pages

The OIE *Guidelines on disaster management and risk reduction* use an all-hazards approach to the management of natural and man-made and technological disasters and suggest that a wide range of stakeholders from both government and society take action, adapting their interventions to meet local and regional needs.

They advocate the integration of disaster management and risk reduction measures relevant to national Veterinary

Services into broader resilience and disaster management and response networks and policies, i.e. those that promote the health and welfare of animals, safeguard human and environmental health and assist OIE Members to restore and enhance economic and societal conditions in the aftermath of a disaster.

[ [Download the document](#) ]

## RESOURCES

### ► OIE PUBLICATIONS

## Guidelines for investigation of suspicious biological events

### Guidelines for national Veterinary Services

#### KEYWORDS

#biological threat reduction, #emergency management, #guidelines, #OIE publication, #Veterinary Services, #World Organisation for Animal Health (OIE).



World Organisation for Animal Health (OIE)

March 2018

8 pages

In response to the changing landscape of biological threats and the perceived likelihood of criminal or terrorist acts involving pathogens or toxins, guidance for prevention, preparedness and response to such attacks was issued by many countries, organisations and institutions. However, most of this guidance focuses on laboratory settings and protection of human health, leaving a gap regarding general guidance for Veterinary Service. To address this gap, the OIE developed these guidelines which should be understood as impulse on how to identify biological events that

warrant further investigation and on good practices for (joint) investigations of such events.

[ [Download the document](#) ]

## RESOURCES

### ► THEMATIC EVENTS

## Sharing the best practices on emergency preparedness

### KEYWORDS

#emergency preparedness, #One Health, #South-East Asia, #Veterinary Services, #workshop, #World Organisation for Animal Health (OIE).



A World Organisation for Animal Health (OIE) sub-regional workshop aimed to sharing the best practices on emergency preparedness, encouraging public-private collaboration, and building capacity to OIE Members to mobilise resources more effectively and develop their national emergency preparedness plan, was held in Bangkok, Thailand, in August 2019.

To access the presentations given during the workshop, please follow the links below.

**[Why preparedness is important.](#)** Chadia Wannous, Coordinator, Towards A Safer World Network (TASW).

**[Experience from Malaysia on the avian influenza emergency management.](#)**

**[Experience from Indonesia on the rabies introduction emergency management.](#)**

**[OIE Standards and PVS and FAO Good Emergency Management Practice \(GEMP\).](#)** John Weaver, veterinary consultant and OIE PVS expert.

**[Good Emergency Management Practice \(GEMP\).](#)** Ludovic Plée, Emergency Management Centre for Animal Health (EMC-AH), Food and Agriculture Organization of the United Nations (FAO).

**[OIE PVS review of the African swine fever \(ASF\) preparedness in South-East Asia.](#)**

John Weaver, veterinary consultant and OIE PVS expert.

**[Welfare guidelines and emergency preparedness.](#)** Ashish Sutar, OIE Sub-Regional Representation for South-East Asia.

**[Role of the OIE Reference Laboratories in emergency preparedness.](#)** David Williams, Australian Animal Health Laboratory (AAHL).

**Face emergencies: preparing logistics and resources in peace time.** Chadia Wannous, Coordinator, Towards A Safer World Network (TASW).

**Depopulation, Disposal and Decontamination (3D) activities on an infected premises.** Duncan Worsfold, 3D Technical Specialist, Victoria, Australia.

**Value chain analysis - Identifying risk and designing interventions for African swine fever (ASF).** Damian Tago Pacheco, Regional Animal Health Economist, Food and Agriculture Organization of the United Nations (FAO).

**ASF Risk Communication: The Philippine Experience.** Edna Zenaida Villacorte, Chairperson, National Advisory Committee for Animal Disease Control and Emergency (NAC-ADCE).

[ [View all the information of the workshop](#) ]



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## RESOURCES

### ► EBO-SURSY PROJECT RESOURCES

## Capacity building and surveillance for viral haemorrhagic fevers

### KEYWORDS

#Africa, #capacity building, #Crimean-Congo haemorrhagic fever, #early detection, #EBO-SURSY, #Ebola virus, #emergency preparedness, #Lassa fever, #Marburg virus, #One Health, #Rift Valley fever (RVF), #surveillance, #wildlife, #zoonosis.



*In 2016, the World Organisation for Animal Health (OIE) signed a grant agreement with the European Union to carry out capacity-building and surveillance for the Ebola virus disease (EBO-SURSY Project).*

This five-year project aims to strengthen early detection systems in wildlife in ten countries of West and Central Africa, to better detect, differentiate and prevent outbreaks of Ebola virus disease and four other viral haemorrhagic diseases: Marburg virus disease, Rift Valley fever, Crimean-Congo haemorrhagic fever and Lassa fever.

[ [Scientific publications](#) ]

[ [Data maps](#) ]

[ [Outreach tools and other resources](#) ]

## RESOURCES

### ► OIE PUBLICATIONS

## Building capacity for emergency management through transparency and solidarity

### OIE Project – Final Report

#### KEYWORDS

#capacity building, #emergency management, #OIE publication, #World Organisation for Animal Health (OIE).



Authors: Mirzet Sabirovic & Dorothy Geale

World Organisation for Animal Health (OIE)

March 2018

46 pages

This study has been developed with the financial assistance of the [WMD Threat Reduction Program – Global Affairs Canada](#).

#### Objectives

This work focuses on the two key areas aimed at national Veterinary Services' capacity to prevent, detect and respond to outbreaks of animal diseases, including recovery:

a. [National Contingency Plans](#)

b. [OIE PVS Pathway](#).

## **Expected outputs**

a. National Contingency Plans: (i) a preliminary analysis of the current trends in global capacity for contingency planning in animal health and preparedness for emergency response which will help to target capacity building; (ii) a preliminary analysis of the involvement of animal health sector in multi-sectoral national contingency plans for natural disasters

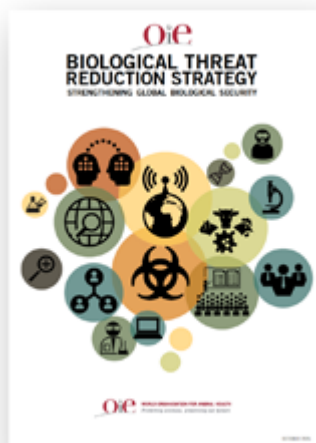
b. OIE PVS Pathway: Identify gaps in national Veterinary Services' capacity for emergency management which may benefit from capacity building assistance.

[ [Download the document](#) ]

 OIE PUBLICATIONS

## Strengthening global biological security

#biological threat reduction, #emergency preparedness, #OIE publication, #One Health, #strategy, #World Organisation for Animal Health (OIE).



World Organisation for Animal Health (OIE)

October 2015

8 pages

In meeting its mandate to improve animal health, veterinary public health, and animal welfare worldwide, the OIE takes the threat posed by accidental and deliberate release of animal pathogens very seriously.

The OIE's strategy for bio-threat reduction focuses on strengthening, enhancing, and developing cross-links between existing health systems.

[ [Download the document](#) ]

## RESOURCES

### ► OIE PUBLICATIONS

## New tools to confront future biothreats

*Panorama*, 2018-1 issue

### KEYWORDS

#biological threat reduction, #emergency preparedness, #OIE publication, #World Organisation for Animal Health (OIE).



World Organisation for Animal Health (OIE)

2018

DOI: 10.20506/bull.issue.2018.1.2763

58 pages

Issue no. 2018-1 of *Panorama* contains the following articles, among others:

- [The Biological Weapons Convention and its practical application](#)
- [Global Rinderpest Action Plan and national preparedness](#)
- [OIE guidelines and biothreat reduction](#)

- [Working together to reduce biological threats in animal agriculture](#)
- [The Emergency Management Centre for Animal Health: Building on past success to meet the needs of the future](#)

[ [Download \*Panorama\* issue no. 2018-1](#) ]

## RESOURCES

### ► OIE PUBLICATIONS

## Biological threat reduction

### KEYWORDS

#biological threat reduction, #OIE publication, #Scientific and Technical Review, #World Organisation for Animal Health (OIE).



**Scientific and Technical Review**, Vol. 36 (2)

Coordinator and Editor: Tammy Beckham

World Organisation for Animal Health (OIE)

August 2017

348 pages

ISBN: 978-92-95108-31-8

This issue of the [Scientific and Technical Review](#) reviews the use of animal pathogens and zoonotic agents as bioweapons. More specifically, it examines their use throughout history, explores current disease trends and threats and evaluates the use of animals (terrestrial and aquatic) as sentinels for early detection of outbreaks affecting

animals and/or humans, whether the outbreaks be of natural, accidental or deliberate origin. In addition, it looks at the potential impacts of animal pathogens, including zoonotic agents, on economies, social unrest, food security, and public health. It reviews current frameworks for an international response to a biological event and explores current United Nations mechanisms for response to an alleged use of biological agents. This volume also explores technological advances for early detection, surveillance, and response to a disease event. It concludes by discussing systems for strengthening global biosecurity and resilience and considering methods of ensuring the sustainability of these systems.

[ [Order the printed version](#) ]

## Contents:

- **Preface** – Biological threat reduction
- **Introduction** – Biological threat reduction
- [A brief history of biological weapons programmes and the use of animal pathogens as biological warfare agents](#)
- [Animal pathogens and their impact on animal health, the economy, food security, food safety and public health](#)
- [Biological threats from a 'One Health' perspective](#)
- [Biosafety and biosecurity in veterinary laboratories](#)
- [Biosurveillance: a systematic review of global infectious disease surveillance systems from 1900 to 2016](#)
- [Comparing responses to natural, accidental and deliberate biological events](#)
- [Emerging infectious disease risk: shared drivers with environmental change](#)
- [Engaging scientists and veterinarians in strengthening biosecurity systems](#)
- [Genome editing as a national security threat](#)
- [International health threats and global early warning and response mechanisms](#)
- [Linking animal diseases and social instability](#)
- [Links between law enforcement and veterinary animal health: a case study of the United Kingdom and the United States of America](#)
- [OIE twinning programme for veterinary education](#)
- [Preparedness activities and research needs in addressing emerging infectious animal and zoonotic diseases](#)
- [Response of developing countries to biological threats: the case of the Republic of Haiti](#)
- [Rinderpest eradication: challenges for remaining disease free and implications for future eradication efforts](#)
- [Rinderpest experience](#)
- [Strengthening good governance: exploiting synergies between the Performance of Veterinary Services Pathway and the International Health Regulations \(2005\)](#)
- [Sustainability and economic investments in animal health systems](#)
- [Technological advances in veterinary diagnostics: opportunities to deploy rapid decentralised tests to detect pathogens affecting livestock](#)
- [Technologies for capturing and analysing animal health data in near real time](#)
- [The Biological Weapons Convention](#)
- [The Global Health Security Agenda and the role of the World Organisation for Animal Health](#)
- [The importance of intergovernmental standards in reducing biological threats associated with accidental, natural or deliberate acts](#)
- [The World Organisation for Animal Health and the World Health Organization: intergovernmental disease information and reporting systems and their role in early warning](#)

- [The role of climate change in a developing threat: the case of bluetongue in Europe](#)
- [United Nations Secretary-General's Mechanism](#)
- [Viral discovery as a tool for pandemic preparedness](#)

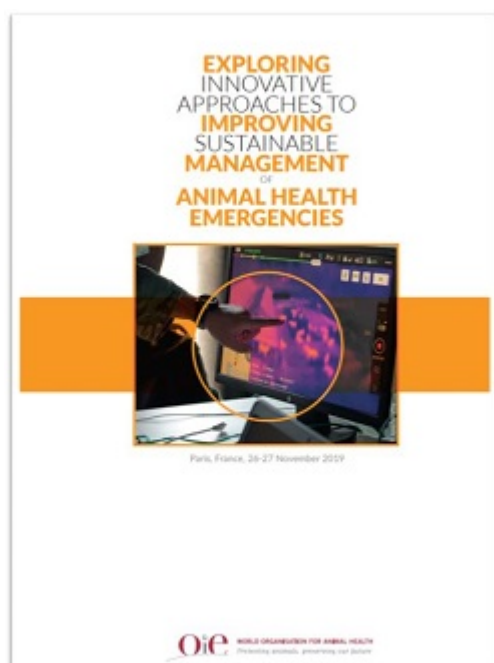
## RESOURCES

### ► OIE PUBLICATIONS

## Exploring innovative approaches to improving sustainable management of animal health emergencies

### KEYWORDS

#animal health, #emergency management, #emergency preparedness, #resilience, #sustainability, #World Organisation for Animal Health (OIE).



World Organisation for Animal Health (OIE)  
2019

30 pages

Report of the workshop held at OIE Headquarters, Paris, France, on 26–27 November 2019.

[ [Download the report](#) ]

## RESOURCES

### ► JOINT PUBLICATIONS

## Towards a stronger partnership between Veterinary Services and law enforcement

### Tackling agro-crime affecting animal health and welfare

#### KEYWORDS

#agroterrorism, #biological threat reduction, #emergency management, #Food and Agriculture Organization of the United Nations (FAO), #International Criminal Police Organization (INTERPOL), #resilience, #simulation exercise, #Veterinary Services, #World Organisation for Animal Health (OIE).



International Criminal Police Organization (INTERPOL) & World Organisation for Animal Health (OIE)  
2020

24 pages

Report of a workshop held from 28 to 30 July 2020 as part of the [OIE–FAO–INTERPOL Project on ‘Building resilience against agro-crime and agro-terrorism’](#) supported by the [Weapons Threat Reduction Program \(WTRP\)](#) of Global Affairs Canada.

[ [Download the report](#) ]

## RESOURCES

### ▶ EXTERNAL RESOURCES

## Building resilience to biothreats

An assessment of unmet core global health security needs

### KEYWORDS

#biological threat reduction, #EcoHealth Alliance, #emergency management, #emergency preparedness, #resilience.



Authors: Ellen P. Carlin, Catherine Machalaba, Franck C.J. Berthe, Kanya C. Long & William B. Karesh

EcoHealth Alliance

2019

58 pages

This work presents a framework for rethinking global health security in a way that captures, under a single umbrella, functional areas requiring inputs from the healthcare and public health, animal health, agriculture, environmental, law enforcement and counterterrorism, defense, and disaster risk reduction sectors. It also explicitly considers functions needed to defend against events regardless of their source, whether intentional or unintentional.

[ [Download the document](#) ]

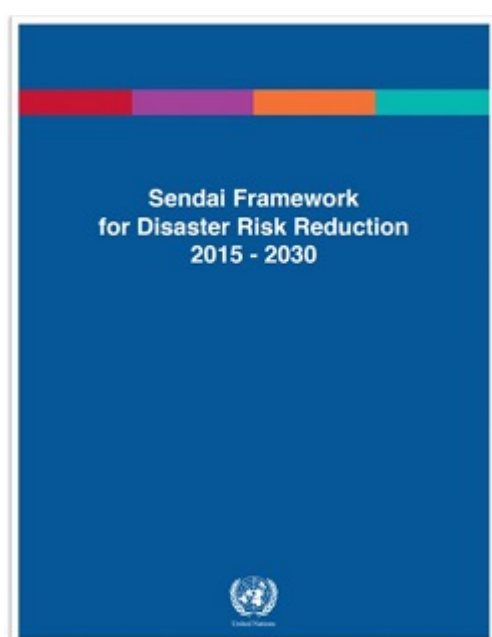
## RESOURCES

### ▶ EXTERNAL RESOURCES

## Sendai Framework for Disaster Risk Reduction 2015-2030

### KEYWORDS

#biological disaster, #emergency management, #risk, #Sendai Framework, #United Nations Office for Disaster Risk Reduction (UNDRR).



The United Nations Office for Disaster Risk Reduction  
2015

36 pages

The Sendai Framework for Disaster Risk Reduction 2015-2030 is the global roadmap for reducing human and economic loss as a direct result of disasters.

The Sendai Framework advocates for 'the substantial reduction of disaster risk and losses in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries.' It recognises that the State has the primary role to reduce disaster risk but that responsibility should be shared with other stakeholders including local government and the private sector.

The [United Nations Office for Disaster Risk Reduction \(UNDRR, formerly UNISDR\)](#) is tasked to support the

implementation, follow-up and review of the Sendai Framework.

[ [Download the document from the UNDRR website](#) ]

## RESOURCES

### EXTERNAL RESOURCES

## Manual de análisis de riesgo aplicado a la sanidad animal y la inocuidad de los alimentos

### KEYWORDS

#animal health, #communication, #food safety, #risk analysis, #risk assessment.



### [Handbook of animal health and food safety risk analysis]

Authors: Emilio A. León & Marcelo Signorini.

Fundación Prosaia

2020

In Spanish

ISBN: 978-987-25861-1-9

160 pages

The handbook of animal health and food safety risk analysis describes, in simple, readable and practical terms, the core aspects of the three components of risk analysis: risk assessment, management and communication. Aimed mainly at decision-makers in the field of animal health, food safety and trade in animals and animal products, in both the public and private sectors, it may also be of interest to the academic and scientific sectors

Taking an educational approach, the handbook explains the core aspects of probability to model variability and uncertainty in biological processes. This will enable readers to create quantitative models of risk in animal health and food safety to provide scientific support for management decisions.

[ [Order the book from Prosaia Foundation](#) ]

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