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***Animal welfare:
an asset for livestock production***

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Ivan Dimitroff

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Animal welfare: an asset for livestock production

The relationship between humans and animals has been a topic of intense debate and controversy since ancient times. Philosophers such as Pythagoras urged respect for animals, in the belief that humans and non-humans possessed the same kind of soul, while Aristotle held the view that humans' dominion over all other creatures was part of the natural order.

There is no denying that the fate of animals is inextricably linked with that of humans: farm animals, companion animals and wildlife are all key elements that constantly interact with our environment. Yet, irrespective of our cultural, religious or societal beliefs, and despite differences and controversy, our attitude towards animals remains one of the key factors defining our humanity.

Notions of animal welfare were long considered to be unscientific and based solely on cultural considerations linking humans to animals. This has now been refuted by numerous studies confirming that the debates and subsequent regulations were supported by sound, science based arguments.

A growing awareness that animal welfare is consistent with sustainable livestock development will undoubtedly contribute to the development of new, more animal-friendly practices

Some 20 years ago, the main objective of an animal welfare policy was to improve the conditions under which animals were raised, transported, slaughtered and so on, in order to meet their physiological and behavioural needs and to improve their productivity. This objective remains relevant in a large number of countries. However, the paradigm is now changing and new considerations are giving rise to a fresh perspective on animal welfare issues, especially in the field of animal production, where a growing awareness that animal welfare is consistent with sustainable livestock development will undoubtedly contribute to the development of new,

more animal-friendly practices.

A point of note is that consumers in the most developed countries are no longer concerned solely about the price of products and the safety of their food. They are also interested in how their food is produced and especially in how animals are raised, transported and slaughtered.

The current tentative but evidently growing trend towards the inclusion of animal welfare requirements in negotiations for bilateral trade agreements on animals and animal products is a further factor that will encourage better implementation of international standards.

This makes it even more essential to formulate and adopt standards that are clear, science-based and enforceable, and to disseminate knowledge and concrete examples that will help to ensure ownership of these concepts and their application.

It is also crucial to maintain frank and constructive stakeholder dialogue to promote mutual understanding. It is important to remember the vital role of livestock producers and owners as the key players in ensuring their animals' welfare, not forgetting that these players must also contend with constant economic constraints, difficult-to-control animal health risks and often precarious living conditions for them and their families.

Last December, the OIE held the Fourth Global Conference on Animal Welfare in Guadalajara, Mexico (6 – 8 December 2016), with the financial and logistical





ensure ongoing support and commitment for the implementation of OIE standards.

Armed with this support and the proposals made at the Fourth Global Conference on Animal Welfare, and based on the experience gained over a number of years from regional actions in application of the recommendations of the previous three global conferences (Paris, 2004;

support of the Veterinary Authorities of Mexico's Ministry of Agriculture (SAGARPA-SENASICA¹).

This was an important event to:

- discuss developments in animal welfare science that help to ensure that OIE standards are as relevant as possible;
- highlight how strengthening OIE programmes on behalf of Member Countries can help to improve the implementation of standards;
- discuss a global animal welfare strategy, based on feedback and the outcomes of already implemented regional strategies.

All the participants supported the OIE's approach and the final recommendations are available on the OIE website². I should like to highlight some of the main points. In particular, the OIE is requested to:

- continue its commitment to influence decision-makers to support new research programmes, including increased use of new technologies;
- support the development and implementation of regional animal health strategies, in collaboration with regional organisations, in response to the needs and priorities determined by the Member Countries;
- establish a framework for ongoing dialogue between animal industry representatives, non-governmental organisations for animal welfare, scientific experts and OIE Member Countries and their experts to

Cairo, 2008; Kuala Lumpur, 2012), the OIE plans to submit a global animal welfare strategy to the World Assembly of Delegates for adoption at the OIE General Session in May 2017. This new step will send another strong signal to encourage implementation of the standards that have already been adopted.

For all these reasons, the OIE is proud of its involvement as the reference standard-setting

It is crucial to maintain frank and constructive stakeholder dialogue to promote mutual understanding

body on animal welfare, a field that also encompasses the Organisation's historic mandate: animal health. By implementing these standards adopted by Member Countries, national Veterinary Services are making a concrete and significant contribution to animal protection.

We shall therefore continue this mission.

Monique Éloit
Director General

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OIE web portal on animal welfare: www.oie.int/animalwelfare

1. SAGARPA: Secretariat of Agriculture, Livestock, Rural Development, Fisheries, and Food; SENASICA: National Agro-Alimentary Health, Safety and Quality Service
2. www.oie.int/eng/animal-welfare-conf2016/introduction.html

‘One Welfare’: a framework to support the implementation of OIE animal welfare standards

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Keywords

Animal welfare – global sustainable development – ‘One World, One Health’ – ‘One Welfare’ – standard.

Summary

The ‘One Welfare’ concept emphasises the link between animal welfare, human wellbeing, biodiversity and the environment. It builds upon and complements the development of the ‘One World, One Health’ concept to achieve fully comprehensive approaches in support of global sustainable development.

Background

Animal welfare (Box 1) is a complex and multifaceted issue involving scientific, ethical, economic, cultural, social, religious and political dimensions [1]. This shows how animal welfare is interconnected with human wellbeing, biodiversity and the environment at the different levels of society.

Just as ‘human health and animal health are interdependent and bound to the health of the ecosystems in which they exist’ [2], preserving and improving animal welfare has various direct and indirect connections with human wellbeing and environmental issues. These cover a number of areas that sometimes overlap with those covered by the ‘One World, One Health’ strategic framework and the 12 Manhattan Principles (Box 2).

Box 1

Definition of animal welfare and human wellbeing

Animal welfare is defined in Article 7.1.1. of the *Terrestrial Animal Health Code* – it means ‘how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress.

Good animal welfare requires disease prevention and appropriate veterinary treatment, shelter, management and nutrition, humane handling and humane slaughter or killing.

Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.’

In this paper **‘human wellbeing’** is used as an equivalent term for humans.

1. Recognize the essential link between human, domestic animal and wildlife health and the threat disease poses to people, their food supplies and economies, and the biodiversity essential to maintaining the healthy environments and functioning ecosystems we all require.
2. Recognize that decisions regarding land and water use have real implications for health. Alterations in the resilience of ecosystems and shifts in patterns of disease emergence and spread manifest themselves when we fail to recognize this relationship.
3. Include wildlife health science as an essential component of global disease prevention, surveillance, monitoring, control and mitigation.
4. Recognize that public health programs can greatly contribute to conservation efforts.
5. Devise adaptive, holistic and forward-looking approaches to the prevention, surveillance, monitoring, control and mitigation of emerging and resurging diseases that take the complex interconnections among species into full account.
6. Seek opportunities to fully integrate biodiversity conservation perspectives and human needs (including those related to domestic animal health) when developing solutions to infectious disease threats.
7. Reduce the demand for and better regulate the international live wildlife and bush meat trade not only to protect wildlife populations but also to lessen the risks of disease movement, cross-species transmission, and the development of novel pathogen-host relationships. The costs of this worldwide trade in terms of impacts on public health, agriculture and conservation are enormous, and the global community must address this trade as the real threat it is to global socio-economic security.
8. Restrict the mass culling of free-ranging wildlife species for disease control to situations where there is a multidisciplinary, international scientific consensus that a wildlife population poses an urgent, significant threat to public health, food security, or wildlife health more broadly.
9. Increase investment in the global human and animal health infrastructure commensurate with the serious nature of emerging and resurging disease threats to people, domestic animals and wildlife. Enhanced capacity for global human and animal health surveillance and for clear, timely information-sharing (that takes language barriers into account) can only help improve coordination of responses among governmental and non-governmental agencies, public and animal health institutions, vaccine or pharmaceutical manufacturers, and other stakeholders.
10. Form collaborative relationships among governments, local people, and the private and public (i.e. non-profit) sectors to meet the challenges of global health and biodiversity conservation.
11. Provide adequate resources and support for global wildlife health surveillance networks that exchange disease information with the public health and agricultural animal health communities as part of early warning systems for the emergence and resurgence of disease threats.
12. Invest in educating and raising awareness among the world's people and in influencing the policy process to increase recognition that we must better understand the relationships between health and ecosystem integrity to succeed in improving prospects for a healthier planet.

'One Welfare' is not intended as a replacement for 'animal welfare' but as a tool to mainstream animal welfare more effectively into wider policy frameworks and projects globally to help improve communication, coordination and collaboration. Integrating 'One Welfare' with 'One World, One Health' can strengthen and help to better integrate stakeholder liaison by capturing all relevant issues involving animals and our society in a holistic way.

The Fourth OIE Global Welfare Conference included two full plenary sessions focusing on the 'One Welfare' concept. Many of the speakers highlighted the relevance of this concept as a complement to 'One Health' and the importance of recognising the interconnections between animal welfare and other disciplines in support of global sustainable development. A One Welfare approach is consistent with the United Nations Sustainable

SUSTAINABLE DEVELOPMENT GOALS



Development Goals in animal-related areas by helping to 'build economic growth and address a range of social needs including education, health, social protection, and job opportunities, while tackling climate change and environmental protection' [4]. Speakers also highlighted the benefits of a One Welfare approach as a tool for increasing engagement and communication among different stakeholder groups in relevant areas [5]. Together, all this supports the implementation of OIE standards.

Given the complex interconnections at different levels, One Welfare is a very broad concept, making it necessary to define a set of areas or categories to provide a conceptual framework. Once the categories are established, it will be easier to gather and order the available evidence. It will also allow stakeholders from relevant disciplines to work together towards a common goal for improving animal welfare, human wellbeing, biodiversity and the environment.

Developing the One Welfare framework: approaches in practice

Whilst progress has been made in recent decades to establish and implement animal welfare standards, many challenges remain for the sustainable improvement of animal welfare. One

of the key reasons might be that animal welfare is often considered and worked upon in isolation, rather than integrating it with other relevant areas in a given field. Integrating animal welfare and increasing collaboration and communication among different players could lead to more effective and efficient ways of working.

Many publications and projects have already highlighted the connection between animal welfare and a number of other areas relevant to human wellbeing and the environment. A report by the Food and Agriculture Organization of the United Nations (FAO) in 2014 suggested that global organisations 'could proactively include animal welfare as a basic element of their projects, integrated with, and contributing to, other goals such as food safety and security, human and animal health, environmental sustainability, worker safety, rural development, gender equality, and social justice' [6]. Since then, a number of projects have begun to integrate animal welfare into a One Welfare approach. This has brought additional benefits to ongoing projects.

Incorporating the One Welfare concept into projects makes it possible to increase recognition and gather evidence on the direct and indirect benefits of integrating animal welfare with other disciplines.



Examples presented at the Fourth OIE Global Welfare Conference include [5]:

- reminders of the links between animal welfare and productivity (i.e. ‘well-managed animals are more profitable; healthy farm animals reduce farming costs; improved animal handling results in increased meat yields’);
- evidence from ongoing studies into conventional pasture and silvopastoral farming systems (i.e. trees, shrubs and pasture) points at improved animal welfare (i.e. more affiliative behaviour and less foraging during the hottest and wettest periods) alongside more sustainable farming (i.e. greater biodiversity and more ecosystem services), when compared to a monoculture system;
- the role of animals in supporting human livelihoods, where animals are a source of food, income, social status and cultural identity, as well as companionship and security;
- the role of improved animal welfare within the World Food Security agenda¹;
- the importance of responsible dog ownership and following a ‘One Health, One Welfare’ approach

by combining the animal health and community aspects within dog population control programmes as a means of achieving more effective results.

There are many other examples and, from the brief summary above, it is clear that the disciplines involved fall naturally to different stakeholder groups and policy areas. Therefore, to aid clarity and implementation of a One Welfare approach it is advisable to develop and define a conceptual framework where relevant stakeholders and policies can be ordered according to the different One Welfare outputs. A recent publication described and enumerated a number of areas that could benefit (or are already benefiting) from a One Welfare approach [7]. The outcomes described can now be used as the basis for developing a conceptual framework². Defining categories under the broader concept of One Welfare will help to define in greater detail what One Welfare encompasses and will provide a mechanism to support more efficient and organised collaboration and evidence-gathering at global level (Box 3).

1. Details about the World Food Security agenda and the Sustainable Development Goals can be found at: www.fao.org/cfs/en/
 2. A public consultation to define a One Welfare conceptual framework was held during the first quarter of 2017 on the website www.onewelfareworld.org

Box 3

Proposed areas within a One Welfare conceptual framework [6]

1. **Reduction in animal and human abuse** – covers all aspects of the link between animal abuse, family and social violence. It supports reduction of incidence of crime and violence internationally, in particular domestic violence and abuse of elderly people and children.
2. **Improved animal welfare and social aspects** – covers cases involving animal welfare, socioeconomic indicators and offences in other areas mainly taking place within inner city areas or troubled communities. Improvements in animal welfare at this level support interventions tackling other social issues within inner cities. (i.e. homelessness, hoarding, dog fighting, separation anxiety, etc.). It overlaps with One Health where mental health issues are involved.
3. **Improved animal welfare** – addressing poverty and local community support – covers the connection between poor states of human welfare and poor states of animal welfare. Promoting the integration of animal welfare as part of general livelihood improvement programmes is seen as a key to success.
4. **Improved animal welfare and food safety** – covers all aspects of links between animal welfare and food safety. Improvements in animal welfare support better food safety.
5. **Improved animal and farmer welfare – improved farming productivity** – includes elements linking farmer wellbeing with animal welfare. This extends to the farming environment and sustainable production practices.
6. **Improved animal welfare and improved food security and sustainability** – covers work focusing on the beneficial aspects of animal welfare improvements to wider areas of societal concern such as climate change, farming sustainability and disaster management.
7. **More efficient multidisciplinary approaches** – a more joined-up and multidisciplinary approach could be more efficient and effective. For example, animal welfare indicators can be used as a sign of a farmer being successful or failing to cope and could be used to detect poor farmer health/wellbeing. Equally, poor farmer wellbeing detected by a medical practitioner could indicate a risk of poor animal welfare on the farm. Different professionals could all play a part in improving both farm animal welfare and farmer wellbeing.
8. **Mutual rescue, improved life chances** – comprises animal assisted interventions and paired human rehabilitation and animal rehoming programmes which can be beneficial both to the people and the animals involved.
9. **Improved biodiversity conservation, environmental aspects and human wellbeing** – comprises the links between environmental and conservation issues and animal welfare/ human wellbeing.

Conclusions

Applying a One Welfare approach can serve to 'improve animal welfare to improve human welfare (and vice versa); coordinate actions between veterinary and other services and protect the environment as a fundamental step for both human and animal welfare' [8].

Recognising the links between animal welfare, human wellbeing and the environment represents a step forward in the implementation of animal welfare standards and policies, with the aim of integrating animal welfare with other relevant areas for the benefit of all.

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'One Welfare': towards sustainable

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Keywords

Animal welfare – OIE Collaborating Centre – 'One Welfare' – sustainability – World Organisation for Animal Health (OIE).



livestock production systems

Summary

Its volume of livestock production destines the Americas to become one of the world's leading suppliers of animal-source foods. Increasing demand for livestock products and growing concern about animal welfare and the environmental impact of conventional livestock systems call for work to develop sustainable livestock production systems in the region. This entails identifying reliable environmental, socioeconomic and animal welfare indicators and criteria of sustainability to quantify synergies and trade-offs among the various systems and supply chains. This article describes a transdisciplinary research project currently being conducted on grazing systems in Yucatan, Mexico, including intensive silvopastoral systems (ISS) of trees, shrubs and grasses. The results have shown ISS to be an efficient way to produce food, provide environmental services and promote animal welfare. As not all systems have such synergies, it is important for the OIE animal welfare agenda to address these challenges to ensure that the recently adopted OIE regional animal welfare strategy for the Americas can be successfully implemented, with support from the OIE Regional Representation for the Americas, OIE Member Countries and the OIE Collaborating Centre for Animal Welfare and Livestock Production Systems (Chile–Mexico–Uruguay). One of the objectives of the animal welfare strategy, which will guide future policy on the basis of a regional approach, is to ensure that animal welfare is considered to be a key element in livestock sustainability.

Background

Latin America is a complex and diverse region, both geographically and culturally. It is home to most of the planet's natural ecosystems, a wide variety of ethnic groups and many different livestock systems. In addition, supply chains and conditions for animal transport and slaughter differ widely in the region as a result of countries' distinctive geographical, social and economic characteristics [1]. Its economic importance and volume of animal production destine the Americas to play an important role as one of the world's leading food suppliers [2].

Population growth, and the consequent increasing demand for animal-source products, is a major global challenge. In many regions of the world, conventional livestock systems, and supply chains generally, are also linked with serious animal welfare issues, not only ethically but also in terms of high incidences of infectious diseases and production inefficiency stemming from economic losses and poor product quality. Another major challenge is to mitigate the environmental impact of conventional livestock production systems, particularly the impact of greenhouse gas (GHG) emissions, deforestation and loss of biodiversity [3]. The volume of production in Latin America makes it one of the regions with the highest GHG emissions in the world and, because it is a highly diverse region, deforestation caused by agricultural

Annie-Spratt



practices has been linked with outbreaks of emerging and re-emerging diseases resulting from biodiversity loss. In short, conventional livestock production, both intensive and extensive, has been associated with loss of environmental services. In addition, a wide range of social issues remain to be addressed in the region. In many countries, the burden of rural poverty leads to problems of child malnutrition and high mortality. New forms of agricultural production need to provide smallholder farmers with competitive advantages, and these farmers need to see animal welfare and sustainability issues as an incentive for more effective product marketing.

Given that sustainability criteria are of increasing importance to consumers all around the world, livestock systems that consider only short-term market factors, while widespread today, will not be sustainable. This means that, now or in the relatively near future, the public will demand a gradual change [4].

To address these challenges, urgent work is required to develop sustainable livestock production systems in the region, seeking tools to quantify synergies and trade-offs among the social, economic, environmental and animal welfare dimensions of sustainability, and to define a

comprehensive public policy for the region. This approach is in keeping with the 'One Welfare' agenda in terms of environmental and social sustainability, and of animal health and welfare. The recommendations made at global level include working to build efficient and sustainable livestock production systems, ensuring the provision of environmental services and addressing social and animal welfare issues. This poses a major challenge for the region. Animal welfare is therefore part of a complex matrix of sustainability criteria and should be considered as a key element of sustainable livestock production in the region, from the dual standpoint of economics and future markets [4].

Integration of animal welfare and environmental service indicators: case study in Yucatan (Mexico)

Recent studies suggest that silvopastoral systems can be useful in striking a balance among productivity, the provision of environmental services (including biodiversity) and animal welfare [4]. Until now, most studies of agro-silvopastoral systems have focused on animal nutrition, basically comparing monoculture systems with systems combining grasses and legumes. While this has been useful for understanding the different ways to feed livestock, a broader and more comprehensive measurement of synergies and trade-offs among sustainability indicators is also needed, for example by considering biodiversity and its impact on health, the GHG balance in the system, productivity and reliable indicators of animal welfare, along with socioeconomic aspects of these systems.

Few studies have included different scales of analysis of agricultural landscapes to better assess the impact of silvopastoral systems from a perspective of landscape ecology and in terms of land use and distribution strategies, as well as conservation alternatives. For this reason, a study is being conducted in the Yucatan Peninsula that takes an integrative, multi-scale approach to analysing the relationships between livestock production and the provision of different environmental services.

The study has used indicators of biodiversity (such as diversity indices of birds, rodents and bats), landscape composition and carbon sequestration on 20 farms (landscape units) ranging in size from 100 hectares to 300 hectares.

The 20 farms represent landscapes with a range of vegetation structures arising from different combinations of livestock production systems (extensive monoculture, extensive polyculture, intensive bi-culture, and intensive polyculture), other agricultural activities (tree plantations, forage crops, food crops) and vegetation (primary forest, secondary forest). A positive relationship ($P < 0.05$) between species diversity and habitat structural complexity was found, as well as a trend ($R = 0.52$, $n = 15$, $P = 0.09$) showing that the most productive farms – in terms of kilograms of meat per hectare per year – are those with the greatest forest cover (including hedgerows), with most of the land given over to grazing. No significant relationships were found between total forest cover and total species present (bats, rodents and birds combined) or the richness of specific groups. However, the three least common mammal species – the big-eared climbing rat (*Ototylomys phyllotis*), the endangered Hatt's vesper rat (*Otonyctomys hatti*), also known as the Yucatan vesper rat, and the endemic Yucatan yellow bat (*Rhogeessa aeneus*) – were found mainly on farms that intentionally preserved at least one forested area (including one silvopastoral

farm). *Ototylomys phyllotis* was also found on a farm where 97% of the land area was devoted to mono-cropping. A point of note is that most of this farm's perimeter is adjacent to forest, suggesting that high-quality surrounding habitats could serve as a source of individuals in predominantly grassland landscapes.

However, it is customary for monoculture landscapes to comprise few generalist species of bats, rodents and birds. Interestingly, cases of West Nile virus occurred in some of these generalist species [5]. To ensure more conclusive results, future studies should monitor differences in the structure of large-scale landscapes, as well as differences in the size of the farms studied.

Differing microclimatic conditions in grazing areas as a result of differing vegetation structure and cover may be important for livestock welfare [4]. Intensive silvopastoral systems (ISS) can provide shade and reduce excess heat [6]. As part of this case study, Amendola *et al.* (2016) reported that the temperature–humidity index on ISS farms was significantly lower than under a monoculture system (MS). The mean skin temperatures of cattle under ISS were lower than under MS (37.88 ± 0.3 °C compared with 39.09 ± 0.4 °C), and the temperature gap remained for up to two hours after cattle had left the meadow and entered a pen (Fig. 1). Cows under ISS

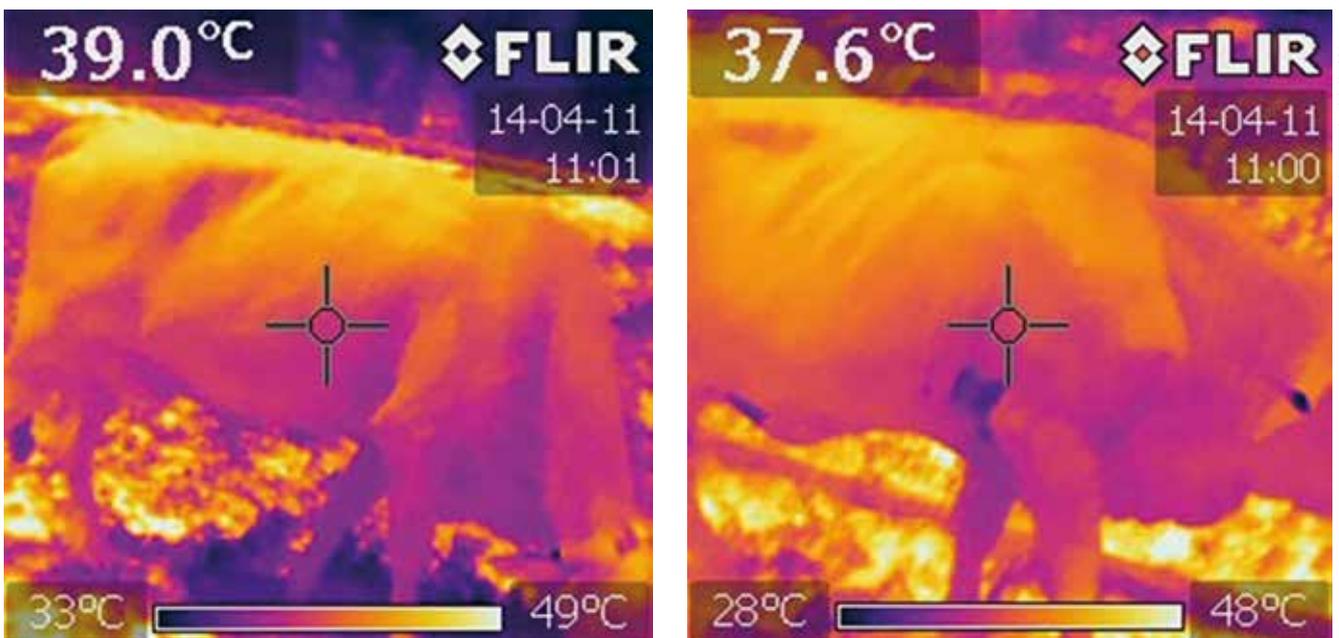
spent more time at rest than cows under MS (ISS=203.74 ± 3.94 min per animal; MS=116.15 ± 3.84 min/ animal) and distributed their rest time over longer periods (ISS=78.38 ± 1.88 min/ animal; MS=50.44 ± 1.46 min/ animal) [6]. In addition, animals under ISS exhibited more affiliative behaviour than those under MS (ISS=4.04 ± 0.76 per herd per day; MS=2.40 ± 0.39 per herd/day), leading to more stable social groups [6]. Under systems with greater tree cover, livestock optimise dry matter intake at the hottest times of day, unlike those with low tree cover [7]. Mancera *et al.* [8] reported a smaller percentage of cows in poor body condition under ISS than under MS. Animals under ISS also appear to be less stressed

and disturbed when they approach humans, indicating good wellbeing.

As part of this multidisciplinary study, the synergies and trade-offs among sustainability indicators were evaluated at different scales and by different methods, including life cycle analysis, the Framework for Evaluation of Natural Resource Management Systems incorporating Sustainability Indicators (MESMIS is the acronym in Spanish) and the FAO Sustainability Assessment for Food and Agriculture (SAFA) Tool. These methods considered four dimensions (environment, social impact, economic impact and animal welfare).

The initial results show that a three-tier vegetation structure, with edible plants, provides more ecosystem services, greater biodiversity (abundance of bird

and mammal species) and improved livestock welfare. Livestock farms with broader and more complex plant cover have significantly higher rates of native and specialist species of birds, bats and rodents (P<0.05). In contrast, more generalist and invasive species are found on monoculture farms (P<0.05). Life cycle analysis also found a positive relationship between environmental protection and animal welfare scores. Therefore, ISS seems to be a good option for conversion to more sustainable systems in terms of biodiversity, welfare and livestock production, and should be further investigated. More studies are needed on the use of tools to assess sustainability indicators in both extensive and intensive systems.



Images by Adelis Márquez

Monoculture system

Intensive silvopastoral system

Fig. 1

Thermal images of cows under a monoculture system and under an intensive silvopastoral system



Concluding remarks

Given the need for parallel work on animal welfare and on environmental and socioeconomic sustainability, it is important to integrate the 'One Welfare' concept into a global agenda. This requires transdisciplinary research approaches, and groups need to be involved in order to identify reliable sustainability indicators, considering the social, animal welfare, economic and environmental dimensions. The goal is to quantify synergies and trade-offs among these indicators in different intensive and extensive livestock systems, leading to the development of a science-based public policy based on a holistic approach. It will be necessary to incorporate this approach into education and training programmes for public policy implementers.

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Mobile apps based on AWIN protocols to assess animal welfare on farm

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Keywords

Animal welfare – animal welfare assessment – AWIN protocol – mobile application.

Summary

Based on the welfare assessment protocols developed during the Animal Welfare Indicators (AWIN) project, four application programs (apps) were made freely available on Google Play Store to allow the collection of data on animal-based welfare indicators. I-WatchTurkey, AWINHorse, AWINGoat, and AWINSheep were specifically designed to guide the user step-by-step during the farm visit and to provide an immediate visual output with the results of the assessment. The AWIN apps can be used by veterinarians and technicians in their everyday practice. The real-time output can facilitate dialogue with farmers, suggesting actions to improve the welfare of animals. Farmers can use the apps to compare the welfare status of their animals to that of those on farms with similar husbandry or management systems, and furthermore can easily identify causes for sub-performance. Although the AWIN apps are user-friendly, specific training on how to assess and score the welfare indicators is needed in order to harmonise the assessment and obtain reliable data. Teaching platforms based on mobile devices may offer a practical solution to combine e-learning and face-to-face training. The AWIN apps were developed to be affordable and to work offline; these features should contribute to an extensive use of welfare assessment protocols, with no geographical limits. These apps increase the efficiency and standardisation of on-farm welfare data collection, paving the way for the development of a globally accessible data repository on animal welfare.

Background

Good animal welfare is a prerequisite for high-quality and sound farm animal production. Providing environmental and management conditions that favour animal welfare is not only expected by consumers and society, but is also crucial to achieving system-appropriate levels of performance and profitability. Animal welfare assessment is thus one of the pillars of productive, efficient and sustainable management systems and it should be done in a valid and reliable way worldwide. However, data related to welfare status on farm are still missing for many animal species. Within the European Seventh Framework Programme, the Animal Welfare Indicators (AWIN) project¹ was funded to address the development, integration and dissemination of animal-based indicators, with an emphasis on pain assessment and pain recognition. In 2015, the AWIN project ended with the publication of five on-farm welfare assessment

protocols, centred on animal-based indicators for goats, sheep, donkeys, horses and turkeys [1, 2, 3, 4, 5]. These protocols, tested for validity and reliability, were developed with the objective of being feasible for on-farm conditions, in terms of duration, costs and ease of the assessment. A digitalised system was deemed necessary in order to improve efficiency of data collection, by reducing the time needed and transcription mistakes, as well as enabling automatic data upload. Therefore, four mobile apps were developed and are freely available on Google Play Store for Android devices. They were specifically designed to guide the user step-by-step in on-farm data collection (Fig. 1).

The scientific basis of the apps and the design were supplied by the AWIN researchers, and the software and dashboard were developed by DAIA Intelligent Solutions S.L (Spain).

1. www.animal-welfare-indicators.net



I-WatchTurkey for growing turkeys in intensive systems.
Release date:
10 October 2014
<https://goo.gl/Ai24cu>
Contact person: Inma Estevez
iestevez@neiker.eus



AWINHorse for adult horses stabled in single boxes.
Release date:
28 September 2015
<https://goo.gl/JTiu5A>
Contact person:
Emanuela Dalla Costa
emanuela.dallacosta@unimi.it



AWINGoat for dairy goats on intensive farms.
Release date:
19 December 2015
<https://goo.gl/rbrhpH>
Contact person: Monica Battini
monica.battini@unimi.it



AWINSheep for adult female sheep in milk and/or meat production systems.
Release date:
9 July 2016
<https://goo.gl/2Qb4cR>
Contact person:
Ina Beltrán de Heredia
ibeltran@neiker.eus

Fig. 1

Short summary of I-WatchTurkey, AWINHorse, AWINGoat and AWINSheep apps: release date on Google Play Store, link to download and contact person for scientific questions related to each app

A short tour inside the AWIN apps

To use the AWIN apps, the first step is to insert farm information (Fig. 2, Section 1). Once the farm information is added, the user is ready to start the welfare assessment and insert data. This section is specifically designed to guide the user step-by-step in the on-farm collection of animal-based welfare indicators (Fig. 2, Section 2). After completing the assessment, the user can immediately access the results simply by clicking on the results button (Fig. 2, Section 3). An immediate and clear visual output on the welfare status of the animals is provided. The graphs, shown in Figure 2, emphasise positive feedback on the welfare conditions of the animals. In the current version, no thresholds or final marks have been set to evaluate the results; the AWINHorse, AWINGoat and AWINSheep apps enable comparison with a reference population of similar farms, providing a useful tool for benchmarking, whereas I-WatchTurkey allows comparisons among flocks previously evaluated by the user and is suitable for all commercial housing conditions [6].

The AWIN apps allow the user to collect on-farm data faster and more easily than ever before. The apps can be used on any Android device (tablet and smartphones) and allow the user to collect data in real time, with custom designed forms, ability to work in offline mode and more. A full database consisting of all the data collected over time is saved in CSV format (Excel file compatible) and it can be sent by email for further analysis.

Benefits for the user

The AWIN apps provide an easy way to evaluate, in a simple, reliable and standardised manner, the welfare status of animals on farm. This is an important asset to facilitate the farmer's decision-making process, improving animal welfare on the basis of a systematic and standardised data collection protocol. Worldwide users have reported that apps are user-friendly, practical and flexible on farm and that data analysis is rapid.



Fig. 2 Structure of AWINGoat app. An example of how the apps are designed

I-WatchTurkey, AWINHorse, AWINGoat and AWINSheep were developed to meet the needs of different users, e.g. veterinarians, technicians, researchers and farmers. Veterinarians and technicians, after a short training period, can include the animal welfare assessment in their everyday practice, having a useful tool able to provide precise and accurate results in real time. Additionally, these apps allow the discussion of the results during a farm visit, facilitating dialogue with farmers about the welfare of the animals assessed, and the actions needed to improve it. Farmers can also use the apps to compare the welfare status of their animals to that of farms with a similar husbandry or management system (benchmarking). Moreover, they can use the collected data as a tool to identify causes for sub-performance, such as sub-clinical diseases and poor welfare.

Opportunities and challenges in the use of apps for on-farm welfare assessment

I-WatchTurkey, AWINHorse, AWINGoat and AWINSheep are affordable and can be used by anyone who has a smartphone or a tablet, after receiving the appropriate training. The app increases the efficiency and standardisation of on-farm welfare data collection. The easy accessibility to AWIN apps should contribute to a more extensive use of welfare assessment protocols, with no geographical limits (Fig. 3).

Although the AWIN apps are user-friendly, specific training on how to assess and score the welfare indicators is needed in order to obtain reliable data. Teaching platforms based on smartphones and tablets may offer a practical solution to meeting the needs for training. A combination of e-learning material and face-to-face practical training, together with the on-farm use of the apps, will guarantee the harmonisation of welfare data collected worldwide. Indeed, creating a global database of animal health and welfare indices is paramount in order to enforce animal welfare

policies. In this view, the use of mobile solutions may foster the development of a globally accessible data repository on animal welfare. At this moment, the AWIN apps' reference population is limited to farms assessed during the AWIN project, hence the sample size is restricted and is not adequate for larger comparisons. To make the reference population more representative, the data collection must become larger and be more widely distributed. In order to reach this goal, some minor issues need to be overcome: translation into languages other than English, and the ability to work on other operating systems, such as iOS or Windows Phone.

Mobile apps to collect welfare data are available for: growing turkeys in intensive systems (I-WatchTurkey); commercial broilers (I-WatchBroiler); adult horses stabled in single boxes (AWINHorse); dairy goats on intensive farms (AWINGoat); and adult female sheep in milk and/or meat production systems (AWINSheep). Therefore, it is essential that, in the near future, new apps covering welfare assessment, based on sound scientific knowledge, of other farm or companion animals are developed.

One Health, One Welfare

Traditionally, human health and animal health have been seen as distinct disciplines. Nowadays, the concept of 'One Health' is internationally recognised and consists of a worldwide strategy for expanding interdisciplinary collaboration and communication in all aspects of health care for humans, animals and the environment. The concepts and principles of One Health have been the foundation for the One Welfare model. In the view of the One Welfare concept, veterinary care serves cooperatively to progress the health and welfare of humans and animals, meaning that improving animal welfare often improves human welfare (and vice versa). The harmonisation of animal welfare data collection, together with the creation of a global data repository, can help in this process. Once a global animal welfare data repository has been made available, it can be integrated with other information

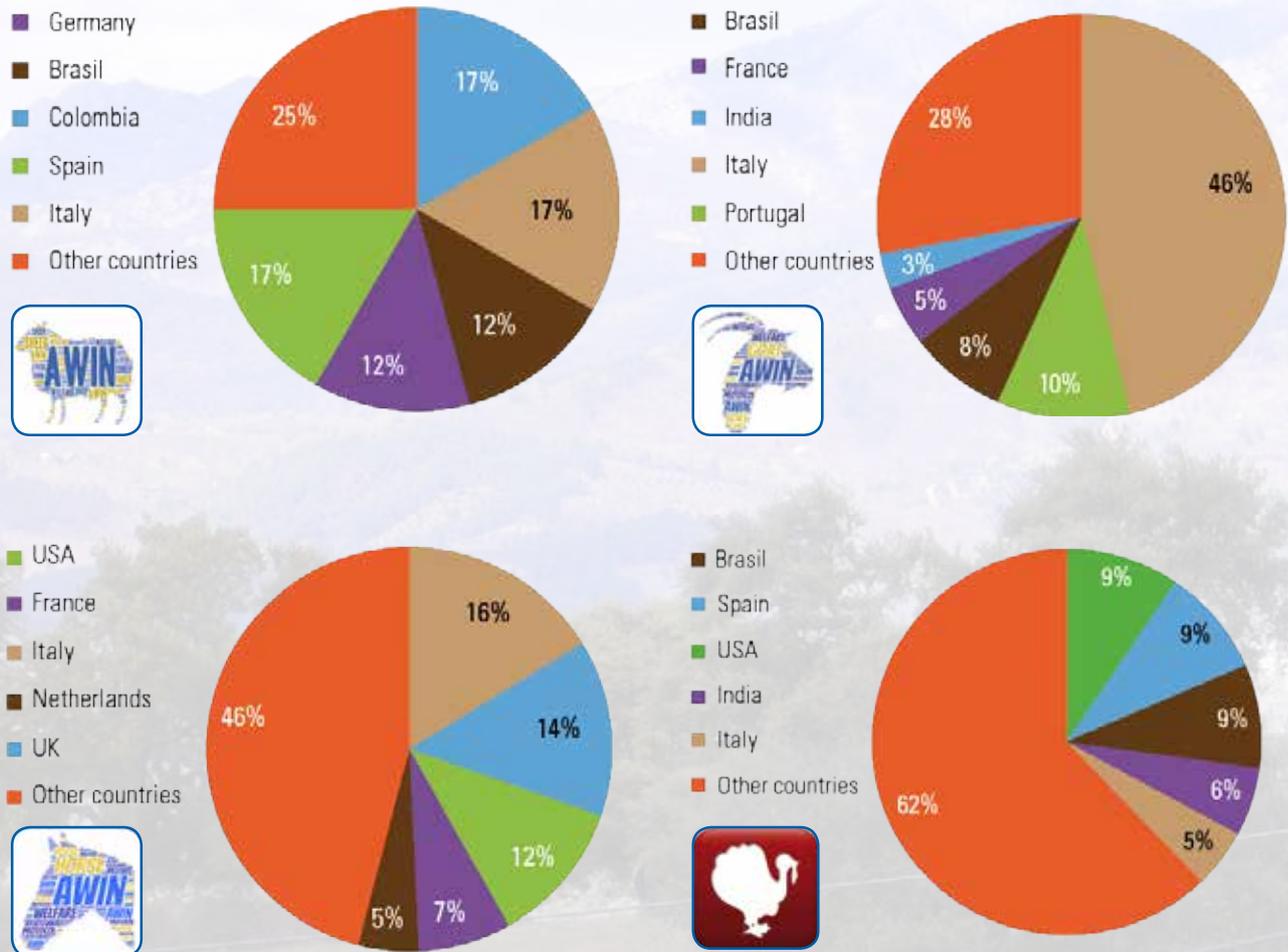


Fig. 3
Number of installations by user: top countries. Countries in which each app has been downloaded most frequently. Latest data 15 October 2016

directly related to human and animal health (e.g. the use of antibiotics).

Ensuring animal welfare is a shared responsibility, which needs the engagement and involvement of different stakeholders, such as veterinarians, farmers, and other animal caretakers. Indeed, veterinarians, in both their public and their private capacities, play an essential role in raising awareness of animal welfare and educating key players.

The AWIN apps represent the first attempt to directly link scientific research to the final

users, highlighting how mutual recognition and constructive engagement among parties is necessary to achieve sustained improvements in animal welfare.

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Authorship

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- I-WATCHTURKEY: I. Estevez, V. Ferrante & J. Marchewka.
- AWIN welfare assessment protocol for horses: M. Minero, E. Dalla Costa, F. Dai, D. Lebelt & P. Scholz.
- AWINHORSE: E. Dalla Costa, F. Dai, M. Battini & M. Minero.
- AWIN welfare assessment protocol for goats: G. Stilwell, A. Vieira, S. Mattiello & M. Battini.
- AWINGOAT: M. Battini, E. Dalla Costa, F. Dai, S. Mattiello & G. Stilwell.
- AWIN welfare assessment protocol for sheep: C. Dwyer, S. Richmond, F. Wemelsfelder, R. Ruiz, I. Beltrán de Heredia & J. Arranz.
- AWINSHEEP: I. Beltrán de Heredia, C. Dwyer & R. Ruiz.
- AWIN welfare assessment protocol for donkeys: M. Minero, F. Dai, E. Dalla Costa & L.A.M. Murray.

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The role of the OIE in disaster management and risk reduction

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Keywords

Animal welfare – disaster management – risk reduction – World Organisation for Animal Health (OIE).

Global disasters have an extraordinary impact on animal and human health, economies and societies. In 2012 the Centre for Research on the Epidemiology of Disasters (CRED) reported 552 natural and technical disasters (not including wars, conflict-related famines, diseases or epidemics), directly affecting nearly 140 million people at a cost of USD 157 billion [1]. Natural and human-made or technological disasters require the involvement

of multiple disciplines to achieve optimal efficiency and effectiveness in emergency planning, mitigation, response and recovery.

In recent years, events such as Hurricane Katrina in the United States; the Gulf of Mexico oil spill; Japan's earthquake/tsunami/Fukushima nuclear disaster; earthquakes in Haiti, New Zealand, Chile and Italy; African droughts; Australian

wildfires; floods in Somerset (United Kingdom) and the Balkans; and local and regional conflicts all highlight the need to bring together the components of disaster management and risk reduction, in a cohesive programme, with veterinarians and experts in animal management playing a vital role.

To date, humanitarian efforts have primarily focused on saving human life. However, experience



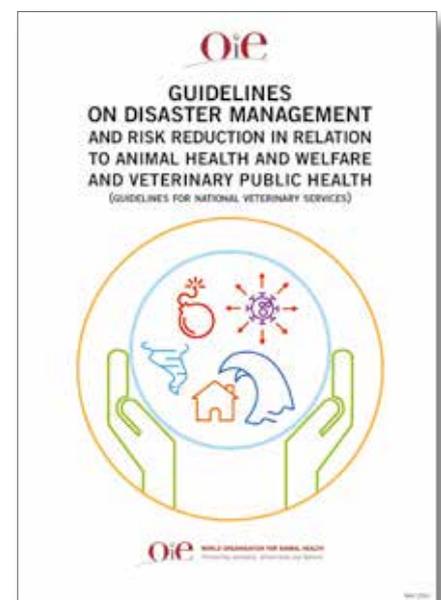
- capacity-building of national Veterinary Services as set out in the Tool for the Evaluation of quality of Veterinary Services (PVS Tool) could include capacities relevant to animals in disasters, and
- the development of guidance to OIE Member Countries should be considered.

In 2012, the OIE Animal Welfare Working Group recommended that the OIE should provide guidance to Member Countries on the management of animals in disasters. In addition, the OIE Regional Commission for the Americas discussed a Technical Item on ‘Disaster management: the role and preparedness of Veterinary Services’, presented by the OIE Collaborating Centre on the Reduction of the Risk of Disasters in Animal Health [3]. On this occasion, a Resolution was adopted that urged the OIE to do more to support national Veterinary Services

in relation to disaster prevention and response.

In 2013, the Director General of the OIE commissioned a Discussion Paper on possible future action in the field of disaster management and the OIE Regional Commission for Europe adopted the theme of ‘Animal health in the light of natural disasters and bioterrorism’ as the Technical Item to be presented during the 26th Conference of the OIE Regional Commission in 2014 [4]. A specific survey on ‘Animal health and welfare in natural disasters and bioterrorism’ was developed for this purpose, and 48 of 53 (91 percent) Member Countries of the European region provided responses. The significant response rate indicated the high level of interest in this topic. Responses covered many aspects, including legislation, disaster management, bioterrorism, and effectiveness. There was also discussion of possible guidelines and standards, the range

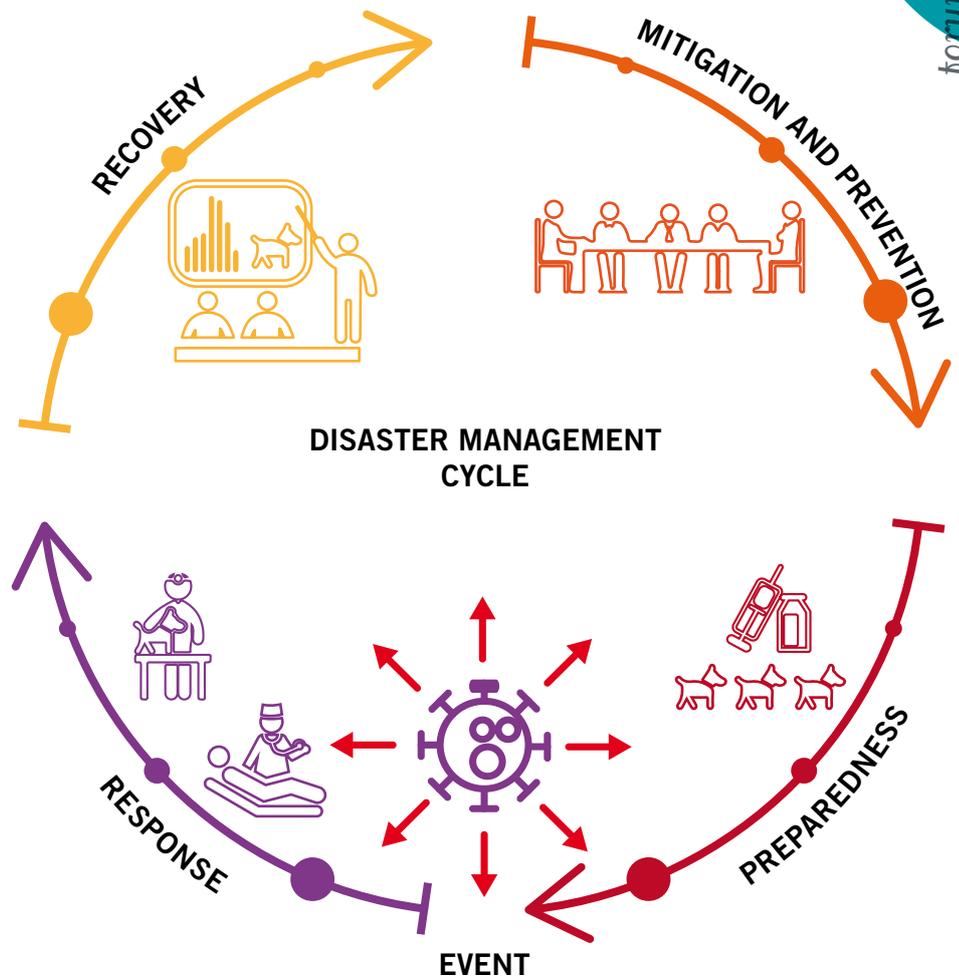
of animals covered, integrating other stakeholders, analysing lessons learned, resourcing, and other key elements of effective disaster management and risk reduction. The wide variation in responses showed that in many countries the national Veterinary Services are not well integrated into national and regional networks for preparedness and response to natural disasters



and bioterrorism. Moreover, it became clear that preparedness and the capacity to respond to disasters and bioterrorism events differed widely among countries in the region. There was a clear need for guidelines and standards, training and education, information resources, and collaboration. The vast majority of responders (94%) called for the OIE to take action that would support Competent Authorities and Veterinary Services in this regard.

As a result, in 2014 the OIE began to develop Guidelines for the Veterinary Services of its Member Countries on 'Disaster management and risk reduction in relation to animal health and welfare and veterinary public health' [5]. These guidelines were adopted in May 2016, and were aimed at strengthening the capacity of Veterinary Services to protect animal health and welfare, safeguard human and environmental health, and help to restore social and economic conditions in the aftermath of a disaster. The OIE recommended the implementation of a specific framework including processes and procedures that cover all phases of the Disaster Management Cycle (Mitigation/Prevention → Preparedness → Response → Recovery). This framework should be applied in conjunction with existing international, regional and national instruments.

Programmes for the management and avoidance of disasters, based on risk management methodologies, should

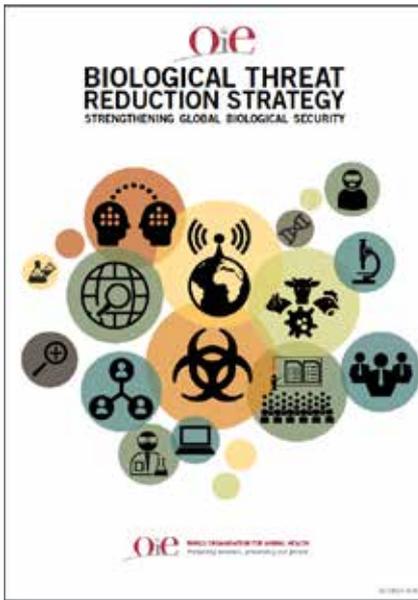


be continuously reviewed and updated in response to the evolution of hazards, technologies, standards and legal requirements.

Implementation of such programmes will strengthen national Veterinary Services' participation in and contribution to whole-of-government programmes for disaster planning, management and response. Moreover, the OIE guidelines provide an important, previously-lacking basis for the development of operational manuals and Standard Operating Procedures, the adoption of new technologies, and the implementation of new legal and administrative rules for intervention teams.

OIE took a significant leadership role in a specific subject of disaster

management and risk reduction through the sponsorship of the Global Conference on Biological Threat Reduction in Paris 30 June to 2 July 2015. In close collaboration with the World Health Organization (WHO), OIE brought key stakeholders from OIE, WHO, INTERPOL, UN Office for Disarmament Affairs (UNODA), Biological Weapons Convention, FAO and representatives from more than 120 countries. This collaborative effort led to the OIE Biological Threat Reduction Strategy [8] that outlined five key focus areas: 1. Maintaining, Scientific Expertise and Setting Standards, and Guidelines; 2. Good Government, Capacity-Building and Implementation of the One Health Concept; 3. Global Disease Intelligence and Updates on the Latest Methods for



Disease Prevention and Control;
4. International Cooperation and Solidarity Between Countries;
5. Advocacy and Communication.

The importance of promoting disaster risk reduction efforts at the international and regional level, as well as the national and local level, was recognised at the Fourth OIE Global Conference on Animal

Welfare, held from 6 to 8 December 2016 in Guadalajara, Mexico. This Conference provided a unique opportunity to promote a strategic and systematic approach in this field. The OIE Member Countries were requested to develop national plans for animal welfare in disasters that aligned with the OIE Guidelines, and to further increase their capacities for disaster risk reduction and response. These efforts should be systematically integrated into policies for sustainable development and supported through regional and international cooperation, in order to build the resilience of nations and communities to catastrophic events.

Many other initiatives have been taken in parallel over the last few years, by other key organisations involved in disaster planning and management, and

relevant activities have been strongly promoted at the international level.

In 2013, at its 68th session, the UN General Assembly adopted a Resolution on 'International cooperation on humanitarian assistance in the field of natural disasters, from relief to development'. Noting that local communities are the first responders in most disasters, and underlining the crucial requirement for in-country capacity to reduce the risk of disasters occurring, the UN acknowledged the need to support the efforts of Member States to develop and enhance their national and local capacities.

At the operational level, the United Nations Office for the Coordination of Humanitarian Affairs¹ currently supports the mobilisation, funding and coordination of humanitarian action in response to complex emergencies

1. www.unocha.org



and natural disasters. Its 2014–2017 Strategic Plan describes how it contributes to effectiveness in the field by assessing situations and needs; agreeing on common priorities; developing common strategies to address issues such as negotiating access, mobilising funding and other resources; ensuring clear and consistent public messages; and monitoring progress.

In addition, programmes developed by the UN Food and Agriculture Organization (FAO) specifically address recovery and rehabilitation² to increase the resilience of livelihoods through longer-term interventions that facilitate the transition from relief to development. Until now, FAO has supported the livelihoods of many livestock-dependent communities who live in areas that are prone to natural disasters, including through the distribution of emergency veterinary inputs, multivitamins and mineral food supplements for livestock. FAO has also helped to restock herds by providing

vaccinated small ruminants and poultry, and its investment in improving emergency response and resilience has grown from USD 160 million per year in 2002 to more than USD 400 million each year today.

FAO is also one of the key organisations involved in preparing the independent *Livestock Emergency Guidelines and Standards* (LEGS), first published in 2009 and revised in 2014, and supports the worldwide LEGS training programme. To date, 403 LEGS trainers have carried out 215 training sessions, providing skills to more than 4,500 people in 42 countries.

At the national level, a number of important initiatives have been taken over the last few years. With the enactment of the Animal Protection Law 20.380 in Chile in 2013, an obligation was established for animal production and transportation providers to develop and hold ‘contingency

plans’ to deal with emergency situations. The Agricultural and Livestock Service (SAG) has been identified as the national Veterinary Authority responsible for monitoring these plans and it has developed ‘Guidance for the development of contingency plans’ to promote and improve disaster management and regulation compliance among its own members, local farmers and the general public.

Alongside government authorities, several international animal welfare non-governmental organisations (NGOs) have been involved in disaster relief and still play an important part in emergency response by putting operational teams with emergency veterinary aids and feed into the field.

The work of *World Animal Protection* on disaster risk reduction for animals started with the Hyogo Framework for Action [6] more than a decade ago, and continues with the inclusion of animals in the Sendai Framework [7] of the International

2. www.worldanimalprotection.org/our-work/animals-disasters



Earthquake in Central Italy, 2016



IUVENE intervention in Central Italy, 2016

Strategy for Disaster Risk Reduction of the United Nations (UNISDR). *World Animal Protection* has also developed unique online tools for capacity-building, such as Prep Vet, which are meant to serve as models to protect the livelihoods of inhabitants, particularly in rural areas.

To date, other international animal welfare NGOs, including the Humane Society International (HSI)³, the Donkey Sanctuary⁴, the International Fund for Animal Welfare (IFAW)⁵ and FOUR PAWS⁶, have been leading, funding and providing assistance to animal rescue groups to assess disaster situations, formulate plans and take action by dispatching emergency response and disaster relief teams to areas around the world where animals are in distress.

The OIE Collaborating Centre role in disaster management

The expertise and experience of the *Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise 'G. Caporale'* (IZSAM) in the field of animal health and welfare, food safety and surveillance of infectious animal diseases have been tested over time, during

non-epidemic emergency management situations.

In 2009, the city of L'Aquila, Italy, was devastated by an earthquake, which caused more than 300 deaths and resulted in about 65,000 displaced people, with hugely adverse consequences on the welfare of farm and companion animals, stray dogs and cat colonies. On that occasion, IZSAM had a crucial role in planning, coordinating and controlling veterinary activities on behalf of the National Civil Protection Service.

After this first experience in disaster management, IZSAM was appointed as the National Reference Centre for Urban Veterinary Hygiene and Non-Epidemic Emergencies (IUVENE)⁷ by the Italian Ministry of Health (MoH).

Since 2013, IUVENE has operated with the following mandate:

- to create a permanent network of experts located in each of 10 *Istituti Zooprofilattici Sperimentali* in Italy;
- to support and assist the MoH in planning and implementing surveillance, and monitoring and control programmes for stray dog

and cat populations, as well as in developing protocols and operational procedures for that purpose;

- to define plans for surveillance and control of pests of public health interest;
- to draw up contingency plans and related operating procedures in relation to non-epidemic emergencies;
- to put in place any other useful measure in the field of urban hygiene and non-epidemic emergencies.

On 24 August 2016, another earthquake, this time measuring 6.0 on the Richter scale, struck an even larger area that includes four Apennine regions of Central Italy. This earthquake resulted in the deaths of 300 people. In its aftermath, the need for reinforced, effective coordination and communication again became apparent, in light of the many organisations involved with the relief efforts.

Following the first phase of the relief effort, which was dedicated to search and rescue for people, an Interregional Technical Committee was established in collaboration

3. www.hsi.org/about/how_we_work/disaster_services/

4. www.thedonkeysanctuary.org.uk/story/4573

5. www.ifaw.org/united-states/our-work/animal-rescue/disaster-response

6. www.four-paws.org.uk/projects/disaster-relief-and-emergency-response/

7. *Centro di Referenza Nazionale per l'Igiene Urbana Veterinaria e le Emergenze Non Epidemiche (IUVENE)*: www.izs.it/IZS/Centres_of_excellence/National_Centres/CRN_-_IUVENE

with the Ministry of Health Directorates General for Animal Health and Veterinary Medicinal Products and for Hygiene, Food Safety and Nutrition; the National Civil Protection Department, with its responsibilities for human, social, and veterinary health; and the Italian Ministry of Agriculture, Food and Forestry Policies. The Regional Veterinary Services of Abruzzo, Lazio, Marche and Umbria and the *Istituti Zooprofilattici Sperimentali* Umbria-Marche and Lazio-Tuscany were included as permanent members.

On 30 October, an even more powerful 6.5-magnitude earthquake affected Central Italy. This was the strongest tremor to hit the country in more than three decades. After the August earthquake, most of the victims in the affected regions had already been evacuated to emergency camps and hotel rooms. Schools had been shut down in anticipation of powerful aftershocks

and there were no immediate reports of deaths. Nevertheless, the number of municipalities involved in this second disaster grew from 8 to 52 and threatened the health and welfare of many more farmers and animal owners, livestock and companion animals.

In this situation, IUVENE operated as the technical and scientific agency of the MoH, providing operational and information tools that were quickly used to identify the main needs of the communities involved, and to prioritise and plan specific veterinary interventions for animal health, welfare, and food safety. A tailored made information system was updated and adapted to the situation, enabling the collection of data on the needs of livestock and farmers in a coherent and harmonised fashion, as well as information on the needs of food establishments and feed industries.

Moreover, to capture a holistic picture of the situation, an IUVENE multidisciplinary unit conducted a census of companion animals whose owners had been temporarily displaced. This action was intended to support the maintenance of the human–animal bond and comfort those affected by the disaster.

In January 2017, a series of tremors that varied in strength from 4.1 to 5.3 on the Richter scale affected a large part of the Abruzzo region, which was simultaneously hit by freezing weather, snowstorms, and avalanches in some areas. Thousands of livestock were trapped under collapsed buildings, power and phone services were disrupted and roads blocked, leaving hamlets and farms isolated. Hundreds of animals were injured or killed, and many more were declared missing or out of reach of their owners. Rescue efforts were mounted but faced great difficulty, mainly in the Province of Teramo. On this occasion, IUVENE



was asked to join the emergency coordination centre set up by the Prefect of the Province of Teramo and operated under the coordination of the Carabinieri Command for the protection of forestry, environment and agri-food. Support was provided to local farmers by IUVENE in collaboration with the Regional Veterinary Services, the Veterinary Services of the Teramo Local Health Unit, the Gran Sasso and Monti della Laga National Park, the local Civil Protection and the University of Teramo – Faculty of Veterinary Medicine.

The response to the series of disasters occurred over time in Central Italy highlights how much can be achieved when disaster management agencies work together in a coordinated, holistic manner.

Conclusions

Disasters, by definition, have profound effects on communities, economies and individuals. The protection of animal welfare and support of animal-related businesses are an increasingly important part of disaster preparedness and management, due to the role played by animals in our communities – whether this role is measured in terms of economic or sentimental value.

The OIE has taken a leadership role in identifying the current state of disaster management and risk reduction processes by supporting the Veterinary Services of Member Countries to enhance their resilience and strengthen their capacity to manage emergencies and reduce risk at the global level. As Veterinary Services are a vital component in the governmental framework relevant to public health and wellbeing, through their responsibility for animal health and welfare it is crucial that they collaborate closely with the emergency services and all other agencies involved in disaster management.

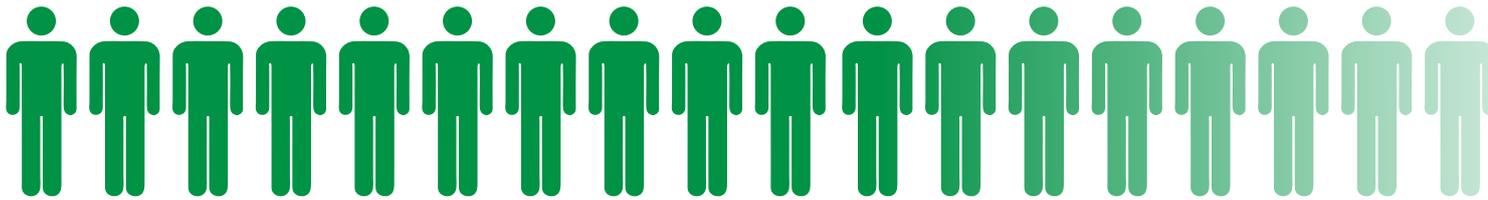
The progressive implementation of the OIE ‘Guidelines on disaster management and risk reduction in relation to animal health and welfare and veterinary public health’ will enhance the integration of Veterinary Services into disaster management and risk reduction planning in national and regional networks. It will thus help Member Countries to safeguard human health and wellbeing by protecting the health and welfare of animals, to mitigate the consequences of a disaster, and to rapidly restore economic conditions and communities that have been affected by after disaster.

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New procedure for nominating and electing experts to the Specialist Commissions



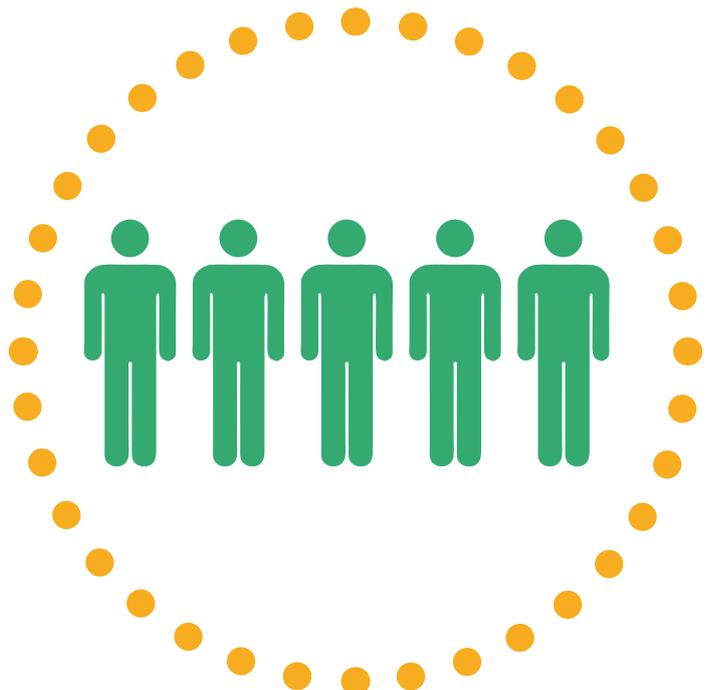
The OIE continues to improve participation and transparency within its procedure for developing standards, to ensure the best scientific basis for these standards and to make sure that they are practical and able to be implemented by Member Countries.

A major objective of the OIE's Sixth Strategic Plan 2016–2020 is **scientific excellence**. To help fulfil this goal, the OIE has developed a process to guide the selection of experts for election to the four Specialist Commissions. As with other major international organisations and leading scientific bodies, the process for selecting OIE experts must ensure the scientific basis and independence of the Specialist Commissions, while also ensuring the transparency of their recommendations and the standards developed. This process will make sure that the candidates presented for election in 2018 represent a range of expertise and viewpoints and include scientific experts from all geographic regions of the world.

The new process will bring the OIE into line with best practice approaches used by many other national and international bodies. It strengthens the role of the OIE Council, Bureaux of the Regional Commissions and OIE Delegates in ensuring that the best scientific advice is provided to support the development of OIE standards, guidelines and recommendations.

It is important to note that the process does not require changes to the Basic Texts of the OIE and will retain the authority of the Members of the World Assembly of Delegates (Assembly) to elect the President, Vice Presidents and the remaining members of each of the Specialist Commissions. This process will also provide greater transparency to the overall nomination process.

As part of the implementation of this new process, OIE Delegates will be asked, at the Assembly in May 2017, to adopt a resolution giving authority to OIE Headquarters to establish the new process in preparation for the 2018 elections.





The process

If the resolution is adopted in May 2017, OIE Headquarters will launch the process for the selection of experts through a **call for nominations**, which will be disseminated widely throughout existing OIE networks during July 2017. The call for nominations, including selection criteria, will be:

- notified to the OIE Delegates, who will be asked to inform their national academic institutions and other relevant entities,
- published on the OIE website, and
- notified through the OIE's Reference Centre network.

Once the applications have been received at OIE Headquarters, they will be assessed by an **Evaluation Committee**, consisting of OIE Headquarters staff, a representative of the Council and independent experts. The Evaluation Committee will identify applicants of a very high calibre who meet the necessary criteria for election to one of the four Specialist Commissions. After the evaluation process, a list of suitable candidates to be proposed for election to the Commissions will be provided to the OIE Council in February 2018. Once the list has been endorsed by the Council, it will be disseminated to OIE Delegates to allow sufficient time for their full consideration in the lead-up to the Assembly and elections in May 2018.

The final nomination and election process at the Assembly will not change. Regions will still be able to support their preferred experts from the list endorsed by the Council, and OIE Delegates will vote in the same manner as they have in the past.

After the election, OIE Headquarters will take the necessary steps to establish the newly elected representatives in the four Specialist Commissions, ensuring that they are properly prepared for their new role.

Frequently asked questions

What is the role of OIE Delegates in this process?

OIE Delegates will be asked to endorse applications from experts in their country, before the application is submitted to OIE Headquarters.

During the Assembly in May 2018, Delegates will vote for their preferred candidates for each of the four Specialist Commissions, including Presidents, two Vice Presidents and the remaining members.

What are the qualifications needed to apply for selection as an expert?

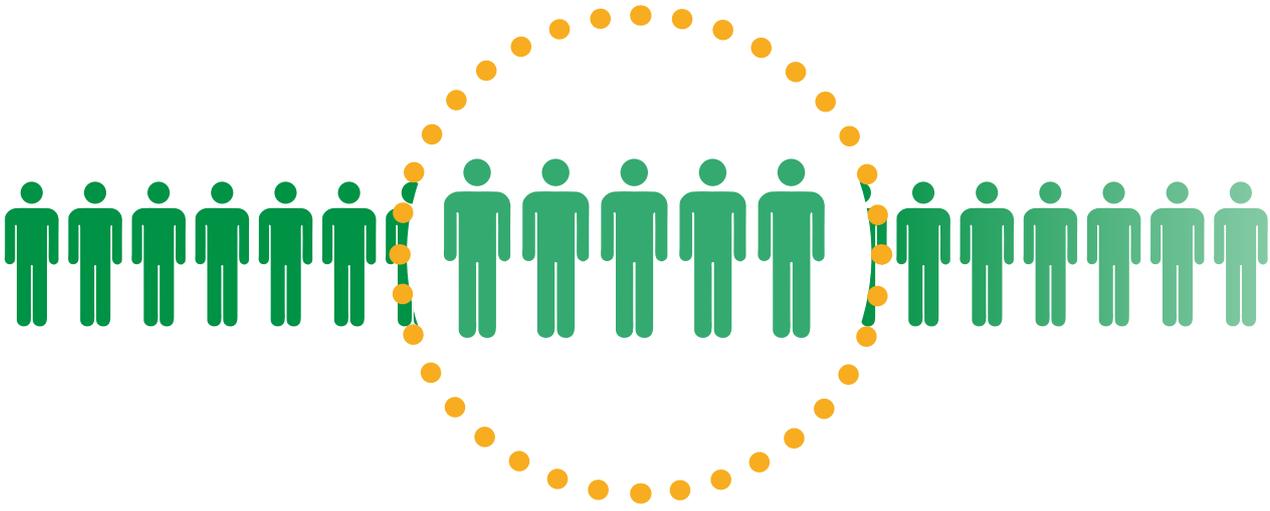
Applicants will be required to demonstrate in their applications that they have a range of personal attributes and technical qualifications. These will vary, depending on the Specialist Commission they wish to be considered for.

The type of qualifications will include a veterinary or scientific degree or other technical qualification relevant to one of the Specialist Commissions, and expertise in one or more of the following fields:

- the control of animal diseases, animal welfare and veterinary public health;
- the surveillance, diagnosis, control and prevention of infectious diseases of aquatic animals;
- the development or implementation of national or international standards and systems relevant to the mandate of the OIE;
- risk analysis, epidemiology, laboratory diagnosis, or new scientific technologies applied to disease prevention and control; and
- laboratory diagnosis or prevention of infectious terrestrial animal diseases.

This is just an indication of the types of specialist expertise that are required, together with a working knowledge of English and the ability to analyse and synthesise complex technical information into structured





assessments or reviews, and to work with people from different cultural backgrounds as well as other scientists from various disciplines.

It is important to note that specific criteria applicable to each of the Specialist Commissions will be published along with the call for nominations.

What is the role of an expert?

The experts elected to the Specialist Commissions are required to attend meetings held at the OIE Headquarters (Paris) at least twice a year, in February and September, and, if required, immediately prior to the Assembly (in May). Experts are required to allocate sufficient time to their own preparation before meetings. Depending on the Specialist Commission agenda, this can include familiarising themselves with the working documents, including Member Countries' comments on draft standards, Member Countries' disease status dossiers, Reference Laboratory and Collaborating Centre applications and associated reports of Working Groups and *Ad hoc* Groups.

Experts must be available to provide advice to OIE Headquarters on specific requests related to matters under the Terms of Reference of the Specialist Commissions and to participate as observers in *Ad hoc* Groups of relevance.

Experts must also act in a capacity that maintains their independence from the specific positions or views of the government of their country, although an awareness of the various animal health and welfare issues associated with their region is an advantage.

Meetings are conducted in English so experts need to have a relatively comprehensive understanding of the

English language and be able to write and contribute to discussions in English.

How long are the meetings and for how long will experts be a member of the Specialist Commission?

Meetings of the Terrestrial Animal Health Standards Commission (the Code Commission) last for ten days; the other Specialist Commissions meet for up to five days.

Experts remain members of the Specialist Commission for a term of three years, commencing in May 2018. After this period they will be eligible for re-nomination for a second term. Members will only be eligible to serve three consecutive terms. However, under exceptional circumstances, when it may be necessary for experts to continue in a given role. In this case, the Director General, in consultation with the Council, may decide to extend an appointment.

I am currently an expert or member of one of the Specialist Commissions, and I would like to maintain my position for another term (three years). What do I have to do?

Existing members who wish to serve another term on one of the Specialist Commissions may be required to submit an application for nomination, in the same way as new candidates. Their previous participation and contribution to the Specialist Commission will be taken into account during the evaluation process.

Interested in applying or have other questions regarding the process?

Questions about the process can be sent directly to the Standards Department at OIE Headquarters:
expert_applications@oie.int

OIE Improved Animal Welfare Programme (IAWP)

A success story of an OIE capacity-building activity

National Meat Inspection Service – Plant Operation Standards and Monitoring Division



Practical training in cattle abattoir. The NMIS Officers trained by Dr Tomasz Grudnik and Dr Ma. Elaine Joy C. Villareal, 2014

Pennapa Matayompong ^{(1)*} & Armie Mariel M. Sebello ⁽²⁾

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The views expressed in this article are solely the responsibility of the author(s). The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by the OIE in preference to others of a similar nature that are not mentioned.

Keywords

Animal welfare – OIE Improved Animal Welfare Programme (IAWP) – training of trainers.

The OIE Improved Animal Welfare Programme (IAWP) capacity-building initiative began in June 2012, thanks to the support of the Government of Australia¹. This capacity-building programme was designed to improve implementation of OIE standards on transport and slaughter in countries importing live cattle from Australia. Since October 2012, more than 400 participants have completed the training programme, in Indonesia, the Philippines, Turkey, Vietnam, Thailand, Jordan, Oman, Iran, the Republic of Korea and Israel. The Programme methodological approach, including the training material used throughout the training sessions, was developed by Dr Rastislav Kolesar, with the support of Dr Tomasz Grudnik and Dr Ma. Elaine Joy Villarreal from OIE Headquarters. Today the same model is being used to deliver training sessions under the framework of the OIE Regional Platform on Animal Welfare for Europe (see pp. 47–50).

1. See *Bulletin*, No. 2014-1, p. 31

The training approach

The IAWP 'training of trainers' programme is designed to impact the three learning domains of the future trainers: namely their cognitive domain, or theoretical knowledge; their psychomotor domain, or practical skills; and their affective domain, or values.

In following this approach, the programme comprises theoretical in-classroom training, practical in-field training, and individual distance learning. We aim to provide a balance of science and practical training with enough time for participants to understand, recognise, and value best practices from the animal welfare viewpoint.

A key output of the IAWP was the OIE training DVD on the welfare of cattle pre-slaughter and at slaughter (with and without stunning). Copies of the DVD have been given to trainers, OIE Focal Points for Animal Welfare and many NGOs. English and Arabic versions are available on request.

The Philippines example

The OIE IAWP was conducted in the Philippines between 2013 and 2014. The training programme included the welfare of cattle and pigs during transport and at slaughterhouses. The training was delivered four times. The first two training sessions, supported by the OIE and the Department of

Agriculture, Fisheries and Forestry, Australia, on the welfare of cattle, were offered to selected animal welfare officers from the Bureau of Animal Industry (BAI), the National Meat Inspection Service (NMIS) and the Department of Agriculture Regional Field Offices (DARFOs). The programme started in 2013 and continued in 2014 to train more Food Animal Welfare Officers from the NMIS.

With the support of the OIE and *World Animal Protection* in 2014, another two training sessions were conducted, on the welfare of pigs, for the officers of BAI and DARFOs and for the officers of NMIS, respectively.

The OIE IAWP has provided the Philippine government with an opportunity to establish a pool of technical personnel tasked to cascade principles of animal welfare and able to demonstrate how to implement it. As a commitment to improve the handling of cattle in the Philippines, the BAI and the NMIS conducted a series of training sessions for cattle and swine producers, handlers, dealers, slaughterhouse operators and butchers, with the trained trainers as the resource persons. From 2013 to 2016, the BAI and the NMIS conducted separate training sessions for stakeholders, covering 16 regions of the country, and the BAI, in collaboration with the DARFO-regulatory units and the Regional NMIS offices, continue

to disseminate animal welfare information to stakeholders.

As part of the IAWP, in 2013, the OIE trained trainers also conducted animal welfare training for the staff of veterinary education establishments.

To promote better handling and slaughter practices, and to improve animal welfare in the country, gap analysis was carried out for the Philippine animal welfare legislation, compared with the OIE animal welfare standards. The Committee on Animal Welfare of the Department of Agriculture, meanwhile, is drafting and amending the guidelines on humane handling, transport, and slaughter of food animals to be consistent with the OIE guidelines. This is one of the goals of the Philippine National Animal Welfare Strategy. In addition, the new animal welfare officers from the DARFO regulatory units are being trained to continue the advocacy and implementation of the country's guidelines on the transport of animals by land, air and sea, as mandated by the Philippine Animal Welfare law. The NMIS, on the other hand, oversees the humane handling and slaughter of cattle and pigs in slaughterhouses.

<http://dx.doi.org/10.20506/bull.2017.1.2592>

new OIE publications



Trilingual publication
April 2017

29.7 × 21 cm
Approx. 350 pages
ISBN 978-92-95108-30-1
Price: EUR 70
<http://dx.doi.org/10.20506/rst.ssue.36.1.2604>

The economics of animal health *Scientific and Technical Review*, Vol. 36 (1)

Coordinator and editor:
Jonathan Rushton

In 1999 the OIE had the foresight to publish a special edition of the *Scientific and Technical Review* on the economics of animal health. Since then, many challenges

in global, national and local animal health environments have arisen. The emergence of highly pathogenic avian influenza followed on from the reemergence and subsequent control of transboundary diseases in Europe, Asia, South America and the United States of America.

These challenges are linked to the changes in how society views animals, how it uses them and how it values them. Therefore, understanding the socio-economic circumstances in which animal diseases emerge, are maintained and spread, is both a part of economic impact assessments and a basis for multidisciplinary assessments of animal health interventions. Such assessments need to consider animal welfare and take into account the value that society places on this important aspect of animal care.

In addition to changes in public attitudes towards animal health and welfare, there has been a shift in the way the world uses and views economics. The neo-classical basis of economic assessment is under scrutiny and alternative views of how to assess people's behaviour have been proposed. These are applicable to an animal health context and need to be explored if economics is to add value to animal disease management and to overall leadership on animal health and welfare policies and standards.

Therefore, this issue of the *Review* comes at an opportune time. It allows the presentation of what is currently considered best practice in the use of economics in animal health, and it looks at where economics could be incorporated into animal health investments and programmes to ensure that the allocation of resources is both proportionate and timely.



In English
2017

29.7 × 21 cm
Approx. 130 pages
ISBN 978-92-95108-49-3
Price: EUR 30

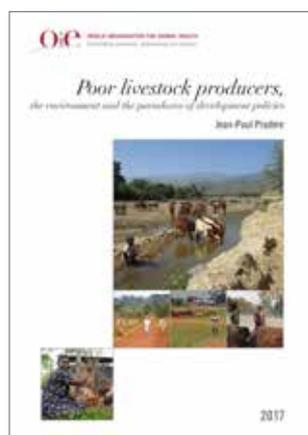
Biological Threat Reduction Proceedings of the 1st OIE Global Conference on Biological Threat Reduction Paris, France, 30 June – 2 July 2015

The first OIE Global Conference on Biological Threat Reduction was convened in close collaboration with the World Health Organization (WHO), to put biological threat reduction on the agenda of Veterinary Services in the OIE Member Countries; strengthen links between the health and security community by engaging key partners in public health, animal health and the security sector; promote international human and animal health frameworks as a key to reducing biological threats; and develop a road map focused on enhancing and



coordinating existing mechanisms for outreach and the strengthening of health systems.

These proceedings include presentations from 34 speakers, including representatives of international organisations, national governments, policy and decision makers, OIE reference centres and donors as well as experts on sciences and economic applied studies.



In English
2017

29.7 × 21 cm
104 pages
ISBN 978-92-95108-29-5
Price: EUR 40

Poor livestock producers, the environment and the paradoxes of development policies

Jean-Paul Pradère

Livestock production has increased considerably in recent decades, and this growth is likely to continue in all regions, particularly in developing countries. Ensuring sustainable growth of livestock production is a challenge facing all countries.

In developed countries and in many developing countries, livestock production volumes continue to increase. However, due to improved productivity and more rational husbandry methods, animal pressure on natural resources and climate change is decreasing. By contrast, in poor countries, there are major obstacles to the sustainable development of livestock farming. Growth in livestock production is achieved primarily by increasing the numbers of animals, which is aggravating the environmental impact of livestock farming. At the same time, animal diseases take an enormous toll on natural resources and on the assets of the most vulnerable households, which contributes to keeping them in extreme poverty. The high risk of animal disease makes investments vulnerable and impedes innovation that could improve productivity.

The report confirms the need for international solidarity and the need to strengthen the capacity of Veterinary Services in poor countries in order to promote sustainable livestock development, tackle poverty and preserve the global public goods of health and the environment more effectively.

Selected OIE publications on animal welfare



Trilingual publication
August 2005

29.7 × 21 cm
365 pages
ISBN 92-9044-658-7
Price: EUR 50

Animal Welfare: global issues, trends and challenges *Scientific and Technical Review*, Vol. 24 (2)

A.C.D. Bayvel, S.A. Rahman & A. Gavinelli, eds



Trilingual publication
April 2014

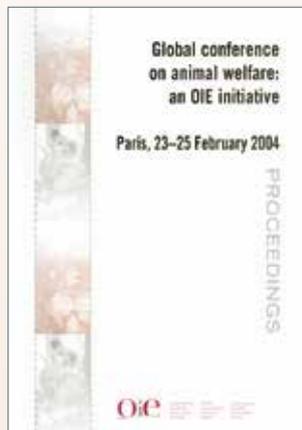
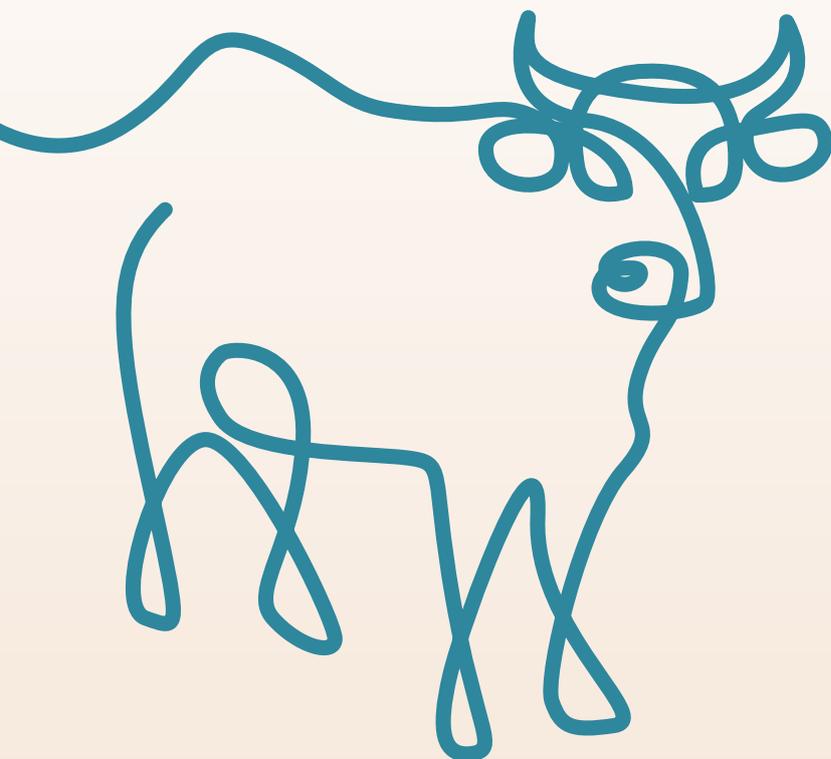
29.7 × 21 cm
358 pages
ISBN 978-92-9044-929-4
Price: EUR 65

Animal welfare: focusing on the future *Scientific and Technical Review*, Vol. 33 (1)

David J. Mellor & A.C. David Bayvel, eds



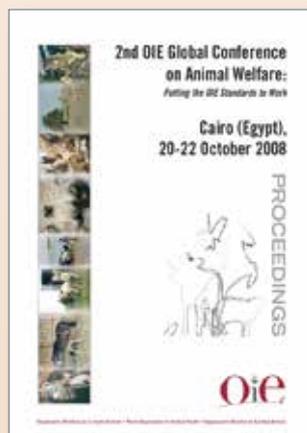
Selected OIE publications on animal welfare



In English
2004

29.7 × 21 cm
333 pages
ISBN 92-894-6614-6
Price: EUR 20

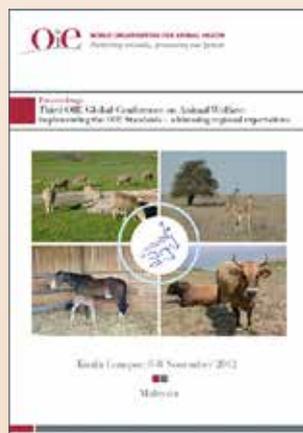
Animal Welfare: an OIE initiative
Proceedings of the 1st Global Conference on Animal Welfare. Paris, France



In English
2011

29.7 × 21 cm
270 pages
ISBN 978-92-79-15178-1
Price: EUR 25

Animal Welfare: 'Putting the OIE standards to work'
Proceedings of the 2nd Global Conference on Animal Welfare. Cairo, Egypt



In English
2014

29.7 × 21 cm
128 pages
ISBN 978-92-9044-956-0
Price: EUR 25

Animal Welfare: implementing the OIE Standards – addressing regional expectations
Proceedings of the 3rd Global Conference on Animal Welfare, Kuala Lumpur, Malaysia



activities of the OIE Specialist Commissions, Working Groups and *Ad hoc* Groups

October – December 2016

Activities of the *Ad hoc* Group on Evaluation of the Foot and Mouth Disease (FMD) Status of Member Countries

The *Ad hoc* Group met at the OIE Headquarters, Paris, from 17 to 20 October 2016. The Group assessed the information provided by one OIE Member Country to be officially recognised as a country free from FMD where vaccination is practised. In addition, the Group evaluated applications from four Member Countries for the official recognition of 11 FMD-free zones.

One country applied for recognition of two zones without vaccination, whereas the remaining three applied for one, three and five zones with vaccination, respectively. Based on experience assessing applications from Member Countries, the Group also drafted different headings to help applicant Member Countries in presenting their surveillance design and results in the dossier.

Activities of the *Ad hoc* Group on Evaluation of the Contagious Bovine Pleuropneumonia (CBPP) Status of Member Countries

The *Ad hoc* Group met at the OIE Headquarters, Paris, on 2–3 November 2016. The Group evaluated the dossiers submitted by three Member Countries for official recognition of their CBPP-free status based on historical grounds, in accordance with the *Terrestrial Animal Health Code* (the *Terrestrial Code*).

Activities of the *Ad hoc* Group on Evaluation of the Classical Swine Fever (CSF) Status of Member Countries

The *Ad hoc* Group met at the OIE Headquarters, Paris, from 8 to 10 November 2016. The Group evaluated the dossiers submitted by five Member Countries for official recognition of their classical-swine-fever-free status, in accordance with the *Terrestrial Code*.

Activities of the *Ad hoc* Group on Susceptibility of Fish Species to Infection with OIE-Listed Diseases

The *Ad hoc* Group on susceptibility of fish species to infection with OIE-listed diseases met for the first time from 15 to 17 November 2016. The purpose of this meeting was to commence assessments for the ten OIE-listed fish diseases, using the 'criteria for listing species as susceptible to infection with a specific pathogen' as presented in Chapter 1.5. of the *Aquatic Animal Health Code* (the *Aquatic Code*), on the basis of relevant scientific literature. It is expected that this *Ad hoc* Group will meet on several occasions in order to complete these assessments. The outcome of this work will be the development of a revised list of susceptible species for inclusion in the relevant chapters of the *Aquatic Code* and the *Manual of Diagnostic Tests for Aquatic Animals*. The Aquatic Animals Commission, at their February 2017 meeting, reviewed the work completed to date by this *Ad hoc* Group.





activities of the OIE Specialist Commissions, Working Groups and *Ad hoc* Groups

Activities of the *Ad hoc* Group on Evaluation of the Bovine Spongiform Encephalopathy (BSE) Risk Status of Member Countries

The *Ad hoc* Group met at the OIE Headquarters, Paris, from 22 to 24 November 2016. The Group evaluated the dossiers submitted by three Member Countries for official recognition of BSE risk status: one country was applying for a 'negligible risk' status for BSE for the first time; one country, already recognised as having a 'controlled risk' status, applied for the 'negligible risk' status; the third country applied for the recognition of two zones for the 'negligible risk' status. The Group also evaluated the information provided by a Member Country concerning its investigations into a case of classical BSE, identified in 2016. Finally, the Group expressed some concerns about the surveillance requirements of Chapter 11.4. of the *Terrestrial Code* and about Chapter 2.4.5. of the *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*.

Activities of the *Ad hoc* Group on Evaluation of African Horse Sickness (AHS) Status of Member Countries

The *Ad hoc* Group met at the OIE Headquarters, Paris, from 6 to 8 December 2016. The Group evaluated the dossiers submitted by three OIE Member Countries for official recognition of their AHS-free status, in accordance with the *Terrestrial Code*. The Group also proposed modifications to Chapter 12.1. of the *Terrestrial Code* on AHS, with regard to the requirements for maintenance of status over time and for surveillance to be conducted when adjacent to an infected country. In addition, it suggested amendments to the AHS questionnaire in Article 1.6.8. of the *Terrestrial Code*. The Group also discussed the link between an official AHS-free status and the establishment of an equine-disease-free zone (EDFZ).

Activities of the *Ad hoc* Group on Evaluation of the Peste des Petits Ruminants (PPR) Status of Member Countries

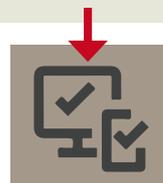
The *Ad hoc* Group met at the OIE Headquarters, Paris, on 13–14 December 2016. The Group evaluated the dossiers submitted by two OIE Member Countries, one requesting recognition of its PPR-free status based on historical grounds, and one seeking endorsement of its official national control programme for PPR. The Group discussed the requirements for the maintenance of PPR-free status over time and the need to revise the relevant section of Chapter 14.7. of the *Terrestrial Code*. Finally, the Group was updated on the implementation of the PPR Global Control and Eradication Strategy and the development of the PPR Global Eradication Programme.

Reports of OIE meetings

Reports of *Ad hoc* Groups meetings:
www.oie.int/en/reports-adhoc/

Reports of the meetings of the Working Group on Animal Welfare:
www.oie.int/en/animal-welfare/en-reports/

Reports of the meetings of the Working Group on Wildlife:
www.oie.int/en/reports-wildlife/





activities of the OIE Specialist Commissions, Working Groups and *Ad hoc* Groups

Highlights from the OIE Working Group on Wildlife in 2016

The OIE's Working Group on Wildlife (WGW) helps the OIE to fulfil its mandates where wild animals are concerned. This article presents some highlights from the work of the WGW in 2016. The aim is to strengthen the link between OIE activities related to wildlife and the OIE National Focal Points on Wildlife.

Continued importance of wildlife and a broad scope of environmental concerns

At a recent meeting of the WGW, Dr Monique Éloit, Director General of the OIE, emphasised to WGW members the continued importance of wild animals in global policies, management and standards for animal health. Rapid environmental changes are major factors in animal health issues around the world, and nowhere more so than at the interface of wildlife, human and domestic animal health. She asked the WGW to include the full range of disease, environmental and epidemiological risks at this interface in its work, to assist all of the OIE Specialist Commissions, and to report directly to the World Assembly of Delegates at each annual meeting in May.

Wildlife diseases around the world

With the help of the OIE World Animal Health Information and Analysis Department and the online reporting tool *WAHIS-Wild*, the WGW monitors wild animal health and disease around the world. A small sample of the noteworthy disease occurrences brought to the attention of the WGW in 2016 is presented below:

a) Chronic wasting disease in Norway

Chronic wasting disease (CWD) is a prion disease affecting members

of the deer family (Cervidae) which was first identified in North America in the 1970s. It has spread slowly but relentlessly since then, and is beginning to have negative impacts on wild deer populations. In 2016, CWD was found unexpectedly in reindeer and moose in Norway, 6,500 km east of the nearest previously known location. The origin of CWD in Norway is not known, but the disease has now been detected there in two species that are present from Norway all the way to far eastern Russia, placing all members of the deer family in Europe and Asia at risk.

b) Devastating fungal diseases

Pathogenic fungi present a grave concern for wild animal health and biodiversity.

- A new Chytrid fungus (*Batrachochytrium salamandrivorans*), native to Asia, has produced very high mortality in wild salamanders in western Europe and has been found in salamanders in international commerce.
- Snake fungal disease, a lethal skin infection of snakes of many species caused by the fungus *Ophidiomyces ophiodiicola*, was discovered in North America in wild snakes and has been expanding its geographical range over the past decade. In 2016, diseased wild snakes were found in the United Kingdom, the first known occurrence of the disease outside

North America and 5,200 km east of the nearest previously known location.

- White nose syndrome of insectivorous bats, caused by the fungus *Pseudogymnoascus destructans*, which has killed millions of bats and threatens several species with extinction in North America, was detected for the first time in 2016 on the west coast of North America, over 2,000 km from the nearest previously known location.

c) Rabies

While dog rabies is the greatest rabies threat to human and domestic animal health, rabies viruses and other closely related Lyssaviruses occur and persist in populations of many different wild animal species. For the current effort toward global eradication of dog rabies to be successful, it is essential that all occurrences of rabies or rabies-like viruses in wild animals everywhere in the world be documented and reported. The WGW learned that, in 2016, a single rabid jackal (*Canis aureus*) in Asia had bitten and potentially infected 36 people. Dog rabies occurs in many populations of wild members of the dog family (Canidae), but also in many other species, such as insectivorous bats and ferret badgers (Mustelidae – the weasel family) and civets (Viverridae – family of civets and genets).



activities of the OIE Specialist Commissions, Working Groups and *Ad hoc* Groups

Reporting of diseases in wild animals by Delegates of OIE Member Countries

The voluntary reporting by Delegates to the OIE of diseases in wild animals is extremely important to the worldwide management of animal health. As of 2016, **OIE-listed diseases** that occur in wild animals are reported through the regular mandatory reporting carried out through the WAHIS online reporting system by the Delegate, assisted by the OIE National Focal Point for Animal Disease Notification. However, many diseases occur in wild animals that are important to biodiversity conservation, human health and domestic animal health but do not meet the criteria for inclusion on the OIE List. Delegates are asked by the OIE voluntarily to report at the end of each year the occurrence of some of these diseases, using the special online reporting tool **WAHIS-Wild**. The OIE National Focal Points for Wildlife assemble the information needed for the Delegates to make these annual voluntary reports. Figure 1 shows the reporting of non-listed diseases in wildlife through *WAHIS-Wild* by the 180 Permanent OIE Delegates for the year 2015.

As the graph shows, only 39 Delegates (22%) submitted reports on non-listed wildlife diseases through *WAHIS-Wild* for 2015. If OIE Member Countries are to be adequately informed about pathogens

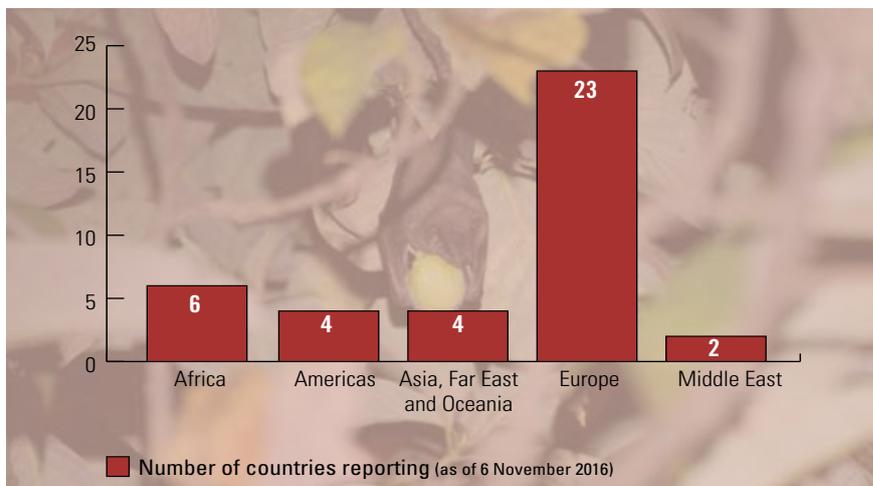


Fig. 1
Reporting of non-listed diseases in wildlife through *WAHIS-Wild* for the year 2015

and diseases of importance in wild animals, some of which may one day meet the criteria for listing by the OIE, a much larger proportion of OIE Delegates and their Focal Points for Wildlife will have to gather information about wild animal diseases in their countries and report to the OIE annually through *WAHIS-Wild*.

CITES and the Nagoya Protocol: challenges for disease diagnosis

The WGW gathered information and discussed at length the problems for timely disease diagnosis posed by regulations on the international shipment of specimens from wild animals associated with CITES¹ regulations, aimed at conservation of endangered species, and with the Nagoya Protocol, which aims to safeguard the economic interests of

a country when life-forms from that country are exploited commercially elsewhere. Both sets of regulations can impose delays in the timely shipment of diagnostic specimens from wild animals to laboratories outside the country of origin. The WGW noted positive efforts by the OIE to find workable solutions with CITES and the Nagoya Protocol to facilitate timely disease diagnosis while maintaining the global benefits of these regulations.

Reports of the OIE Working Group on Wildlife
www.oie.int/en/reports-wildlife/

1. CITES: Convention on International Trade of Endangered Species



news from headquarters

Staff movements

Arrivals

Irma Zarur-Lefebvre

Trilingual Assistant to the General Directorate



Ms Irma Zarur-Lefebvre began her new duties as Trilingual Assistant to the General Directorate on 1 September 2016. Irma will work for the Deputy Directors, in collaboration with the other staff members of the General Directorate and the secretariats of the various departments. In particular, she will manage the appointment of Delegates, oversee the records and membership of OIE Member Countries and maintain the list of Delegates. She will also provide support to the Legal Affairs and Partnerships Unit.

Irma comes from Mexico and has a Master's degree in Specialised Graduate Studies in Editorial, Economic and Technical Translation from the *École Supérieure d'Interprètes et de Traducteurs* (ESIT, Paris). Before joining the OIE, she worked for several years at the Mexican Embassy in Paris and with the Permanent Delegation of Mexico to UNESCO.

Communication Unit Paula Pinet

Digital Communications Officer



The Communication Unit was pleased to welcome Ms Paula Pinet as the new Digital Communications Officer on 3 October 2016. Her background in design and advertising and her Master's degree in Marketing will add a new dimension to the Unit's collection of skills. Paula has worked as an online community manager for brands such as Iberia Airlines and the restaurant brand, Chili's Puerto Rico. She has also developed and managed several digital marketing and social media strategies for various companies in Mexico.

Paula is in charge of coordinating and developing strategies for digital communication solutions that will enable the OIE to make up-to-the-minute use of new technologies and media. She will propose and support the design, development and introduction of fresh and innovative communication tools and materials for digital distribution, to gain the best possible coverage and placement for OIE communications.

Budget Unit Camille Vallin

Assistant

Ms Camille Vallin joined the OIE on 1 August 2016 as Assistant in the Budget Unit.

Camille holds a degree in applied foreign languages (English and Spanish) and a Master 2 'Global Security/Trilingual Analyst' (English, French, Spanish), both awarded by Bordeaux University, France.

She is responsible for assisting the Head of the Budget Unit with a number of tasks, including the reimbursement of mission expenses incurred by OIE staff and experts, budget analysis and monitoring of the OIE's various accounts, monitoring the payment of statutory contributions by Member Countries, and analysing and monitoring budgets for regional seminars and global conferences.



Regional Activities Department

Alise Ozolina

Bilingual Assistant

Ms Alise Ozolina took up her position as Bilingual Assistant with the Regional Activities Department on 1 December

2016. Her responsibilities include providing organisational support



for events such as OIE Regional Commission conferences, the meetings of the Regional and Sub-Regional Representations at OIE Headquarters and the OIE General Sessions. She will also be in charge of the Department's contribution to the OIE Bulletin, coordinate meetings and visits organised by each of the Regional and Sub-Regional Representations and follow up on mission reports from the Representations.

Alise graduated with a Master's degree in International Trade from Paris-Sorbonne University, in Paris, France, with a specialisation in Buying and Product Management, undertaken at *l'École supérieure de management en alternance* (ESM-A), a business college in Paris. She was previously a press attaché to the French Ministry of Agriculture, Agrifood and Forestry.

Events Coordination Unit Nelly Dubarry

Bilingual Assistant



Ms Nelly Dubarry will provide administrative support to the Events Coordination Unit, including drafting regular and diplomatic correspondence, contributing to the maintenance and implementation of the annual planning of regional activities with reminder to ensure that all activities are launched on time. She will also provide

organisational and coordination support to those organising seminars, conferences and technical meetings, liaising with the staff of Regional and Sub-Regional Representations and the technical staff at OIE Headquarters.

World Animal Health Information and Analysis Department François Ntsama

Chargé de mission



Dr François Ntsama took up his post as Chargé de mission at the World Animal Health Information and Analysis Department, where his work will include contributing to the validation and publication of epidemiological information by OIE Member Countries and non-members.

He obtained his diploma in veterinary medicine at Hassan II Institute of Agronomy and Veterinary Medicine (Morocco), followed by a Master 2 in epidemiological surveillance of human and animal diseases at the Alfort National Veterinary School (France).

Standards Department Ann Backhouse

Head of the Department



Ms Ann Backhouse joined OIE Headquarters on 1 September 2016 as Head of the Standards Department (previously the International Trade Department). Her responsibilities include leadership and management of the personnel and activities of the Standards Department and its liaison and collaboration with other OIE departments. One key priority is ensuring that the activities of the department align with the priorities of the Director General's annual work programme in implementing the OIE's Sixth Strategic Plan (2016–2020).

Important activities in the immediate future include developing and implementing the new process for the selection and nomination of experts for election to the four Specialist Commissions (see pp. 29–31), which support the development of the OIE's standards, guidelines and recommendations. Strengthening the role of the secretariats that support the Specialist Commissions by establishing harmonised, transparent work procedures will also be a particular focus during 2017.

Departure

Pablo Belmar von Kretschmann



During a varied and lengthy career with the Australian government, Ann has held senior positions with the Australian Department of Agriculture and Water Resources (including as Advisor to the Minister for Agriculture), dealing with technical market access and the import and export of agricultural products. Before joining the OIE, Ann was responsible for the coordination and management of Australia's input to the work of the Codex Alimentarius Commission (for the development of international food standards) and, as Director of Export Documentation, Registration and Licensing, she ensured the delivery of these functions to support Australia's export of agricultural products. Ann also has extensive experience in the provision of high-level secretariat functions to a range of national and international committees in animal health and food safety, including during the management of emergency situations.

With her varied experience in representing Australia at the international level, her practical experience and knowledge of the operational issues faced by both importing and exporting countries, and her considerable understanding of the multilateral trade environment, Ann will bring a new dimension to the provision of secretariat functions at the OIE.

The OIE said goodbye to Dr Pablo Belmar von Kretschmann on 16 September 2016. He had been working as a Chargé de mission in the Regional Activities Department at OIE Headquarters since January 2015. His responsibilities primarily involved activities associated with the Performance of Veterinary Services Pathway (PVS Pathway), the OIE's global programme to strengthen national Veterinary Services. They included helping to organise OIE assessments of the Performance of Veterinary Services (PVS Evaluations), PVS Gap Analyses, Veterinary Legislation Missions and Follow-up Missions; taking part in the analysis of PVS Pathway mission reports; and contributing to the activities of the OIE Veterinary Legislation Support Programme.

The OIE wishes Dr Belmar von Kretschmann every success in his future endeavours, including his new position relating to food safety in the United Kingdom.

News on the OIE website

Discover some of the latest communication tools available on the OIE website.

New web portal on avian influenza

Providing a clearer understanding of the disease, facilitating access to the OIE's recommendations on combating the disease and raising the international community's awareness of the avian influenza situation worldwide – these are the objectives of this new portal on avian influenza.

In recent months, outbreaks of highly pathogenic avian influenza have affected many countries in most regions of the world. These events have led to the death of hundreds of thousands of poultry, whether from natural causes or as a result of stamping out measures. The recent global upsurge of the disease emphasises the need for effective information-sharing on the avian influenza prevention and control methods to be applied at the local level, and on the OIE's recommendations and the actions it undertakes at the international level.



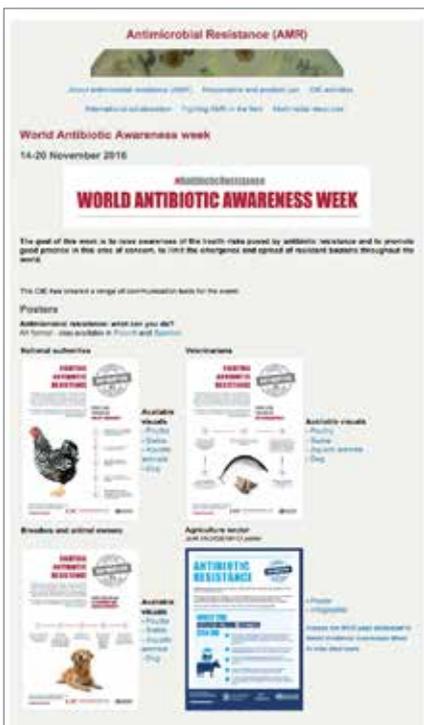
The new OIE portal on avian influenza presents a wealth of information that gives a clear understanding of the disease and details the OIE's recommended biosecurity measures at farm level and for trade, aimed at halting the spread of the disease. It also provides real-time access to notifications of outbreaks submitted by Member Countries. This platform also presents the actions undertaken by the

OIE and its partners, combating animal influenzas being one of the three priorities of the FAO–OIE–WHO Tripartite Alliance.

Numerous communication tools targeting various audiences are freely available for downloading from the portal webpage.

World Antibiotic Awareness Week: 14–20 November 2016

A series of short videos was produced in connection with World Antibiotic Awareness Week 2016 to raise awareness among target groups, including veterinarians, policy makers and animal producers and owners, and provide them with recommendations on good practices they should adopt to protect the efficacy of antimicrobials.



This week was also the occasion for the OIE to publish its strategy on antimicrobial resistance (AMR) and the prudent use of antimicrobials. The document compiles all of the OIE's activities on AMR and is in line with the WHO Global Action Plan. The Strategy outlines the goals and the tactics we have in place to support Member Countries and promote its implementation at national level. Alongside our Tripartite colleagues – WHO and FAO – we are moving towards a common objective: to control AMR for the benefit of all.

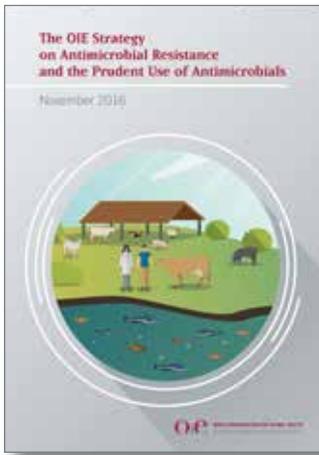


Angelina Litvin



The OIE Strategy on Antimicrobial Resistance and the Prudent Use of Antimicrobials

Complete document



www.oie.int/amrstrategy

Factsheet



www.oie.int/infoamrstrategy

Factsheet



www.oie.int/factsheetamrstrategy

Various posters and infographics on the prudent use of antimicrobials can be accessed on the OIE Portal on Antimicrobial Resistance at: www.oie.int/antimicrobial-resistance

regional activities

Implementation of the regional animal welfare strategy in the Americas

The Americas region has a large animal population of global importance, with production, cultural and economic characteristics varying widely from country to country.

The vision of the regional strategy, adopted in 2012, is for all stakeholders to be involved in advancing animal welfare. This links Veterinary Services with producer associations, transporters, universities and research centres. The Collaborating Centre for Animal Welfare and Livestock Production Systems, a consortium of research centres from Chile, Uruguay and Mexico, is a key participant.



Samuel Zeller

Initial findings: awareness and implementation of the strategy

A questionnaire by the Regional Representation for the Americas, in 2015, revealed an acceptable level of awareness of the regional strategy within the Veterinary Services. However, awareness of the strategy among stakeholders outside the Veterinary Services needed to be enhanced. The questionnaire results also detailed the action required of OIE National Focal Points with regard to training veterinary professionals and paraprofessionals.

In addition, the questionnaire revealed a high level of implementation of the OIE *Terrestrial Animal Health Code* chapters on the transport of animals by land and the slaughter of animals.

Portuguese translation and dissemination of OIE standards

In 2016, the Standing Technical Committee on Animal Welfare (CTBEA) of Brazil's Ministry of Agriculture, Livestock and Food Supply (MAPA) translated and published a selection of animal welfare-related chapters in the OIE *Codes*. This facilitates consultation by many of the 113,000 veterinarians operating in Brazil, a country with 54% of the continent's avian population, 42% of its cattle, and 23% of its swine.

Veterinary education and animal welfare

The Americas region works actively with the Pan American Federation of Veterinary Science Faculties and Schools (FPFECV). In 2015, FPFECV conducted a study of 100 universities across 14 countries to check whether their curricula included animal welfare. Results indicate that 98% of schools of veterinary science and animal science do include animal welfare in their curricula (up from 63% in 2010).

Online network of focal points

The Regional Representation for the Americas established an online animal welfare network in 2016 for the purpose of sharing information and presenting best practice in the implementation of OIE standards. This has strengthened links between the Regional Representation and the tri-national Collaborating Centre.

Preparation of the regional strategy action plan

In 2016, the Regional Representation worked with OIE headquarters and the Collaborating Centre to draft a regional strategy action plan to organise actions for achieving the strategy's objectives. This action plan will be finalised in consultation with all stakeholders.

The regional animal welfare strategy provides a regional approach based on public-private and multidisciplinary consultation to support the implementation of OIE standards and guidelines, and has become a real driver of change and improvement in the continent's production systems.

OIE Platform on Animal Welfare for Europe Three Years in Review



Courtesy of CVO of Territory of Kosovo

100%
of the First
Action Plan
completed

20
activities
conducted



More than
600 K€
disbursed

2nd
Action Plan
under
preparation

THE PROFILE OF ANIMAL WELFARE HAS ALREADY BEEN RAISED IN EUROPE
LET'S CONTINUE TO PURSUE THESE EFFORTS TOGETHER



M. Eloit, OIE Director General

I am very proud to announce that 100% of the activities scheduled under the first Action Plan of the OIE Platform on Animal Welfare for Europe have been implemented, with some great successes including improved coordination among OIE animal welfare partners in Europe. In light of these conclusive results, donors have renewed their trust in the Platform and are supporting the development of a second Action Plan. It is currently being designed as a logical continuation of the first one, in line with the OIE Sixth Strategic Plan; it will also allow the implementation of the recommendations recently adopted in Guadalajara by the participants of the Fourth OIE Global Conference on Animal Welfare.

I invite all of you to join us in continuing to raise the profile of animal welfare, which is more and more at the heart of European society.

FIRST ACTION PLAN LOGICAL FRAMEWORK APPROACH

Goal
Improving animal welfare in Europe

Purpose
Empowering Veterinary Services to take action on animal welfare in compliance with OIE standards

- Outputs**
1. Awareness is raised and a high level of understanding of animal welfare is achieved
 2. Implementation of OIE animal welfare standards is progressively improved
 3. Participation of countries in the OIE's standard-setting procedure is encouraged

Activities
A set of 20 activities will be implemented

Overview – State of activity implementation



▪ Training of Trainers (ToT) Workshops on transport and slaughter (2)	(Y2)
▪ ToT Workshops on long distance transport , including modules development	(Y3)
▪ Regional stray dog Roadmap for Balkan countries – including an awareness campaign	(Y1, 2, 3)
▪ Regional stray dog Roadmap for West Eurasia	(Y2, 3)
▪ Steering Committee meetings (7)	(Y1, 2, 3)
▪ Newsletters and advocacy documents	(Y1, 3)
▪ Platform website	(Y1, 2, 3)
▪ Translation in Russian	(Y1, 2, 3)



BALKANS
(11 countries)

WEST EURASIA
(8 countries)

I. Stray dog population control

to become compliant with OIE Terrestrial Code Chapter 7.7. by **2025**

to become compliant with OIE Terrestrial Code Chapter 7.7. by **2030**

Regional stray dog Roadmaps

National stray dog reports



- Self-assessment (2015)
- Regional workshops (2014; 2016)
- National reports
- Regional report
- OIE Awareness Campaign on stray dogs in the Balkans

- Self-assessment (2016)
- Regional workshops (2015)

Rabies dimension is taken into account in the Regional stray dog Roadmaps



OIE Campaign official launch: **13 May 2016**



Material for OIE campaign on stray dogs

II. Slaughter of production animals

III. Long-distance transport

OIE Improved Animal Welfare Programme methodology (three sessions back to back)



First ToT workshop on slaughter Tbilisi, Georgia, March 2015

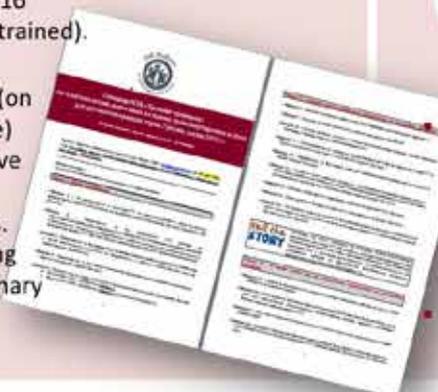
Stage 1 (First Session)	<ul style="list-style-type: none"> • Best practices in humane handling, transport interwoven with field visits and practical training sessions • 3 days
Breaks: 1-4 weeks (Distance Learning, reading and consultations)	
Stage 2 (Second Session)	<ul style="list-style-type: none"> • Recapitulation of the First Session • One-on-one (Trainer to trainees), consultations on the development of training modules followed by delivery of presentations • 4.5 days
Breaks: 4-5 weeks (Development of Training Sessions)	
Stage 3 (Last Session)	<ul style="list-style-type: none"> • Workshop on animal welfare in a long distance transport, for stakeholders delivered by the new set of trainees • 1.5 days

Development of training modules. Content:

- Animal behaviour
- Planning and preparation for the journey
- Loading and transport
- Unloading and resting, and resting points
- Training of drivers, theory, practice, legislation, examination
- Animal welfare in transport and meat quality

- **First ToT Workshop on slaughter**, Tbilisi, Georgia, First semester 2015 (5 countries, 10 trainers trained).
- **Second ToT Workshop on slaughter**, Bryansk and Moscow, Russia, First semester 2016 (7 countries, 14 trainers trained).

Post-workshop evaluation (on the basis of a questionnaire) indicated that countries have cascaded the training at national level in most cases. Kazakhstan used the training material to revise its veterinary core curriculum.



Cattle
Pigs
Sheep
Horses
Poultry



First ToT Workshop on long distance transport, for Kazakhstan and Ukraine (10 trainers trained), in Astana, Kazakhstan:

- **Session 1: 13–15 December 2016 (3 days)**
- **Session 2: 16–20 January 2017 (4.5 days)**
- **Session 3: 22–23 February 2017 (1.5 days)**

▪ Many long-distance activities to be carried out under the Second Action Plan (see page 50).

IV. Governance activities

Steering Group meetings

Composition of the Steering Group (SG)

- Country representatives (Ireland, Russia, Serbia, Spain, Turkey)
- European Commission
- OIE (Headquarters and region)
- IZSAM Teramo (OIE Collaborating Centre on animal welfare)
- Permanent observer: World Animal Protection
- Other participants invited on an *ad hoc* basis

The objectives of the SG meetings are to report on the implementation of the Platform activities carried out over the past six months (since the previous SG meeting) and present and discuss a draft programme for the next six months to come.



Steering Group meetings

SG1	Paris, December 2013
SG2	Moscow, April 2014
SG3	Brussels, December 2014
SG4	Belgrade, May 2015
SG5	Dublin, November 2015
SG6	Teramo, April 2016
SG7	Madrid, November 2016

Stakeholder engagement

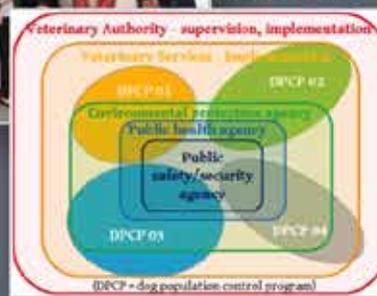
The OIE engages with a large range of animal welfare stakeholders at the international and regional level, to conduct or promote Platform activities (workshops, support to countries, etc.). A stakeholder consultation meeting is organised every year to exchange information on respective animal welfare activities in Europe and create synergies and complementarities.

The OIE also encourages the OIE Delegates to consult stakeholders at the national level. Countries are notably invited to establish a **Stray Dog Multi-Stakeholder Advisory Group** (or a national stakeholder framework), as stated in article 7.7.5. of the *Terrestrial Animal Health Code*.



National stray dog framework

Second stakeholder consultation meeting (June 2016, Brussels)



Donor support



The OIE World Animal Health and Welfare Fund is a multi-donor trust fund which receives contributions from public, private and non-governmental entities. It serves as the main financial mechanism to support the Action Plans of the Platform.

The OIE sincerely thanks all donors who have contributed financially or in kind to the Platform activities

Donor advocacy document (2013)

- European Commission
- France
- Germany
- Switzerland
- World Animal Protection
- IZSAM Teramo
- RSPCA
- Regional Animal Welfare Centre for the Balkans (RAWC), with the support of the RSPCA
- Hosting countries (Romania, Russia, Belgium, Georgia, Serbia, Kyrgyzstan, Ireland, Albania, Spain)

Communication

Communication activities

- Newsletters
- New Platform website
- Presentation of the Platform activities in various arenas

2014 News letter



www.rpawe.oie.int

EN
RU

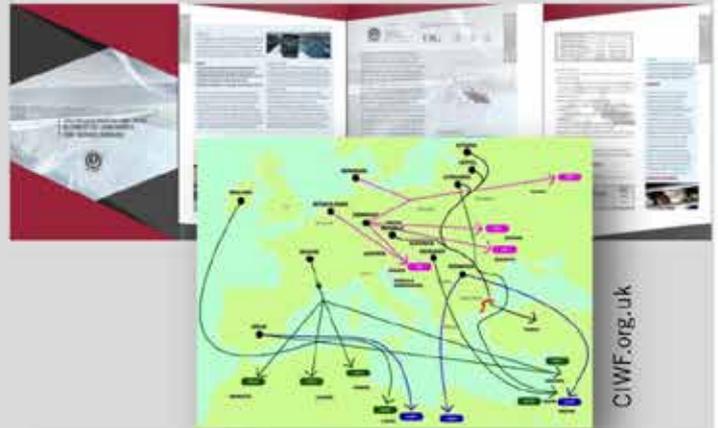


The new Platform website has interesting functionalities to support the future activities of the Platform, such as **e-forum, webinars, e-survey, e-calendar, e-library** (to post best practices), etc. Separate secured spaces are also available, respectively for the members of the Platform Steering Group, and for the OIE Delegates and national Focal Points. The new website will be available in English and Russian.

What is next?

Continuation of the First Action Plan

- **Stray dogs:** continuation of the stray dogs Roadmaps for the Balkans and for West Eurasia (workshops every two years and capacity-building activities in collaboration with stakeholders); the OIE Campaign in the Balkans will be pursued, notably in schools (annual activity);
- **Transport:** (i) **Second ToT Workshop on long-distance transport**, Belarus (tbc), second trimester 2017 (2 countries, 14 trainers to be trained); (ii) **Regional workshops on long distance transport, for West Eurasia and Balkan countries** (dates and location tbc); (iii) **Regional workshops on long distance transport, for West Eurasia and Balkan countries** (dates and location tbc).



CIWF.org.uk

Evaluation of the First Action Plan

The evaluation of the first Platform Action Plan, scheduled for early 2017, will assist in the design of a relevant second Action Plan. The evaluation process will remain simple (more qualitative than quantitative) and the countries, as main Platform beneficiaries, will be consulted. The results of the evaluation will be presented during the OIE 85th General Session (Paris, May 2017).

Second Action Plan (2017–2019)

The first Platform Action Plan came to an end on 31 December 2016. There is, however, a general consensus from the beneficiary countries and donors that, despite the great achievements already accomplished through the OIE Platform, considerable work remains to be done in the field of animal welfare in Europe, and a second three-year Platform Action Plan (2017–2019) is required. It was agreed that the three priority topics of the first Action Plan, namely **stray dog population control**, **transport** and **slaughter of production animals**, should be continued under the second Action Plan, while there is some room to introduce new animal welfare topics of interest to the region such as the **welfare of equids** and **disaster management**. Subsequent activities to cover these topics are currently under discussion.

Sam Bradd Live Graphic Recording



Proposed features of the Second Action Plan

- In line with the OIE Sixth Strategic Plan
- A continuation of the First Action Plan, with the same three priority topics (transport; slaughter; stray dog population control)
- Increased ownership by countries: the Steering Group will be chaired by a member of the Bureau of the OIE Regional Commission for Europe.
- Trans-regional activities ('Whole Journey Scenario Workshops' from Europe to the Middle-East addressing transport and slaughter).
- **Proposed for endorsement during the 85th OIE General Session (Paris, May 2017)**

Continuation of topics



Proposed new topics



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Belgium
Tel. +32 22 11 83 41

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Staff movements

Africa

OIE Sub-Regional Representation for Eastern Africa and the Horn of Africa

Dr Masiga bids 'kwa heri' (farewell) to the OIE



OIE/P. Bastiaensen

Dr Walter Masiga during his farewell speech

Dr Walter N. Masiga's retirement on 31 December 2016 concludes a successful career in animal health in Africa, spanning 50 years.

Dr Masiga joined the OIE in January 2010 to support the establishment of the OIE Sub-Regional Representation for Eastern Africa and the Horn of Africa in Nairobi (Kenya) as the very first

OIE Sub-Regional Representative for Eastern Africa and the Horn of Africa.

Prior to joining the OIE, he worked as a research scientist from 1967 until 1985, during which time he served as Principal Veterinary Research Officer at the East African Veterinary Research Organization (EAVRO) and Director of the Veterinary Research Department (VRD). He then joined the African Union (AU) where he served as Director of the Interafrican Bureau for Animal Resources (AU-IBAR) and Head of the AU Diplomatic Mission in Kenya from 1985 to 2000. Dr Masiga was a member of the OIE Working Group on Animal Welfare from 2001 to 2008.

Dr Masiga's contribution to science and development is well known, not only as the author of numerous publications in a range of fields (including the development of vaccines against contagious bovine pleuropneumonia, contagious caprine pleuropneumonia and East Coast fever; trypanosomiasis control; and research into malignant catarrhal fever), but also for his leadership role in the Pan African Rinderpest Campaign (PARC) project.

An event to mark Dr Masiga's retirement and departure was held in Nairobi on 18 November 2016, which afforded the Government of

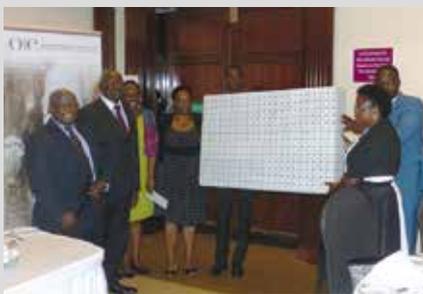


OIE/P. Bastiaensen

Dr Monicah Maichomo (standing), Director of the Veterinary Science Research Institute of the Kenya Agricultural & Livestock Research Organization (KALRO), congratulates Dr Masiga

Kenya, as well as representatives of national, regional and international technical agencies, civil society organisations, regional economic communities, industry stakeholders and friends and family, the opportunity to wish Dr Masiga well on his retirement and return to Kitale in western Kenya.

Dr Masiga said that he believed the OIE had served the Member Countries of the region well and would continue to do so in the years to come. Dr Samuel Wakhusama, Deputy Sub-Regional Representative since 2015, was appointed as Sub-Regional Representative and took over from Dr Masiga.



OIE/P. Bastiaensen

Presentation of a farewell gift on behalf of OIE staff in Africa, including the Representations for Africa (Bamako), Southern Africa (Gaborone) and North Africa (Tunis)



Arrivals

Americas

OIE Regional Representation for the Americas

Lucía Escati

Technical Assistant – Communications
Correspondent



Dr Lucía Escati joined the OIE Regional Representation for the Americas in October 2016 as a Technical Assistant. Her responsibilities primarily involve her role as a regional Communications Correspondent, in charge of improving contacts with the media and press agencies in the Americas, as well as publicising activities carried out by the OIE at the global and regional level. She will also support OIE Regional Representation and Headquarters activities throughout the region.

Dr Lucía Escati graduated as a veterinarian from the University of Buenos Aires in Argentina, specialising in veterinary public health. She worked as a researcher in the field of epidemiology and carried out a three-month student internship with the Argentinian National Service for Food Health and Quality (SENASA), which taught her about managing many different components involved in Veterinary Services. Before becoming one of the staff of the OIE Regional

Representation for the Americas, she completed a six-month internship, where she learned about the structure of the OIE and its activities, and gained experience in regional topics. She also took part in organising various workshops and meetings.

OIE Regional Representation for Asia and the Pacific

Noriyoshi Ojima

Deputy Regional Representative



Dr Noriyoshi Ojima joined the OIE Regional Representation for Asia and the Pacific on 1 October 2016 as Deputy Regional Representative.

A graduate of the University of Tokyo, Dr Ojima took up a post with the Japanese Ministry of Agriculture, Forestry and Fisheries (MAFF) in 1991, and his career with MAFF's Veterinary Services has since spanned more than 25 years. For ten years, he was involved in border control of transboundary animal diseases (TADs) at the Animal Quarantine Service. Subsequently, as Deputy Director of the Animal Health Division of MAFF, he handled OIE-related affairs and

Asia – Pacific

international cooperation on animal health issues, becoming the OIE National Focal Point for Animal Disease Notification to the OIE, Animal Production Food Safety, and Communication. He took part in many international conferences, seminars and meetings, either on behalf of the Chief Veterinary Officer of Japan or as a representative of the Japanese Veterinary Authority. He has also been deeply involved in planning and coordination as well as financial contributions for a large number of OIE/Japan Trust Fund projects.

Moreover, Dr Ojima has considerable experience in national TADs contingency activities and knowledge of the laws and regulations on emergency services and disaster response, recovery and mitigation. Added to this is his ability to coordinate various emergency preparedness and response activities across organisational lines.

He has a broad knowledge of international trade in animals and animal products, as well as sanitary and phytosanitary

Departures

OIE Regional Representation for Asia and the Pacific

Yoko Aoyama



Dr Yoko Aoyama successfully completed her assignment as a Regional Veterinary Officer at the OIE Regional Representation for Asia and the Pacific on 30 September 2016.

She dedicated her two-year tenure to developing and implementing OIE activities in the region, including supporting communications from OIE Regional Commission Members for Asia, the Far East and Oceania, as well as strengthening networks of OIE National Focal Points by organising seminars.

In October 2016, she returned to the Government of Japan to begin her new duties at the Food Safety Commission Secretariat. We wish Dr Yoko Aoyama every success in her new position.

Sun Hongtao

Regional Veterinary Officer



Dr Sun Hongtao joined the OIE Regional Representation for Asia and the Pacific on 27 October 2016 as Regional Veterinary Officer. He will contribute to the organisation of meetings and other activities to be funded by the Ministry of Agriculture of the People's Republic of China via the OIE *World Animal Health and Welfare Fund*.

Dr Sun Hongtao graduated with a Bachelor's degree in Biological Technology from the Northeast Agricultural University of China in 2008, and gained his Master's in Animal Genetic Breeding and Reproduction at the same university in 2011. He worked in the International Veterinary Affairs Department of China's Animal Health and Epidemiology Center (CAHEC) since June 2012, focusing on tracking and analysing epidemics of transboundary animal diseases. He also took part in developing China's commentaries on the OIE standards set down in the *Terrestrial and Aquatic Codes and Manual*, and negotiations on China's import requirements for animal products. As a member of the Working Group for Animal Disease Control in the Chinese Ministry of Agriculture, Dr Sun Hongtao was also involved in animal disease prevention and control in north-west China.

(SPS) measures, including the World Trade Organization (WTO) SPS Agreement. In 1999, he was appointed as Assistant Director for OECD Affairs, International Economic Affairs Division of MAFF, where his responsibilities included international economic discussions about harmonising the rules governing food safety and international trade. He has also worked as a Director of the Japan External Trade Organization (JETRO) in Ho Chi Minh City Office in Vietnam, providing private Japanese companies with information on trade and investment in Vietnam, Cambodia and Laos, sourced through field investigations, interviews and expert consultations on the food and agriculture industries of these countries. From 2014 to 2016, he was in charge of the SPS chapters of free trade agreements (FTAs) and economic partnership agreements (EPAs) between Japan and Japan's trading partners. His knowledge on the international trade of animals and animal products will be a great addition to the Representation's strengths.

Dr Ojima's main duties at the OIE are developing and coordinating OIE activities in Asia and the Pacific, and assisting the OIE Regional Representative for the region to prepare budgets for all pertinent activities, as well as the annual activity report. He also acts on behalf of the Regional Representative in his absence.

Fania Dwi



Dr Fania Dwi, who first joined the OIE Regional Representation for Asia and the Pacific on 22 April 2016, left the OIE towards the end of the year, on 30 November 2016. Dr Dwi worked as a Regional Veterinary Officer in charge of aquatic animal health issues and laboratory-related programmes in Asia and the Pacific.

During her time at the OIE, Fania worked in close collaboration with many organisations, including the Network of Aquaculture Centres in Asia-Pacific (NACA), as she contributed to the Quarterly Aquatic Animal Disease Report; the National Veterinary Assay Laboratory, Ministry of Agriculture, Forestry and Fisheries, Japan (NVAL) in holding a training course on antimicrobial resistance; and the China Animal Disease Control Center (CADCC), when she organised hands-on training for the diagnosis of porcine respiratory and reproductive syndrome and other swine diseases. She was also in charge of preparing the meeting of OIE Reference Centres in Asia and the Pacific, to be held in February 2017.

Dr Dwi has returned to her home country, Indonesia, to continue a project related to community development. The OIE wishes her all the best on her new journey.

Meetings

Implementation of the OIE Sixth Strategic Plan and development of roadmaps for Regional and Sub-Regional Representations

A meeting of OIE Regional and Sub-Regional Representations (RR/SRR) was held at OIE Headquarters (HQ) in Paris from 25 to 28 October 2016. The main objective of the meeting was to reach a common understanding on the content of the RR/SRR roadmap in order to advance its development significantly, in line with the OIE's Sixth Strategic Plan. This entailed reviewing the activities currently implemented by RR/SRR and OIE HQ under the Strategic Plan and developing a regional roadmap template to further harmonise activities among the regions, while ensuring enough flexibility to cater for the specific needs and capabilities of each RR/SRR. The meeting also provided an opportunity to define ways for enhancing collaboration within and between regions, and between RR/SRR and OIE HQ.

Fruitful discussions throughout the week guided the joint development of the regional roadmaps by OIE HQ and RR/SRR. The RR/SRR discussed challenges, expectations and proposals from the regions regarding implementation of the OIE Sixth Strategic Plan and development of the RR/SRR roadmap, while the various OIE HQ departments discussed implementation of the OIE HQ roadmap and anticipated support from the regions. For the first time, the annual meeting of RR/SRR included a working group session to facilitate interaction between OIE HQ and RR/SRR on the thinking process for developing the regional roadmap template. This interaction was warmly welcomed by both OIE HQ and RR/SRR staff.

Dr Monique Éloit, Director General of the OIE, provided participants with crucial considerations to be taken into account when developing the regional roadmaps. She emphasised that RR/SRR were key actors in the work of the OIE because they were best placed to fully understand the regional context and related needs. As Regional and Sub-Regional Representatives are the first contact point between the OIE and Member Countries in the region, they are responsible for ensuring the implementation of OIE activities at regional level.

In conclusion, Dr Éloit said that collaborative work between RR/SR and OIE HQ was the key to successful implementation of the OIE Sixth Strategic Plan.



Implementing progressive control of FMD in South-East Asia and China 19th SEACFMD National Coordinators' Meeting

Bangkok, Thailand, 17–19 August 2016



OIE/Preechaya Srithep

Front row, from left: Dr Yu Qiu, OIE Sub-Regional Representation for South-East Asia; Dr Sahawatchara Ungvanijban, Regional Reference Laboratory; Dr Amonrat Choonnasard, Regional Reference Laboratory; Dr Wilai Linchongsungbongkoch, DLD Consultant; Dr Pranee Rodtian, Acting Director of the Regional Reference Laboratory; Dr Song Junxia, National FMD Coordinator of China; Dr Gardner Murray, President of the OIE Sub-Commission for FMD Control in South-East Asia, China and Mongolia; Dr Prapas Pinyocheep, Director of the Bureau of Disease Control and Veterinary Services of DLD; Dr Ronello Abila, OIE Sub-Regional Representative for South-East Asia; Dr Sith Premashthira, National FMD Coordinator of Thailand; Dr Mohd Naheed Bin Mohd Hussein, National FMD Coordinator of Malaysia; Dr Arlene Vytiaco, National FMD Coordinator of the Philippines; Dr Ashish Sutar, Project Officer of the OIE–Laos FMD Control Project

The SEACFMD¹ National Coordinators' Meeting was held in Bangkok from 17 to 19 August 2016. In attendance were the SEACFMD National Coordinators from 12 Member Countries, donors, partners and observers, 55 participants in all. The meeting was opened by Dr Prapas Pinyocheep, Director of the Bureau of Disease Control and Veterinary Services, Department of Livestock Development (DLD), Thailand, who welcomed participants to Bangkok and spoke of SEACFMD's achievements over the preceding years. Dr Gardner Murray, President of the OIE Sub-Commission for Foot and Mouth Disease (FMD) Control in South-East Asia, China and Mongolia, summarised the key objectives of this meeting, noting the importance of each Member Country developing a strategic implementation plan to guide its progress along the SEACFMD Roadmap and FAO/OIE Progressive Control Pathway for FMD (PCP–FMD).

Participants reviewed the progress made on the priority actions recommended at the 22nd Sub-Commission Meeting and the 18th National Coordinators' Meeting. They were also given an update on the regional FMD situation. Significant epidemiological changes include the incursion of the O/ME-SA/Ind2001d strain into Laos and Vietnam and serotype A viruses into Myanmar. Representatives from Laos, Vietnam and Myanmar presented their investigations

into these outbreaks and the outcomes so far. In the workshop that followed, participants identified the key FMD risks for Member Countries, including delayed responses due to under-detection and/or under-reporting of FMD outbreaks; illegal cross-border movements of livestock and their by-products; poor biosecurity practices on farms; and low vaccination coverage. Risk-mitigation approaches were also identified, including optimising FMD surveillance and reporting systems and sending more samples to reference laboratories on a regular basis; enhancing multi-national and multisectoral collaborations on animal movement management; launching advocacy campaigns to increase biosecurity awareness; developing zoning approaches, and tailored vaccination campaigns, using a combination of broad-scale and targeted vaccination strategies.

In the afternoon, a poster tour was held, during which Member Countries presented their country's FMD situation, describing their key activities to implement the third edition of the SEACFMD Roadmap, and major challenges. Given that the majority of Member Countries have not yet applied for OIE endorsement of their National Plan for FMD Control, nor have experience with PCP–FMD evaluation, a workshop was held to advise participants about relevant guidelines. Country

1. SEACFMD: South-East Asia and China Foot and Mouth Disease Campaign



Poster presentation

Delegates discussed the questions in the PCP–FMD checklist and underlined those that may be difficult to address. The OIE Sub-Regional Representation for South-East Asia (SRR–SEA) confirmed its willingness to provide targeted support, based on the workshop's outcomes, to help Member Countries to prepare for OIE endorsement of their National Plan and PCP evaluation.

The second day started with a wrap-up of the previous day's activities, followed by a facilitated workshop on the Roadmap and PCP implementation plan for 2016–2020. Delegates reviewed the regional implementation plan and then identified strategic targets aligned with their region's strategy. In the afternoon, a poster tour was held, during which partners presented their FMD research and prevention activities. This was followed by a workshop on identifying SEACFMD research priorities for 2016–2020. Participants reviewed past and present research activities and achievements and outlined their most pressing research needs over the next five years. The most common research gaps included technical advances in FMD detection and surveillance; the design and optimisation of broad-scale FMD vaccination strategies; identifying cost-effective biosecurity measures for large-scale applications; and analysis of the regional value chain of animals and animal products. It was agreed that the OIE SRR–SEA will develop a regional SEACFMD research strategy for 2016–2020, based on the results of the workshop. In the following session, the SEACFMD Roadmap manuals were reviewed and National Coordinators were urged to submit case study activities and/or results to annex to the manuals, which would allow for experience-sharing and increased collaboration.

On the third day, Country Delegates presented their national implementation plans for the SEACFMD Roadmap. In the subsequent workshop, Member Countries detailed their action plan for 2016–2017, which included the implementation plan targets they had identified on the previous day. Potential bilateral and multilateral collaborations that could contribute to the implementation plan's activities were also discussed. In the last session, Dr Murray re-emphasised that the sustainability of the



Workshop discussion

SEACFMD Campaign required strong commitment from Member Countries and continued support from donors. He also presented the preparation work for the 23rd Sub-Commission Meeting, which is due to be held in March 2017 in Cambodia. The meeting ended by reviewing and discussing its proposed recommendations.

Among the most important of these recommendations was an agreement that the exotic FMD viruses O/ME-SA/Ind-2001d and A/Asia/GVII from South Asia posed serious risks to SEACFMD Member Countries, and that the OIE SRR–SEA should develop a policy paper and recommendations for risk management approaches, encouraging all Member Countries to continually evaluate the risk of FMD incursions and take protective measures. It was also agreed that a regional PCP Evaluation Committee would be established to review Member Country applications for PCP status for endorsement by the Sub-Commission.

All the workshops in the meeting were organised in a new way. Participants were grouped according to their country's progress along the PCP–FMD or by project. An opening presentation was conducted to explain the categories of the targets/activities to be identified, and a framework was set up on a white board. Each group then discussed and outlined their priority targets/activities on sticky notes, and placed them in the respective category. Group representatives briefly explained their outputs and a quick on-the-spot analysis was performed to draw primary conclusions. This new format of workshop has proved very productive, with increased interaction, improved outputs and very positive comments from participants.

Deep-dive analysis will be conducted by the OIE SRR–SEA after the meeting and conclusions will be circulated through the final meeting report.

A Tripartite approach to 'One Health' and zoonotic influenza in Asia

FAO/OIE/WHO Asia-Pacific Workshop on Surveillance, Prevention and Control of Zoonotic Influenza

Paro, Bhutan, 29–31 August 2016

Zoonotic influenza is a viral infection transmitted directly or indirectly by infected birds, pigs or horses. Outbreaks of various subtypes of avian influenza (AI) in several Asian countries have had significant impacts on animal and public health, trade and the economy in affected regions. As part of their coordinating role in Asia and the Pacific, the FAO/OIE/WHO Tripartite assisted the Government of Bhutan to organise the 'Asia-Pacific Workshop on Surveillance, Prevention and Control of Zoonotic Influenza' in Paro, from 29 to 31 August 2016. Sixty-nine participants joined observers from 13 countries, Bangladesh, Bhutan, Cambodia, India, Indonesia, Japan, the Democratic People's Republic of Korea, Laos, Mongolia, Myanmar, Nepal, Thailand and Vietnam, as well as personnel from the development partner (USAID) and international organisations (FAO, OIE and WHO), at the workshop.



The general objective of the workshop was to strengthen the surveillance, prevention and control of zoonotic influenza through a 'One Health' approach. The specific goals of the workshop were to:

- a)** provide an update on the zoonotic influenza situation and recent scientific information about zoonotic influenza viruses at the national, regional and global level
- b)** share knowledge and experiences of AI surveillance, prevention and control, and
- c)** provide recommendations for Member Countries and international partner organisations to prevent and control zoonotic influenza.

The workshop was opened by His Excellency, Lyonpo Yeshey Dorji, the Minister for Agriculture and Forests of Bhutan. Dr Frank Wong, an OIE expert on AI from Australia, presented the keynote speech on the 'Global and regional situation, and scientific updates on zoonotic influenza'. Dr Wong highlighted concerns about the emergence of AI clade 2.3.4.4 and various subtypes, the threat posed by the zoonotic potential of low pathogenicity AI (LPAI), and the contribution of the OIE/FAO network of expertise on animal influenza (OFFLU) in detecting novel genotypes.

The next technical session focused on participating countries sharing their experiences and lessons learned. Representatives from Bangladesh, Bhutan, Cambodia, Thailand and Vietnam

discussed live bird markets as sentinel detection sites for novel AI viruses and potential sources of new strains, the importance of biosecurity, and a 'One Health' approach towards controlling zoonoses. In the plenary discussion, suggestions were made to improve biosecurity and to update local vaccine strains to ensure vaccine efficacy. Concerns were expressed about the adequacy of information-sharing at the national and regional level, as well as with the OFFLU network.

A poster session was moderated by Dr Ronello Abila, OIE Sub-Regional Representative for South-East Asia, focusing mainly on the risks of zoonotic influenza and the status of the 'One Health' approach. The various risk factors identified for zoonotic influenza were: porous border/cross-border poultry movement, changing viral characteristics (the evolution of multiple clades), the abundance of migratory birds in the region, an absence of robust surveillance systems, biosecurity and mixed-species farming issues, a lack of human resources, difficult geography, and the use of vaccination of ducks along the borders. A 'One Health' approach was considered an effective mechanism for preventing and controlling emerging infectious diseases, including zoonotic influenza. The main issues hindering the implementation of a 'One Health' approach include: inadequate funds for effectively carrying out 'One Health' activities; legislative and policy issues; difficulties in multisectoral coordination; weak engagement of the wildlife sector; difficulties in conducting joint investigations; research and analysis of bioinformatics; problems with real-time data-sharing; and the absence of a platform for data-sharing.



Another session provided updates and information on the existing animal influenza networks of international organisations. The Global Influenza Surveillance and Response System (GISRS) is the key laboratory network for global influenza surveillance, coordinated by WHO. The OFFLU network, coordinated by FAO and the OIE, is a technical platform aimed at reducing the undesirable impacts of animal influenza viruses by promoting effective collaboration between animal health and human health experts. OFFLU contributes AI data to the bi-annual WHO vaccine composition meetings to assist pandemic preparedness.

Prof. Hiroshi Kida from the OIE Reference Laboratory for AI and the WHO Collaborating Centre for Zoonoses in Hokkaido, Japan, provided a keynote presentation on the control of AI and preparedness for pandemic influenza. He emphasised that stamping-out was the most effective control measure for highly pathogenic AI (HPAI) and that vaccination should be applied with caution.

Existing tools for risk assessment were shared by OIE and WHO. Workshop participants were updated on the progress of Joint Risk Assessment (JRA) and the Tool for Influenza Pandemic Risk Assessment (TIPRA).

Those attending the workshop also had the chance to attend group discussions on improving surveillance, laboratory diagnosis and data-sharing, and to debate the 'One Health' approach. Participants provided suggestions and recommendations on each topic and these were incorporated in the meeting's conclusions and final recommendations.

Partners also shared their own activities, programmes and planning for zoonotic influenza. The workshop finished with a field trip, organised by the host country, to the Royal Centre for Disease Control (RCDC) and the National Centre for Animal Health (NCAH) in Thimphu.

In conclusion, the workshop ran smoothly, providing a forum for useful discussion and practical recommendations, and those who attended expressed their appreciation at having had the opportunity to take part.



27th Conference of the OIE Regional Commission for Europe

Lisbon, Portugal, 19–23 September 2016



The 27th Conference of the OIE Regional Commission for Europe was held in Lisbon, from 19 to 23 September 2016.

In all, 112 participants, comprising OIE Delegates and/or representatives of 40 OIE Member Countries, as well as senior officers from nine regional and international organisations, attended the Conference.

The opening ceremony was chaired by Prof. Dr Fernando Bernardo, Delegate of Portugal to the OIE; accompanied by Dr Māris Balodis, President of the OIE Regional Commission for Europe; Dr Monique Éloit, Director General of the OIE; Dr Botlhe Michael Modisane, President of the OIE; and Mr Luís Capoulas Santos, Minister of Agriculture, Forestry and Rural Development of Portugal.

Dr Thomas Müller, Head of the OIE Reference Laboratory for Rabies at the Friedrich Loeffler Institute in Germany, presented Technical Item I, while

Technical Item I was developed from the answers of Member Countries to a questionnaire, prepared by the speaker in collaboration with OIE Headquarters, on the '**Control and elimination of rabies in Europe: challenges and strategies for a rabies-free Europe**'. It enabled the adoption of a recommendation which proposed, among other things, that the OIE and WHO, in collaboration with other international organisations, continue to support Veterinary Services and human health services by organising national bridging workshops on the International Health Regulations and OIE PVS Pathway, promoting intersectoral collaboration as recommended by the 'One Health' concept.

Report on Technical Item I by T. Müller, C.M. Freuling, C. Stoffel & G. Torres:
<http://dx.doi.org/10.20506/TT.2553>

Dr Eeva Tuppurainen, veterinary expert on lumpy skin disease (LSD), sheep pox and goat pox control, and Dr Nadav Galon, Delegate of Israel to the OIE, who are both members of the OIE *ad hoc* Group on LSD, spoke on Technical Item II.

The agenda was a busy one, including a presentation on PVS Pathway evolution; a report on the animal health situation in European Member Countries during

2015 and 2016; a presentation on the current revision of the *Terrestrial Animal Health Code* chapters on African swine fever and LSD; a report on the coordination of global strategies for foot and mouth disease and peste des petits ruminants within the region; an update on antimicrobial resistance and possible future developments; and a detailed examination of the OIE's current work on reviewing the

Technical Item II on 'Lumpy skin disease: current situation in Europe and neighbouring regions and necessary control measures to halt the spread in South-East Europe', described how, despite control and eradication measures taken by some OIE Member Countries, the spread of lumpy skin disease continues, mainly in unvaccinated animals, within the Middle and Near East, South-East Europe and the Northern Caucasus. Considering that there are still many questions about this disease that require further research, one of the adopted recommendations suggested that Member Countries, in collaboration with the OIE and relevant international and regional organisations, set up international research collaborations and networks and initiate research projects to address the current gaps in our knowledge.

Report on Technical Item II by E. Tuppurainen & N. Galon:
<http://dx.doi.org/10.20506/TT.2554>

procedures for official recognition of disease status and self-declarations.

Both Technical Items were of considerable interest to the region and prompted the adoption of two recommendations that will be submitted to the World Assembly of Delegates in May 2017. Once they

have been endorsed by the OIE World Assembly of Delegates, they will provide an important guideline for the Member Countries of the OIE Regional Commission for Europe, as well as for the OIE as a whole.

The last day of the Conference was dedicated to statements and a

panel discussion with international and regional organisations on the following topic: 'Addressing the challenges of international trade of animals and products of animal origin: how to engage all interested parties?'

Middle East

Facilitating official recognition of PPR and FMD status and disease control programmes

Regional workshop on the OIE procedure for official recognition of Member Countries' disease status and for the endorsement of national official control programmes for FMD and PPR

Cairo, Egypt, 5–6 October 2016

The endorsement of official national programmes for controlling foot and mouth disease (FMD) and peste des petits ruminants (PPR), along with the OIE procedure for official recognition of Member Countries' disease status, were the subjects of an OIE regional workshop organised in Cairo on 5 and 6 October 2016. The Government of Egypt kindly provided financial and logistical support.

The workshop was attended by 30 participants – among them, five OIE Delegates – from 10 Member Countries of the OIE Middle-East Region, namely: Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia and the United Arab Emirates. Participants from two Member Countries (Syria

and Yemen) were unable to attend. Prof. Trevor W. Drew, Animal and Plant Health Agency, United Kingdom, and Prof. Hassan Aidaros, Banha University, Egypt, were invited as OIE experts. Representatives from the Food and Agriculture Organization of the United Nations (FAO) and the United States Department of Agriculture Animal and Plant Health Inspection Service (USDA-APHIS) attended as observers.

The workshop was aimed at strengthening the capacity of Member Countries in this region to compile a more effective dossier for the endorsement of their national official control programme or official recognition of their



disease-free status for FMD or PPR, in accordance with the *Terrestrial Animal Health Code* (the *Terrestrial Code*).

The objectives of the workshop were:

- to give participants information on the OIE standards and procedure relevant to official recognition of FMD and PPR status, as well as national control programme endorsement
- to create awareness and interest in having their official national control programme endorsed by the OIE
- to guide Member Countries on preparing dossiers for official recognition of disease status for FMD and PPR and/or for endorsement of their official national control programme by the OIE
- to clarify countries' and the OIE's role and responsibilities when preparing and submitting applications
- to strengthen the sub-regional network of veterinarians working on FMD and PPR; and
- to provide expertise on technical questions related to these programmes.

Opening remarks were made by the Delegate of Egypt to the OIE, Dr Ibrahim Mahrous Saleh Mohamed, followed by an introductory session covering the objectives of the workshop and allowing participants to introduce themselves and to share their expectations of the meeting.

General presentations were given on the current FMD and PPR situation in the region, on the standard operating procedures for official recognition of disease status and for endorsement of official national control programmes, and on the *Terrestrial Code*

requirements for zoning. More specific presentations covered the requirements of the FMD and PPR *Terrestrial Code* chapters; including those on FMD and PPR surveillance; as well as the questionnaires for Member Countries applying for endorsement of their official control programme.

Short overviews on the 'FMD Global Control Strategy' and on the 'Global Strategy for the Control and Eradication of PPR' were also provided. In particular, links were highlighted between these strategies and the OIE procedures under discussion. Speakers also emphasised the benefits that Member Countries could derive from implementing the OIE PVS Pathway, to eventually control and eradicate FMD and PPR.

Two quizzes were held to ensure that the participants had a good understanding of the issues involved and so that confusing or sensitive situations could be further discussed. They also moved into groups to study extracts from a fictitious application for the endorsement of a national control programme. This hands-on training clarified the kind of information and level of detail needed by the OIE experts to evaluate application dossiers and make an informed decision.

The participants expressed their appreciation of both the workshop's topics and format. They were asked to self-assess their knowledge of the issues covered during the workshop, both before the meeting and on its last day. Analysis of their answers showed an increase in their knowledge of both the OIE procedure for official recognition of Member Country disease status and the endorsement of national official control programmes.



Appointment of permanent Delegates

23 August 2016

Philippines

Dr Enrico P. Garzon, Jr.



Assistant Secretary for Livestock, Department of Agriculture

1 November 2016

Indonesia

Dr I Ketut Diarmita



Director General of Livestock and Animal Health Services, Ministry of Agriculture

26 January 2017

Lithuania

Dr Vidmantas Paulauskas



Deputy Director, State Food and Veterinary Service

1 September 2016

Cyprus

Dr Christodoulos Pipis



Acting Director, Veterinary Services, Ministry of Agriculture, Rural Development and Environment

5 December 2016

Croatia

Dr Damir Agičić

Assistant to Minister, Chief Veterinary Officer, Veterinary and Food Safety Directorate, Ministry of Agriculture

3 February 2017

Mali

Dr Souleymane Camara



Chef de la Division surveillance et protection sanitaire, Direction nationale des Services vétérinaires

1 October 2016

Thailand

Mr Apai Suttisunk



Director General, Department of Livestock Development, Ministry of Agriculture and Cooperatives

27 December 2016

Nepal

Dr Bimal Kumar Nirmal

Delegate to the OIE, Department of Livestock Services, Ministry of Agricultural Development

7 February 2017

Andorra

Dr Sònia Abad Puyalto



Chef du Service de santé et de protection animale, Département de l'agriculture, Ministère de l'environnement, de l'agriculture, et du développement durable

27 October 2016

Vanuatu

Dr Ian Peebles

Acting Principal Veterinary Officer, Biosecurity Vanuatu, Ministry of Agriculture, Livestock, Forestry, Fisheries & Biosecurity

16 January 2017

Uganda

Dr Julieta Sentumbwe



Director Animal Resources, Department of Livestock, Health and Entomology, Ministry of Agriculture, Animal Industry and Fisheries

8 February 2017

São Tomé-and-Príncipe

Dr Alfredo De Sousa Pontes

Rodrigues Da Mata



Director Geral da Pecuária, Ministère de l'agriculture, de la pêche et du développement rural

19 January 2017

Algeria

Dr Djamila Hadj Amar

Directrice des Services vétérinaires, Ministère de l'agriculture, du développement rural et de la pêche

13 February 2017**Mauritania****Dr Brahim Ould Taleb Moussa**Directeur des Services Vétérinaires,
Ministère de l'élevage**16 February 2017****Sri Lanka****Dr Rathnayaka****Mudiyanselage Ariyadasa**Director General,
Department of
Animal Production
and Health,
Ministry of
Livestock & Rural
Community
Development**20 February 2017****Canada****Dr Harpreet Kochhar**Chief Veterinary
Officer, Associate
Vice-President
Operations,
Canadian Food
Inspection Agency**22 February 2017****Malaysia****Dr Quaza Nizamuddin****Bin Hassan Nizam**Deputy Director General
(Veterinary Health), Division of
Livestock Resources & Technology
Development, Department of
Veterinary Services**23 February 2017****Comoros****Dr Youssouf Ousseni Moutroifi**Chef de service
Santé publique
vétérinaire, à la
Vice-présidence en
charge du
Ministère de la
production**1 March 2017****Poland****Dr Paweł Niemczuk**Chief Veterinary Officer, Ministry of
Agriculture and Rural Development**10 March 2017****Ukraine****Dr Andrii Zhuk**First Deputy Head of the State Service
of Ukraine on Food Safety and
Consumer Protection, International
Cooperation, Ministry of Agrarian
Policy and Food**12 March 2017****Jordan****Dr Sami Al-Edwan**General Secretary
of Livestock,
Ministry of
Agriculture**14 March 2017****Papua–New Guinea****Dr Gibasa Asiba**Chief Veterinary
Officer, National
Agriculture
Quarantine and
Inspection
Authority**16 March 2017****Angola****Eng. Bernadete Santana**Directora General del Instituto de los
Servicios Veterinarios, Ministerio de
Agricultura**27 March 2017****Niger****Dr Abdoul Malick Haido**Directeur général
des Services
vétérinaires,
Direction de la
Santé Animale**12 April 2017****Greece****Dr Chrysoula Dile**Head, Animal Health Directorate,
Ministry of Rural Development and
Food**20 April 2017****Bahrain****Dr Fajer Alsalloom**Chief of Pharmacy
& Veterinary
Laboratories,
Central Veterinary
Laboratory,
Agriculture and
Marine Resources
Affairs

strengthening of Veterinary Services

OIE PVS Pathway for efficient Veterinary Services

PVS Evaluation missions

State of Play – as at 5 April 2017

OIE Region	OIE Members	Requests received	Missions completed	Reports available for distribution to donors and partners
Africa	54	53	51	43
Americas	29	26	25	19
Asia and the Pacific	32	25	25	14
Europe	53	19	19	11
Middle East	12	13	11	6
Total	180	136	131	93

PVS Evaluation mission requests

• Africa (53)

Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Rep., Chad, Comoros, Rep. of the Congo, Dem. Rep. of the Congo, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, São Tomé and Príncipe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

• Americas (26)

Argentina, Barbados, Belize, Bolivia, Brazil, w Chile, Colombia, Costa Rica, Dominican Rep., Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago, Uruguay, Venezuela.

• Asia-Pacific (25)

Australia, Bangladesh, Bhutan, Brunei, Cambodia, Fiji, Indonesia, Iran, Japan, Dem. People's Rep. of Korea, Laos, Malaysia, Maldives, Mongolia, Myanmar, Nepal, New Caledonia, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Thailand, Timor Leste, Vanuatu, Vietnam.

• Europe (19)

Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Georgia, Iceland, Israel, Kazakhstan, Kyrgyzstan, Former Yug. Rep. of Macedonia, Romania, Serbia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

• Middle East (13)

Afghanistan, Bahrain, Iraq, Jordan, Kuwait, Lebanon, Oman, Palestinian N.A. (observer), Qatar, Saudi Arabia, Syria, United Arab Emirates, Yemen.

In red: completed missions



Legislation missions

State of Play – as at 5 April 2017

OIE Region	OIE Members	Requests received	Missions completed
Africa	54	41	35
Americas	29	9	7
Asia and the Pacific	32	7	7
Europe	53	5	4
Middle East	12	5	4
Total	180	67	57

PVS Gap Analysis missions

State of Play – as at 5 April 2017

OIE Region	OIE Members	Requests received	Missions completed	Reports available for distribution to donors and partners
Africa	54	52	49	32
Americas	29	18	13	10
Asia and the Pacific	32	21	16	9
Europe	53	10	9	4
Middle East	12	10	4	0
Total	180	111	91	55

Legislation mission requests

• Africa (41)

Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African (Rep.), Chad, Comoros, Dem. Rep. of the Congo, Côte d'Ivoire, Djibouti, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

• Americas (9)

Barbados, Belize, Bolivia, Dominican Rep., Guatemala, Haiti, Honduras, Panama, Paraguay.

• Asia/Pacific (7)

Bhutan, Cambodia, Fiji, Laos, Mongolia, Papua New Guinea, Vietnam.

• Europe (5)

Armenia, Georgia, Israel, Kazakhstan, Kyrgyzstan.

• Middle East (5)

Afghanistan, Kuwait, Lebanon, Saudi Arabia, United Arab Emirates.

In red: completed missions

PVS Gap Analysis mission requests

• Africa (52)

Algeria, Angola, Benin*, Botswana, Burkina Faso, Burundi, Cameroon, Central African (Rep.), Chad*, Comoros, Dem. Rep. of the Congo, Côte d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea*, Guinea-Bissau, Kenya, Lesotho, Liberia, Libya, Madagascar*, Mali, Mauritania, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe.

• Americas (18)

Argentina, Barbados, Belize, Bolivia, Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Suriname.

• Asia-Pacific (21)

Bangladesh, Bhutan, Brunei, Cambodia, Fiji, Indonesia, Iran, Dem. People's Rep. of Korea, Laos, Malaysia, Maldives, Mongolia, Myanmar, Nepal, Philippines*, Sri Lanka, Thailand, Timor Leste, Vanuatu, Vietnam.

• Europe (10)

Armenia, Azerbaijan, Bosnia and Herzegovina, Israel, Kazakhstan, Kyrgyzstan, Serbia, Tajikistan*, Turkey.

• Middle East (10)

Afghanistan, Jordan, Kuwait, Lebanon, Oman, Palestinian N.A. (observer), Saudi Arabia, Syria, United Arab Emirates, Yemen.

In red: completed missions

*Including second Gap Analysis missions and Aquatic Gap Analysis mission

Harmonising veterinary medicines and vaccines legislation for mutual benefit in East Africa

Seminar for East African Community Member States
on regional harmonisation of legislation in the veterinary domain
Arusha, Tanzania, 8–12 August 2016

OIE/P. Bastiaensen



Mr Jean-Baptiste Havugimana, representing the Deputy Secretary-General of the East African Community

The meeting was officially opened by the Delegate of Tanzania to the OIE and Director of Veterinary Services of Tanzania, Dr Abdu Hayghaimo, on behalf of the Minister of Livestock and Fisheries Development. Opening statements were also made by Mr Jean-Baptiste Havugimana, representing the Deputy Secretary-General of the EAC; Dr Tabitha Kimani on behalf of FAO; Dr Walter Masiga on behalf of the OIE; Dr Lois Muraguri on behalf of GALVMed; and Dr Mohamed Abdel-Raziz Aziz, on behalf of AU-IBAR.

From 8 to 12 August 2016, the town of Arusha, at the foot of mighty Mount Kilimanjaro, became the meeting-place for government veterinary and legal officers of the East African Community (EAC) Member States. The five-day intensive training seminar was attended by Burundi, Kenya, Rwanda, Tanzania and Uganda, with a delegation of at least one legal expert and one or two veterinary experts from each country.

This seminar was the sixth in a series of regional seminars organised under the auspices of the Strengthening Veterinary Governance in Africa (VETGOV) programme and funded by the European Union, allowing participants to take a detailed look at the problems

involved in harmonising veterinary legislation; in this case, the legal requirements for veterinary medicines and vaccines.

The seminar was attended by 28 participants, including observers and staff from the OIE, the Food and Agriculture Organization of the United Nations (FAO), the African Technology Policy Studies Network (ATPSNet), the Global Alliance for Livestock Veterinary Medicines (GALVMed), the EAC Executive Secretariat, the African Union Interafrican Bureau for Animal Resources (AU-IBAR) and OIE facilitators, including Dr David Sherman, Coordinator of the OIE Veterinary Legislation Support Programme (VLSP), and Dr Jim Fingleton, VLSP legal expert.

During the opening day of the seminar, presentations were given by the various stakeholder organisations:

- AU-IBAR reviewed the objectives, results and structure of VETGOV and briefed the gathering on activities undertaken since the launch of the programme
- the FAO detailed its activities in the region related to veterinary legislation
- the EAC reviewed its activities on veterinary legislation, and explained approaches and activities undertaken to promote the regional harmonisation of policy and legislation



- GALVMed discussed actions taken on veterinary medicines and biologicals in Africa, with special reference to East Africa
- the OIE explained its international standards for veterinary legislation: specifically, Chapter 3.4. of the *Terrestrial Animal Health Code*
- the OIE also discussed methods for the development and successful implementation of quality veterinary legislation, and essential elements for regulating veterinary medicines and biologicals, from a national and regional perspective.

Over the next few days, through a series of working groups, participants conducted a critical evaluation of their country's legislation on the regulation of veterinary vaccines and medicines, to identify gaps and weaknesses. They then revisited their legislation with the goal of providing a sound legal basis for the EAC/GALVMed initiative on

mutual recognition procedures (MRP) for registering veterinary vaccines. This was followed by group discussions to identify additional challenges to the successful implementation of vaccination programmes and associated gaps in legislation. Finally, the participants identified problems that could be effectively resolved by means of a regionally harmonised approach through the EAC.

This was the sixth in a series of seminars on regional harmonisation of legislation in the veterinary domain since 2014, jointly organised by AU-IBAR, the OIE and FAO, in partnership with Regional Economic Communities. The next and last seminar of this kind is scheduled to take place in mid-2017 for the Member States of the Common Market for Eastern and Southern Africa (COMESA), in Livingstone, Zambia.

The meeting recognised that a number of crucial issues would need to be addressed in order to overcome problems with vaccine quality and delivery in the region:

- the implementation of mutually agreed, harmonised disease control policies
- the harmonised registration of vaccines
- harmonised professional qualifications and reciprocity
- cross-border and regional planning, surveillance and vaccinations
- a regional vaccine bank and cold-chain system
- post-vaccination testing at a regional laboratory
- the certification of vaccines by the African Union Pan-African Veterinary Vaccines Centre (AU-PANVAC) throughout the entire region, and
- the establishment of a regional emergency disease response fund.



Enhancing the legislative basis for biological threat reduction

OIE PVS Pathway Veterinary Legislation Support Programme (VLSP) expert training seminar on legislation and biological threat reduction

OIE Headquarters, Paris, 6–7 December 2016



A growing concern for ensuring public safety and promoting the public good is the increasing risk of biological threats to both animals and humans through the intentional release of infectious agents. This risk is of sufficient concern to the OIE and its partners that, in June 2015, the OIE organised a Global Conference on Biological Threat Reduction in Paris. The conference produced 18 recommendations¹, with Recommendation No. 16 explicitly addressing the link between biological threat reduction and legislation.

Recommendation No. 16 states that: 'The OIE should continue to encourage Member Countries to comply with standards for the quality of Veterinary Services by undertaking PVS pathway assessments, and respecting the standards adopted in the *Terrestrial and Aquatic Animal Health Codes* for effective disease control, safe trade and electronic certification. Such efforts should include critical assessments of relevant country legislation to ensure that Veterinary Services have the necessary legal basis to act effectively and efficiently in the face of biological threats'.

In support of this, the Government of Canada, through its Global Partnership Program (GPP), awarded a grant to the OIE to establish a project to strengthen health security and improve countries' preparedness for biological threat reduction by enhancing their veterinary legislation. Canada has requested that the OIE focus its efforts on the Americas through this project; specifically, the countries of Central America that are members of the Regional International Organization for Plant Protection

and Animal Health (*Organismo Internacional Regional de Sanidad Agropecuaria – OIRSA*).

Among the activities to be undertaken was a seminar for Veterinary Legislation Support Programme (VLSP) experts on the topic of legislation and bio-threat reduction. This seminar was organised and held in Paris on 6 and 7 December 2016. There were 31 VLSP experts in attendance and five external speakers, representing legal, veterinary and bio-threat security expertise. A number of OIE Headquarters staff also attended.

The purpose of the seminar was to heighten awareness among the group of VLSP experts, including both lawyers and veterinarians, to the subject of bio-threats related to animal disease and zoonoses and the role of national Veterinary Services in addressing such threats. Moreover, it

The programme was divided into five sections:

- a) an overview of the bio-threat situation and the OIE's response
- b) legislative (national and international) and institutional frameworks for addressing bio-threats
- c) country and regional examples of legislation and actions to address bio-threats
- d) a case study on the pilot Veterinary Legislation Identification Mission (VLIM) undertaken in Belize to assess bio-threat legislation
- e) working-group sessions.

¹ www.oie.int/eng/BIOTHREAT2015/recommendations/BTR_Conference_Final_report_7_8_2015.pdf



aimed to familiarise them with the legal framework, at both the national and international level, that needed to be in place to effectively support the prevention and mitigation of bio-threats.

Among the seminar's practical objectives was to improve the capacity of VLSP experts to conduct assessments of veterinary legislation in relation to biological threat reduction as part of the national veterinary legislation reviews undertaken during their VLSP Veterinary Legislation Identification Missions (VLIMs).

There was consensus that Veterinary Services have an important role to play in the prevention and mitigation of biological threats, since a large number of the agents that can be used to cause intentional harm are animal pathogens, including many zoonotic pathogens. This means that Veterinary Services must be involved not only in intentional animal disease outbreaks but in some human disease outbreaks as well. **It was therefore concluded by the seminar that Veterinary Services need a sound and clear legal basis to act to prevent and mitigate biological threats.** Ideally, nations will already have in place broad, national legislation that reflects their international obligations under the Biological Weapons Convention and UN Security Council Resolution 1540. These countries may also have, or could draft, veterinary legislation that addresses specific legal issues in the veterinary domain but which is harmonised with broader national legislation on biological threats.

A series of regional workshops for advanced training on animal disease notification to WAHIS enhances global animal disease transparency



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Yerevan, 20 October 2016. From left to right: Dr Hovhannes Mkrtchyan, Delegate of Armenia to the OIE; Mr Armen Harutyunyan, Deputy Minister of Agriculture of the Republic of Armenia; Dr Paula Cáceres, Head of the OIE World Animal Health Information and Analysis Department; Prof. Kazimieras Lukauskas, OIE Regional Representative in Moscow

Advanced training workshops on the OIE World Animal Health Information System (WAHIS) for the Americas region (Panama, 6–8 September 2016), the European region (Armenia, 18–20 October 2016), and the African (English speaking) and Middle-Eastern regions (Egypt, 1–3 November 2016), have been successfully delivered. They contributed to the core OIE mandate of enhancing animal disease transparency globally, and rounded off an especially busy quarter for OIE's World Animal Health Information and Analysis Department (WAHIAD), supported by their OIE regional office counterparts.

The three workshops combined have ensured that the technical representatives of almost 100 OIE Member Countries have now received advanced and updated training in OIE disease notification over the three months.

The three-day training workshops each employed similar methodologies focusing on practical learning for participants, most of whom were

OIE National Animal Disease Notification Focal Points (Focal Points). The training format included a multitude of presentations and practical exercises on WAHIS. It used questionnaires, simulations and mock-reports on notifiable (listed and emerging diseases), as well as non-notifiable diseases (e.g. of wildlife) to make the training content user-friendly.

There was also training on the legal basis of OIE reporting and group discussions combining experienced and new (or less experienced) Focal Points. Participants used their own laptops to gain practical experience in the various approaches (and errors to avoid) in submitting the different reporting formats of immediate notifications, weekly follow-up reports, six-monthly reports and annual reports. A short review process was introduced to use prior to submission to reduce errors further and improve the quality of reporting.





Sharm El Sheikh, 1 November 2016. Opening address delivered by Dr Magda Youssef, Head of the Technical Office of the General Organisation for Veterinary Services in Egypt, on behalf of the Delegate of Egypt to the OIE. Left: Dr Neo Mapitse, Deputy Head of the OIE World Animal Health Information and Analysis Department; right: Dr Ali El-Romeh, representing the OIE Regional Representative for the Middle East



Group photo of the workshop held in Panama City, Panama, 6–8 September 2016



Group photo of the workshop held in Yerevan, Armenia, 18–20 October 2016



Group photo of the workshop held in Sharm El Sheikh, Egypt, 1–3 November 2016

The experience of the countries in each region in undertaking real life reporting of recent terrestrial and aquatic disease outbreaks was presented and analysed to further promote practical learning. Participants also used the opportunity to provide useful comments and input on WAHIS renovation. In the Africa region, a special session was held on working with the African Union Inter-African Bureau for Animal Resources – AU-IBAR’s Animal Resource Information System (ARIS) towards full inter-operability with WAHIS.

A self-evaluation quiz was conducted before and after the training workshops. As well as demonstrating an excellent immediate impact from the workshops, it also highlighted areas for greater training emphasis in the future. Overall, the workshops proved valuable: its participants commented on the effective balance between practical and theoretical aspects and an appreciation of the collaborative approach encouraged open exchanges and networking between Focal Points and with OIE staff from both the Headquarters and the regions.

OIE WAHIS Portal:
<https://goo.gl/1yaaEU>

OIE Regional Workshops for focal points and Information Seminars for new Delegates

Africa

Communication for improving animal health in Africa

Regional Seminar for OIE National Focal Points for Communication

The training sessions covered the following themes:

- a) 'Standards, communication approaches and risk communication'
- b) 'Putting lessons learned to the test: raising awareness', and
- c) 'Crisis management and dealing with the (social) media'.

The general objective of the seminars was to provide OIE National Focal Points in charge of communication with all the information they needed to support their National OIE Delegates in the area of communication, according to their Terms of Reference¹ as well as Chapter 3.3. of the *Terrestrial Animal Health Code*². The seminar was therefore specifically designed to train Focal Points in how to manage national communication systems and operational communication campaigns, in line with OIE standards.

To engage the participants and drive home the learning process, the seminar was conducted with the guidance of the *OIE Communication Handbook for Veterinary Services*³, developed in 2015 in collaboration with WHO. Interactive sessions involved group work on a series of practical exercises for the participants to complete together in working groups, and the use of modern communication tools (an online communication session, developed by WHO, completed before the workshop, practical exercises on using social media, photo banks, scenarios and role-play, etc.).

The entire seminars took place in an excellent atmosphere with lively and motivated participation from all those who attended, foreshadowing a constructive future for this network of Communication Focal Points in Africa.

English-speaking participants from Africa

Mombasa, Kenya, 27–29 September 2016

The first cycle of regional seminars for OIE Focal Points for Communication came to a close in Mombasa, Kenya, on 29 September 2016. A total of 25 English-speaking participants, including OIE National Focal Points for Communication, Directors of Veterinary Services (OIE Delegates) and observers from African countries, attended the meeting. The countries represented at the seminar were Botswana, Egypt, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Libya, Malawi, Mozambique, Namibia, Nigeria, South Africa, South Sudan, Sudan, Swaziland, Tanzania, Uganda and Zimbabwe.

The seminar was convened by the OIE in collaboration with the Government of Kenya, and financially supported



Ms Laura Ngo-Fontaine (WHO speaker) with Dr Relebohile Mahloane (OIE Focal Point from Lesotho)

1. www.rr-africa.oie.int/en/RC/OIE_focal%20point_ToR_Communication.pdf
2. www.oie.int/fileadmin/Home/eng/Health_standards/tahc/current/chapitre_communication.pdf
3. www.rr-africa.oie.int/docspdf/en/2016/COM/EN_Guide%20de%20Communication_Web%20download.pdf



Dr Samuel Wakhusama, Deputy OIE Sub-Regional Representative for Eastern Africa and the Horn of Africa (standing, centre) discusses an exercise with the Focal Points

by the European Union (EU). Also in attendance was an observer from the African Union Interafrican Bureau of Animal Resources (AU-IBAR). The seminar was led by two expert trainers in health-related risk communication from the World Health Organization (WHO), Ms Laura Ngo-Fontaine and Ms Pippa Haughton. The OIE trainers were Dr Catherine Bertrand-Ferrandis, Head of the OIE Communication Unit, and Ms Valerie Vouligny, OIE Consultant.

The seminar took place over a three-day period, including a half-day celebration of World Rabies Day on



Dr Mona Ibrahim Mohamed Khalil (OIE Focal Point from Egypt) presents her country's experiences with veterinary communication

28 September. Rabies was also one of the topics integrated into the training programme.

Kenya's Director of Administration in the Ministry of Agriculture, Livestock and Fisheries, Ms Lorna Odera, representing the Principal Secretary, presided over the opening ceremony, accompanied by Dr Kisa Ngeiywa, Director of Veterinary Services and Delegate of Kenya to the OIE; Mr Stephen Wathome, Rural Development Officer of the EU Delegation to the Republic of Kenya; and Dr Walter Masiga, OIE Sub-Regional Representative for Eastern Africa and the Horn of Africa.

**French-speaking participants from Africa
Bamako, Mali, 11–13 October 2016**



OIE/Jocelyn Mérot

Seminar participants

A training session in English for OIE National Focal Points for Communication in Africa (see above) was followed by a seminar for French-speaking Focal Points on the same topic. This event took place from 11 to 13 October 2016 in Bamako, Mali.

A total of 22 participants, mostly OIE National Focal Points for Communication, responsible for communication within the animal health department of their country, attended the meeting. The countries represented were Algeria, Benin, Burkina Faso, Burundi, Cabo Verde, Cameroon, the Central African Republic, Chad, Comoros, the Republic of the Congo, the Democratic Republic of the Congo, Côte d'Ivoire, Equatorial Guinea, Gabon, Guinea,



Opening ceremony, from left to right: Dr Catherine Bertrand-Ferrandis, Head of the OIE Communication Unit; Dr Karim Tounkara, OIE Regional Representative for Africa; Dr Ouayara Koné, Technical Adviser representing the Minister for Livestock and Fisheries of Mali; and Dr Traoré Halimatou Koné, Delegate of Mali to the OIE

Guinea-Bissau, Madagascar, Mali, Morocco, Niger, Senegal and Togo. Representatives of Mauritania, Rwanda and Tunisia were not able to attend the seminar.

This training seminar was organised by the OIE in collaboration with the Government of Mali, and with the financial support of the European Union and Italy. Dr Catherine Bertrand-Ferrandis, Head of the OIE Communication Unit, led the seminar, alongside two communication experts from the World Health Organization (WHO): Ms Akunda Pallangyo and Mr Rodrigue Barry,

assisted by Ms Valérie Vouligny, OIE Consultant and head of a communications agency specialising in animal health, and Dr Jocelyn Mérot, Communications Officer for the OIE Sub-Regional Representation for North Africa.

The opening ceremony was chaired by Dr Ouayara Koné, Technical Adviser, who represented the Minister of Livestock and Fisheries of Mali, with Dr Traoré Halimatou Koné, Delegate of Mali to the OIE; Dr Karim Tounkara, OIE Regional Representative for Africa; and Dr Catherine Bertrand-Ferrandis.

Europe

Spearheading regional dialogue on the quality of veterinary drugs and their prudent use, including the fight against counterfeit products

Regional Seminar for OIE National Focal Points for Veterinary Products

Budapest, Hungary, 11–13 October 2016

Thirty-six Focal Points (or their designates) spent nearly three days together in Budapest, to increase their knowledge and reinforce the regional network of Focal Points in charge of Veterinary Products.

This OIE regional seminar offered a robust programme involving some of the most highly experienced veterinary product experts, including OIE Collaborating Centre experts. It covered a number of advanced topics (fourth-

cycle seminar) while, at the same time, welcoming and training new Focal Points on the OIE and its veterinary product mandate. The agenda was designed to be practical with lectures, countries sharing their experiences and best practice, and exercises aimed at strengthening skills, encouraging participation and facilitating regional dialogue among European countries. The European Medicines Agency (EMA) and the Eurasian Economic Commission (EEC) (the

On their return home, Focal Points have been asked to follow up by:

- a) reporting to their OIE Delegate on the outcomes of the seminar** and discussing follow-up actions to be taken nationally. One key action is to develop a national Action Plan on Antimicrobials, in line with the Global Action Plan on AMR developed by WHO, with strong contributions from FAO and the OIE, and as encouraged by the OIE Resolution;
- b) sharing the knowledge they have acquired with other relevant staff and Focal Points in their country.** For example, they should liaise with Veterinary Education Establishments to ensure that the veterinary core curriculum contains sufficient and updated information on veterinary products. It is vitally important that the next generation of veterinarians is fully prepared to deal with veterinary products and fully understands the prudent use of antimicrobials;
- c) being active in relevant aspects of the OIE standard-setting process**, when new or revised chapters from the OIE *Codes* and *Manuals* become available for country comments, to support their Delegate; and
- d) becoming involved in other OIE activities on veterinary products**, notably the awareness campaigns on antimicrobial and antiparasitic resistance and collecting data on the use of antimicrobial agents in animals.

former Customs Union) shared their regional experience and expertise. Future work could consist of establishing stronger 'bridges' between these two organisations, and others with similar veterinary product mandates, for the benefit of countries in the region.

One key topic, present as a consistent trend across the four seminars organised in Europe¹, was the responsible and prudent use of antimicrobials. The risks of overuse and misuse of antimicrobials in any sector, and their association with the development of antimicrobial resistance (AMR), have been scientifically confirmed. The session on AMR provided an update on Tripartite (FAO/OIE/WHO) activities and projects, and information on high-level political meetings, including the UN General Assembly special event on AMR, which took place in September 2016. A specific working group was dedicated to the annual OIE collection of data on the use of antimicrobial agents in animals, intended to encourage Member Countries to answer a questionnaire which had been sent to them all, for the second time, at the end of September 2016. Another topic of paramount importance, which was addressed in all four seminars, was the use of antiparasitics and challenges linked to increasing resistance.

For the first time in Europe, the World Customs Organization (WCO) was invited to the seminar to deliver a presentation on the fight against counterfeit veterinary products. Studies indicate that, in several countries, more than 50% of medicinal products (for humans and animals)



Dr Lajos Bognár, Delegate of Hungary to the OIE and Deputy State Secretary of the Hungarian Ministry of Agriculture

From left to right:
Dr Nadège Leboucq, OIE Sub-Regional Representative in Brussels;
Dr Martial Plantady, European Commission;
Dr Elisabeth Erlacher-Vindel, Head of the OIE Sciences and New Technologies Department;

may be counterfeit, not only jeopardising their expected curative effects but also possibly increasing AMR.

However, AMR was not the only topic at the meeting, which also offered more general coverage of veterinary medicinal products and vaccines – indispensable tools for improving animal health and welfare. Ensuring that their quality remains in line with OIE standards was a topic discussed in detail, with emphasis also placed on VICH (International Co-operation on Harmonization of Technical Requirements for Registration of Veterinary Medicinal Products) guidelines.

If funding permits, a follow-up seminar will take place in two years, in Europe, where hopefully the group will be able to share many success stories.

This event was made possible with financial support from the European Union and Hungary, the host country, and the OIE offers its warmest thanks to both.

1. The three previous seminars were held in Serbia in 2010, Austria in 2012 and the Former Yug. Rep. of Macedonia in 2014

the OIE and its partners

Epidemiology and animal disease control programmes

Implementation of the Global FMD Control Strategy

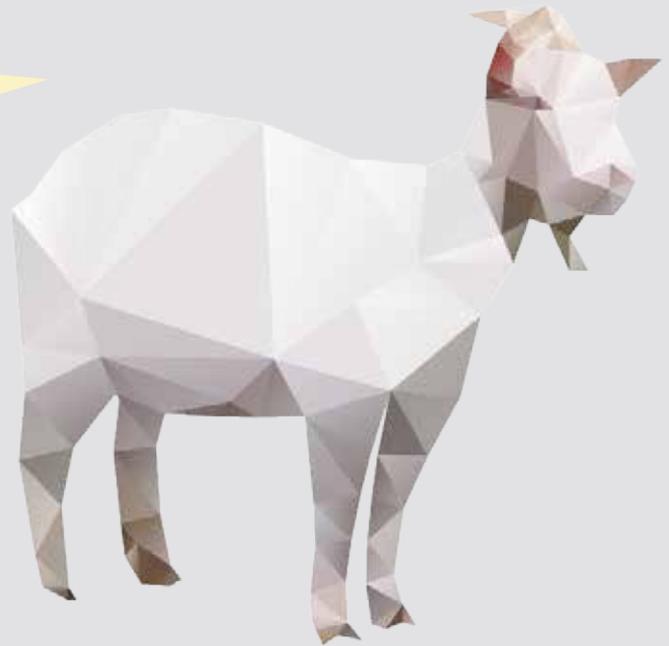
Reaching our goals!

GF-TADs FMD Working Group:
Laure Weber-Vintzel*, Gregorio Torres & Nadège Leboucq (OIE)
Samia Metwally, Silvia Kreindel & Eran Raizman (FAO)

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Keywords

FMD Progressive Control Pathway (FMD-PCP) – Foot and mouth disease (FMD) – Global FMD Control Strategy – OIE PVS Pathway – Roadmap.



Introduction

Foot and mouth disease (FMD) is one of the most contagious transboundary animal diseases (TADs). It can spread very rapidly among cloven-hoofed livestock, in particular through the movement of live animals and animal products or by air currents in which virus-containing aerosols are suspended.

In regions where FMD is endemic (in most parts of Asia, West Eurasia, the Middle East and Africa), the presence of the disease undermines not only food security but also economic development at all levels of the production system, from village smallholders to more organised livestock production systems. The direct economic impact of the disease is seen in a drop in milk production, abortions and deaths (mainly of young livestock) and the indirect effects include the loss of draught power for crop production, transportation, and the costs of implementing FMD control measures.

In other parts of the world, FMD has either been eradicated (Oceania, Western Europe and North and Central America), or has been controlled (South America). As of January 2017, 68 Member Countries have been officially recognised by the OIE World Assembly as being free from FMD (67 without vaccination and 1 with vaccination), and 15 other countries are officially recognised as having FMD-free zones. In FMD-free countries, the cost of the incursion of FMD is estimated to be significantly high (due to the implementation of control measures and restrictions or bans on trade in agricultural products), which justifies the use of strong measures to prevent the introduction of the FMD virus and to control the disease at source.

Recent epidemics of FMD that have occurred in countries previously free from the disease, such as the Republic of Korea and Japan, have re-emphasised the devastating repercussions that FMD can have. Knight-Jones & Rushton [1] estimated the cost of



FMD outbreaks in countries where the disease had previously been eradicated at approximately USD 1.5 billion per year. Although more difficult to estimate, the cost burden in endemic regions is roughly estimated to be more than USD 6.5 billion a year.

Thus, reducing FMD in endemic countries by a coordinated control strategy at the global and regional level is of shared interest and should be considered a global public good.

The Global FMD Control Strategy

The Global Framework for the Progressive Control of Transboundary Animal Diseases (GF-TADS) is a joint initiative which combines the strengths of the Food and Agriculture Organization of the United Nations (FAO) and the OIE to achieve agreed common objectives in the control and eradication of TADs. Under the umbrella of GF-TADS, FAO and the OIE have been working together to combat FMD on a global scale, to decrease its worldwide impact.

The two organisations developed a 15-year Global FMD Control Strategy that was launched in June 2012 in Bangkok. The overall objective of the strategy is to alleviate poverty, improve livelihoods in developing countries and protect and further develop the global and regional trade in animals and animal products. The specific goal is not only to reduce the impact of FMD on animal production in developing countries, but also to maintain the official FMD-free status of countries that have already eradicated the disease. Reducing FMD at source in FMD-endemic countries is therefore a shared interest and should be considered a Global Public Good.

The strategy includes three components:

- a) FMD control
- b) the strengthening of Veterinary Services
- c) the control of other TADs.

Strengthening Veterinary Services is an important component of the Global Strategy and serves as a link with the two other components. Strong Veterinary Services will improve effective implementation of the strategy and represent an opportunity to enhance Veterinary Services' capacity to fight other high-impact livestock diseases.





Implementation of the Global FMD Control Strategy at the international and regional level

The GF-TADs Working Group for FMD (FMD-WG), which includes six experts from the two organisations, has been given the responsibility to coordinate, advocate, and implement the Global FMD Control Strategy at the international and regional level.

Development of tools

The Global Strategy is supported by two key tools: the PVS tool¹ developed by the OIE to assess the performance and progress of Veterinary Services; and the Progressive Control Pathway (PCP) for FMD, developed by the European Commission for FMD Control (EuFMD) and FAO to assist countries where FMD is endemic to progressively control the disease and reduce its impact.

The PCP-FMD offers a structured approach to FMD control, from the very beginning up to the point where a country can submit a dossier to the OIE for official recognition of freedom from FMD. Moving from one stage to the next implies that all the activities in the previous stage have been properly implemented and monitored, and that the country has a plan on how to conduct the activities contained in the next stage.

To provide the necessary support to Member Countries wanting to engage in FMD control, the FMD-WG, with the technical support of EuFMD, is continuously developing and updating a range of supporting documents for the PCP-FMD, including an updated version of the PCP guidelines and templates for national control plans adapted to each of the stages. The FMD-WG recently published guidelines on FMD

vaccination and post-vaccination monitoring, and is planning the development of socio-economic guidelines to encourage Veterinary Services to estimate the impact of FMD more accurately, particularly in endemic countries, and to take this cost/benefit analysis into consideration when planning FMD control activities.

Regional Roadmaps for FMD Control

The Global FMD Control Strategy strongly recommends a regional approach, to exchange information and experiences, coordinate efforts and develop Regional Roadmaps showing each country's ambitions and allowing regular progress assessment.

The FMD-WG organises Regional Roadmap meetings as regularly as possible, aiming to:

- a) share information on FMD virus circulation within the region;
- b) review progress made along the FMD control and PCP pathways;
- c) share experiences, difficulties faced and success stories from each country; and
- d) build capacity based on the needs identified in previous Roadmap meetings to enable progress towards FMD control.

The Roadmap meetings follow the regional distribution of the FMD virus pools (seven Regional FMD Roadmaps corresponding to the seven virus pools – Fig. 1). Countries where the disease is endemic or sporadic may belong to more than one genetic pool and may participate in two different Regional Roadmaps.

While Pool 1 (South East Asia) and Pool 7 (South America) have established their own regional FMD control plans without FMD-WG involvement, the FMD-WG has conducted seven Roadmap meetings in West Eurasia, four in the Middle East, three for the countries of the South Asian Association for Regional Cooperation (SAARC), two in East Africa, one for the countries of the Southern African Development Community (SADC)

1. www.oie.int/en/support-to-oie-members/pvs-pathway/

2. *Foot and mouth disease vaccination and post-vaccination monitoring. Guidelines.* FAO/OIE, 2016

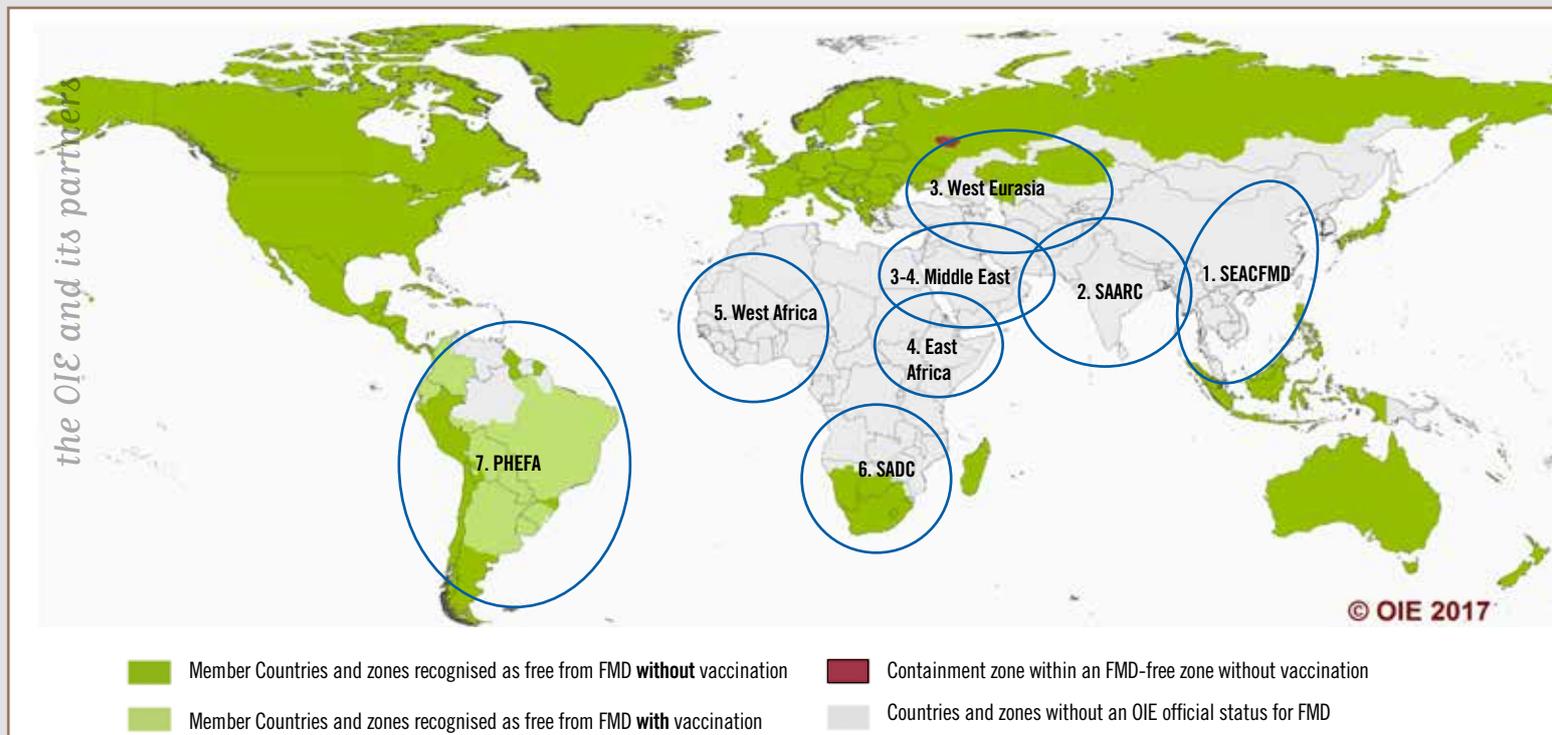


Fig. 1

Approximate distribution of FMD virus pools (January 2017)

and one in West Africa. The disparity in the number of organised meetings per region is mainly due to the level of priority given to the disease in the region and to available resources.

As a result of national, regional and international efforts, 57 of 87 FMD-affected countries belonging to FMD virus pools 2 to 5 are currently implementing control measures at some level, using the PCP–FMD guidelines, in the quest to reduce or eliminate FMD virus circulation by 2020–2025. Since 2012, countries have continued to advance along the PCP stages with a clear shift towards having more countries in PCP stages 1 and 2. A few countries have advanced to higher stages, as of 2016. The trend was particularly evident in the West Eurasia, East Africa and Middle East regions, demonstrating the effectiveness of the global strategy.

FMD control has progressed at both regional and global levels since the adoption of the Global FMD Control Strategy in 2012, as shown in Figure 2.

Feedback from an EuFMD Open Session in 2016, Cascais, Portugal

As a mark of the strong collaboration between the EuFMD and the FMD–WG, the EuFMD requested the FMD–WG to manage two parallel sessions during the October 2016 Open Session: the biennial EuFMD technical and scientific conference dedicated to FMD.

During the first session, the OIE and FAO, co-chairs of the FMD–WG, reviewed the implementation of the

Global Strategy and invited three countries to share their experience in FMD control: Afghanistan (at that time, in PCP stage 1), Turkey (in PCP stage 2, with an FMD-free zone recognised by the OIE) and Thailand (in PCP stage 3, with an official control programme endorsed by the OIE). During their presentations, and the discussions that followed, the invited countries and the FMD–WG spoke of common and specific challenges encountered since they had embarked upon an FMD control programme. These challenges included, but were not limited to, cross-border animal movement, vaccine effectiveness, diagnostic capability and, more importantly, political commitment. As a consequence, it was suggested that the objectives of FMD control be clearly defined as a first step towards motivating stakeholders and government officials and to ensure the establishment of a legislation framework.

The second session was a group discussion, bringing together representatives from countries progressing along the pathway to FMD control (e.g. Afghanistan, Senegal, Sudan, Thailand and Tunisia), FMD experts, PCP experts and academics. Participants discussed the specific technical challenges faced when implementing their national FMD control programme and the support that could be provided by the scientific community to reach their objectives. Topics discussed included the role of small ruminants in the epidemiology of FMD (especially in North Africa and the Middle East), and the use of success stories as a good incentive and advocacy tool, which generated intense and constructive

debate. Pilot projects (e.g. involving appropriate vaccination standards in defined areas or a region) were encouraged as a way of demonstrating the benefits of FMD vaccination to stakeholders. This opportunity for countries and FMD experts to exchange opinions and identify logistical gaps and practical challenges was extremely useful.

Vision

Currently, the FMD-WG is in the process of preparing a Global Report on what has been achieved since the endorsement of the Global FMD Control Strategy almost five years ago, and of prioritising the activities to be planned for future years. The Global Report, as well as a two-year action plan, should be completed by mid-2017.

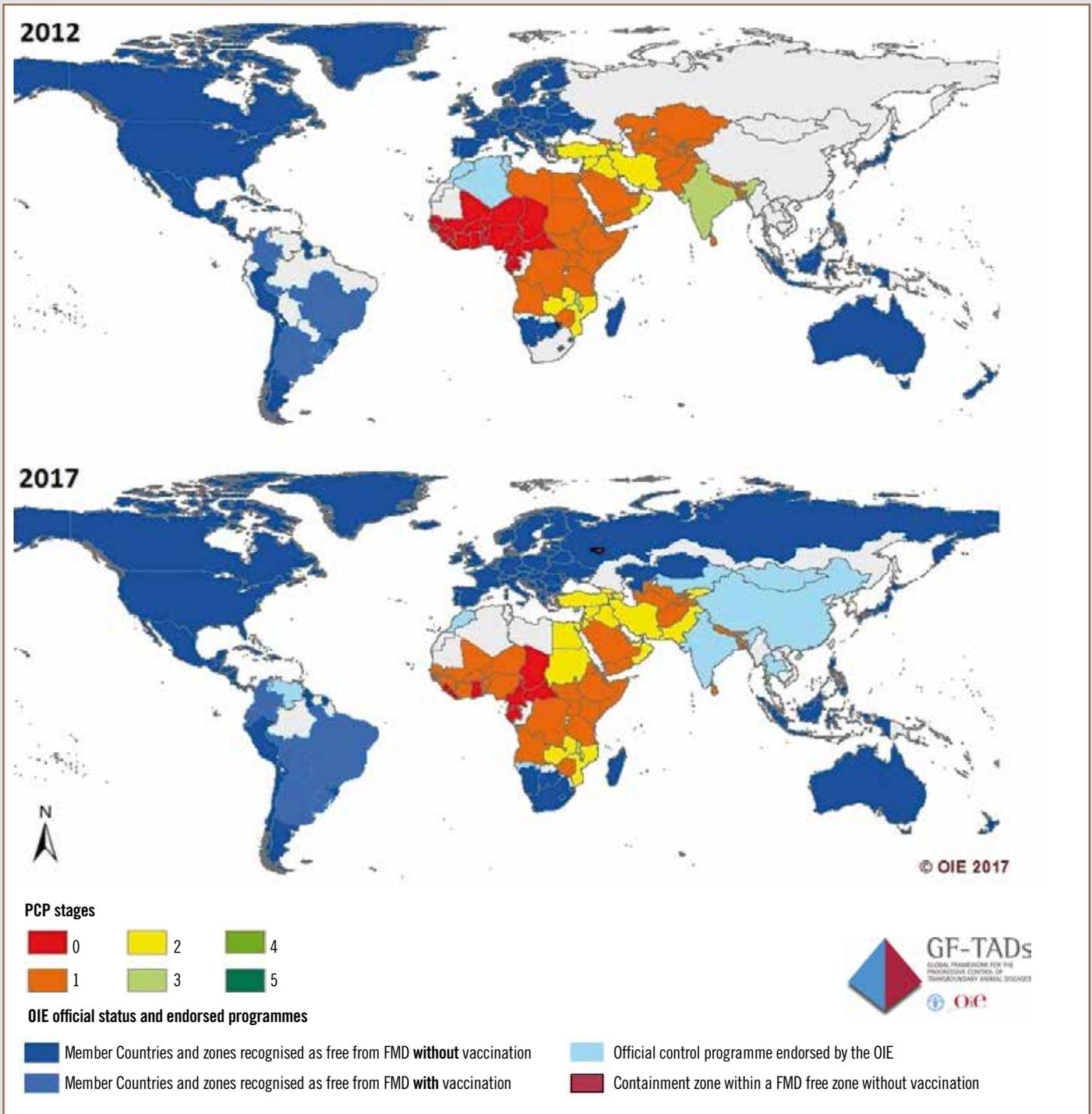


Fig. 2
Evolution of the FMD global situation between May 2012 and January 2017

Resources will then have to be identified to implement both this plan and the Global Strategy.

The feedback received from Member Countries and regions implementing the Global FMD Control Strategy agreed that only solid commitment from global and regional partners and appropriate resource mobilisation will make the objectives of the strategy achievable. Indeed, regional challenges, such as cross-border movements of animals and products, cannot be solved at the level of individual nations but need strong multi-national commitment. In addition, FMD may not always be considered as a priority in some countries, and this, since FMD is a non-fatal transboundary disease, would then jeopardise the control efforts of neighbouring countries and trade partners. Nevertheless, even when countries are committed to controlling FMD, the existence of so many serotypes and genotypes in addition to the complexity and frequency of the vaccination

protocols are formidable technical challenges that require financial resources.

Studies have proven that controlling FMD and reducing its impact would have a hugely positive economic impact on both FMD-infected and FMD-free countries. However, this achievement demands that global, regional and national partners work closely together and that the appropriate resources be mobilised.

<http://dx.doi.org/10.20506/bull.2017.1.2593>

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Recognition of FMD status of countries:
www.oie.int/?id=181&L=3





François Diaz

the OIE and its partners

Mapping the spread of lumpy skin disease using WAHIS data

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Keywords

Lumpy skin disease – OIE World Animal Health Information System (WAHIS).

Introduction

The notification of a lumpy skin disease (LSD) outbreak by Greece in August 2015 represented the first reported incursion of the virus into the European Union (EU) [1, 2]. This alteration to the geographical distribution of LSD highlighted the importance of: (i) implementing effective surveillance and control measures; and (ii) developing a more comprehensive understanding of the transmission dynamics and risk factors promoting virus dissemination.

The OIE Member Countries have responded to the threat of disease spread through coordinated efforts (e.g. the Standing Group of Experts on Lumpy Skin in South-East Europe) [3], outbreak risk assessments [4] and evaluations [5], and the provision of urgent advice on control measures [6]. These activities will enable countries to determine the significance of the risk posed by LSD and to assess the

efficacy of current surveillance and control strategies.

Since the first description of clinical LSD in Zambia in 1929 [7], the geographical distribution of the disease has extended within and beyond Sub-Saharan Africa (SSA). Currently, most countries in Africa hold endemic disease status. A notification of LSD in Israel in 1989 marked the first reported incursion of LSD virus (LSDV) into the Middle East (Western Asia) and preceded other outbreaks in this region. Despite a heightened global awareness of the severe economic and animal welfare implications of LSD, the EU's first reported notification of LSD in 2015 has been followed by further outbreaks in Europe (including Russia) and in West and Central Asia [2].

Under notification requirements pertaining to OIE-Listed diseases (detailed in Articles 1.1.3 and 1.1.4

of the *Terrestrial Animal Health Code* [Terrestrial Code]), Veterinary Authorities of OIE Member Countries are responsible for reporting outbreaks of LSD in cattle. Countries should report outbreaks to the international community via the OIE's World Animal Health Information System (WAHIS). Subsequent to a first occurrence or reoccurrence of LSD, or a change to LSD distribution, weekly follow-up reports should be submitted until disease eradication has been achieved or until the epidemiological situation is stable. If a stable situation is reached (disease is eradicated or endemic), information should be provided via six-monthly (semester) reports [8].

The primary objective of this article is to present the global geographical distribution of LSD from 2005 to 2016 and to quantify the duration of LSD presence or infection in affected countries. The second



objective is to present the current global spectrum of LSD preventive and control measures.

Methods

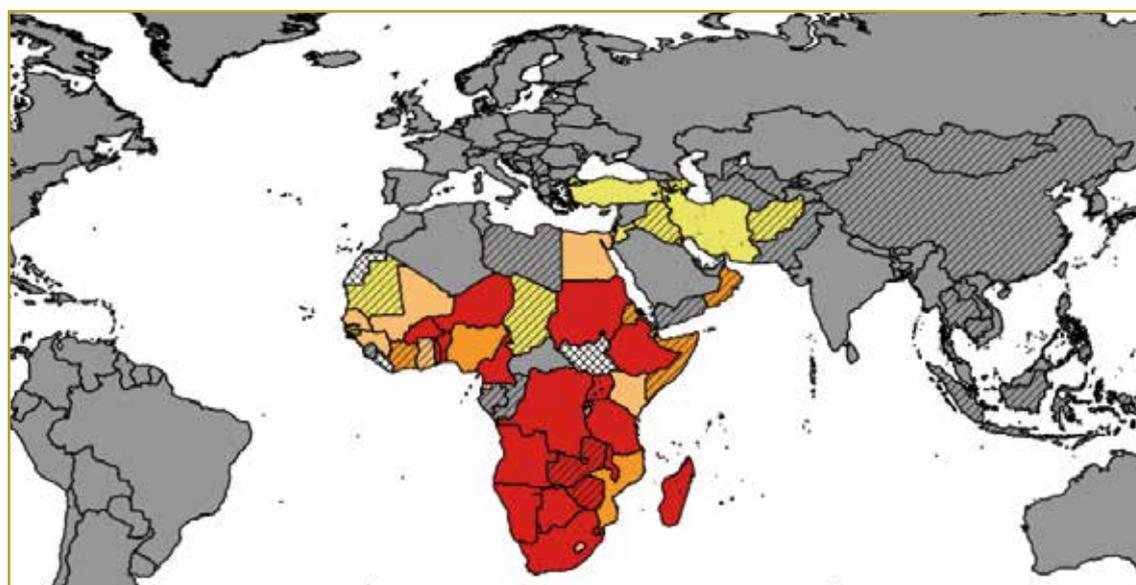
Data were extracted from immediate notifications, follow-up reports and six-monthly semester reports submitted to WAHIS. The time period used throughout this article is 1 January 2005 to 10 October 2016 (data extraction date) unless otherwise stated. The following data on LSD in cattle were extracted:

1. geographical coordinates of outbreak locations;
2. disease occurrence codes [9] per country recorded in six-monthly reports during the time period; and
3. disease preventive and control measures recorded in 2015 semester 2 or 2016 semester 1 by countries, depending on disease occurrence during the time period.

Microsoft® Excel 2010 was employed to record all the extracted

data for graph production. Spatial data were presented using QGIS 2.14 [10].

The percentage of countries reporting LSD to be present in cattle was calculated per year from 1 January 2005 to 2 December 2016 (data extraction date). The coefficient of determination (R²) was calculated to measure the proportion of variance that is explained by the linear relationship between the percentage value and



Number of semesters disease or infection present or suspected



Fig. 1a

Map showing the number of semesters per country in which lumpy skin disease (LSD) presence or infection in cattle was reported during the period 2005 semester 1 to 2014 semester 2



the year. The number of immediate notifications of first reported occurrences of LSD in cattle per year from 1 January 2005 to 2 December 2016 was calculated.

The number of semesters in which disease or infection was

present or suspected per country or zone from 2005 semester 1 to 2014 semester 2 was calculated (Fig. 1a). Countries that had not provided disease timeline information for one or more semesters were identified. The spatial distribution and

duration of LSD outbreaks from 1 January 2015 to 10 October 2016 were presented on a world map (Fig. 1b). Outbreak durations were divided into three periods of 60 days (i.e. <60, 60–119 and 120–179 days) or described as continuing.

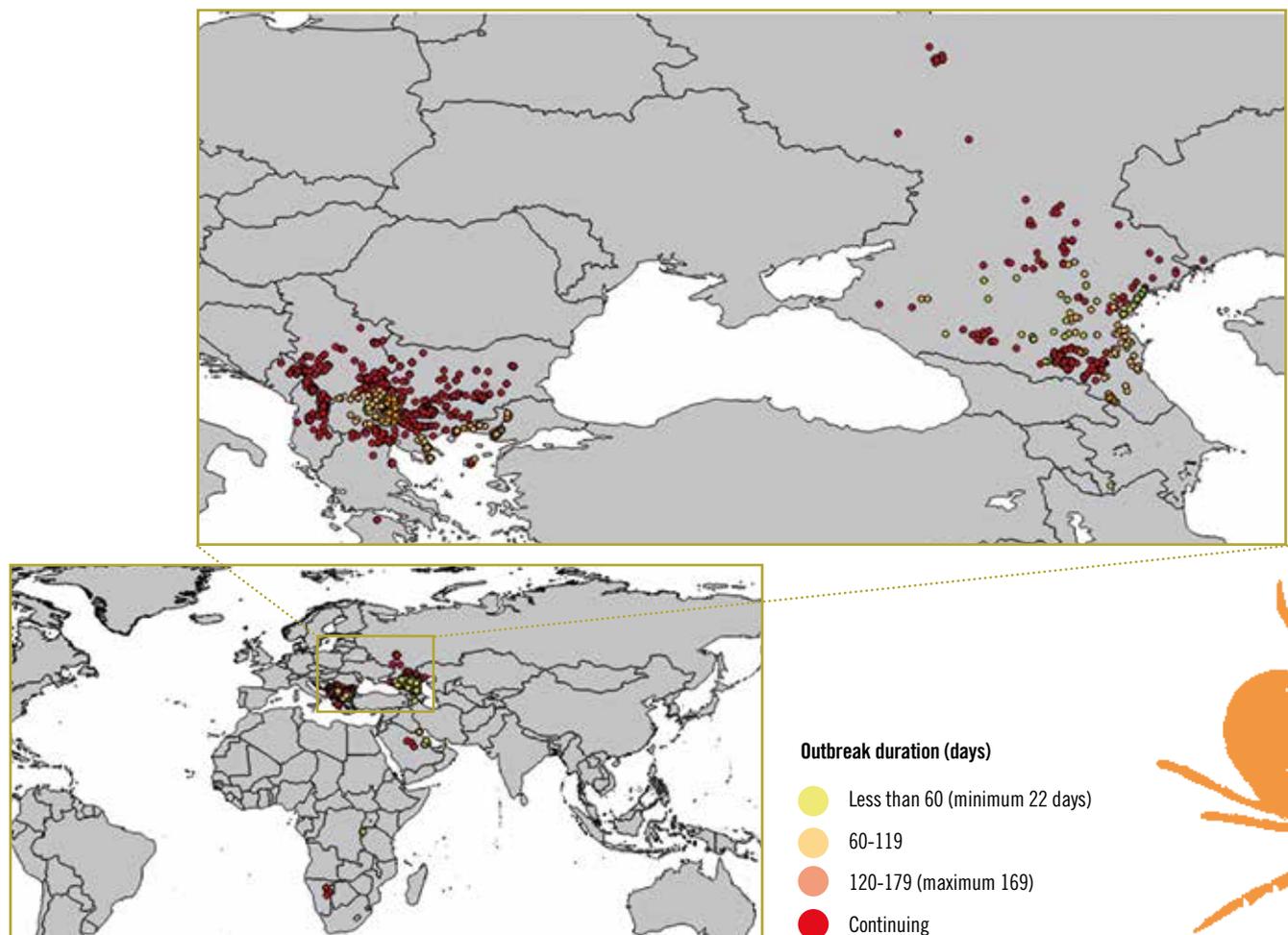
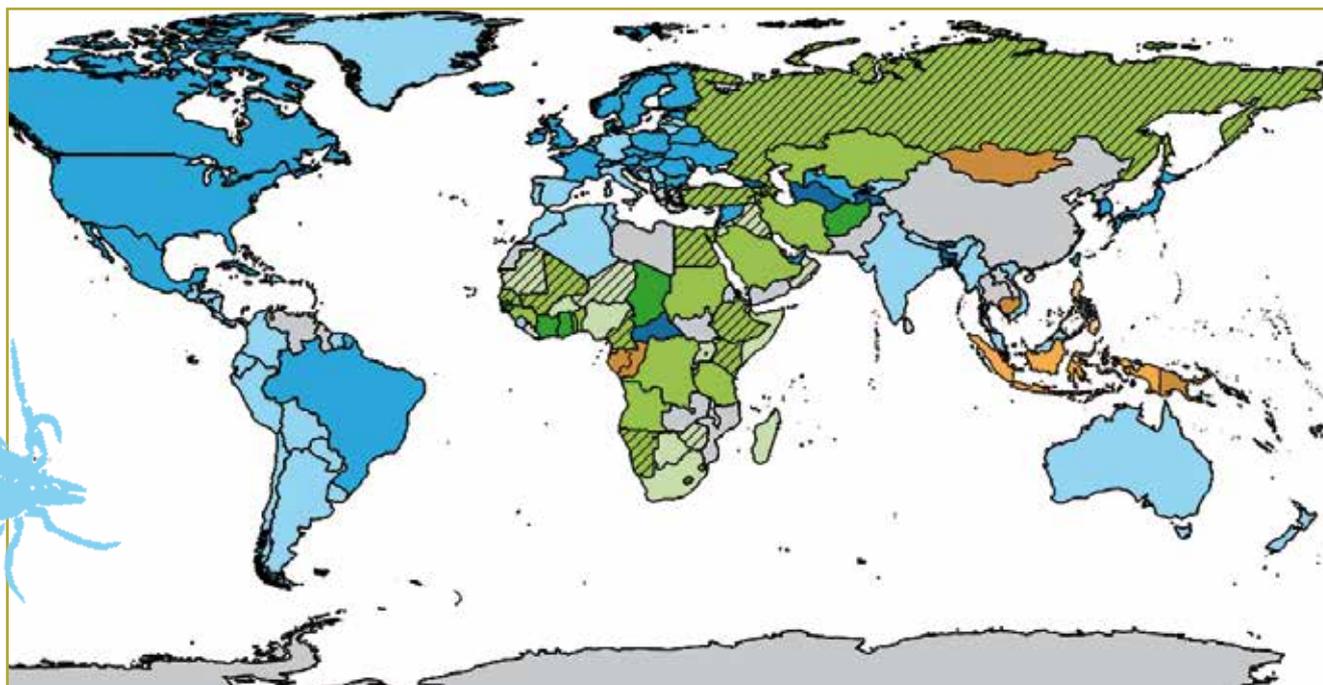
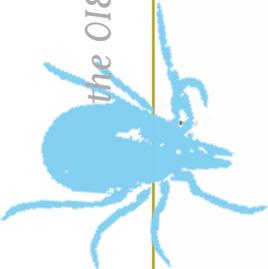


Fig. 1b
Maps showing the spatial distribution and duration of reported lumpy skin disease (LSD) outbreaks in cattle during the period 1 January 2015 to 10 October 2016, worldwide (bottom) and in southern Europe and Southern Russia (top)



LSD occurrence codes and control measures

- No six-monthly reports available (2015 semester 2 or 2016 semester 1)
- No information +/- never reported or absent**
 - Surveillance measures
 - Surveillance and other control measures
 - No measures
- Present or suspected or infected**
 - Surveillance measures
 - Surveillance and other control measures
 - No measures
 - Official vaccination
- Absent or never reported**
 - Surveillance measures
 - Surveillance and other control measures
 - No measures

Fig. 2

Map showing surveillance and control measures implemented in cattle per OIE Member Country in 2015 semester 2 or 2016 semester 1, differentiated by lumpy skin disease (LSD) occurrence during the period 2005 semester 1 to 2016 semester 1

The LSD preventive and control measures implemented in cattle by each country in 2015 semester 2 or 2016 semester 1 were presented on a map, differentiated by LSD status during the time period (Fig. 2).

Countries that reported LSD presence or suspected presence, or infection with LSDV, in any semester during the time period were recorded in these categories. The implementation of an official vaccination programme in response to outbreak(s) was also recorded by country. Preventive and control measures were divided into:

1. surveillance measures, which include disease notification, general and targeted surveillance, monitoring, precautions at the border and screening; and
2. other control measures, which include vector control, (modified) stamping out, movement control inside the country and zoning.

The most recent LSD control measures employed by countries reporting new and recurrent LSD outbreaks from 1 January 2015 to 28 November 2016 (data extraction date) were extracted from the most recent follow-up reports for each immediate notification and presented on a map (Fig. 3). The implementation of an official vaccination programme in response to one or more outbreaks was also recorded by country. Measures were divided into:

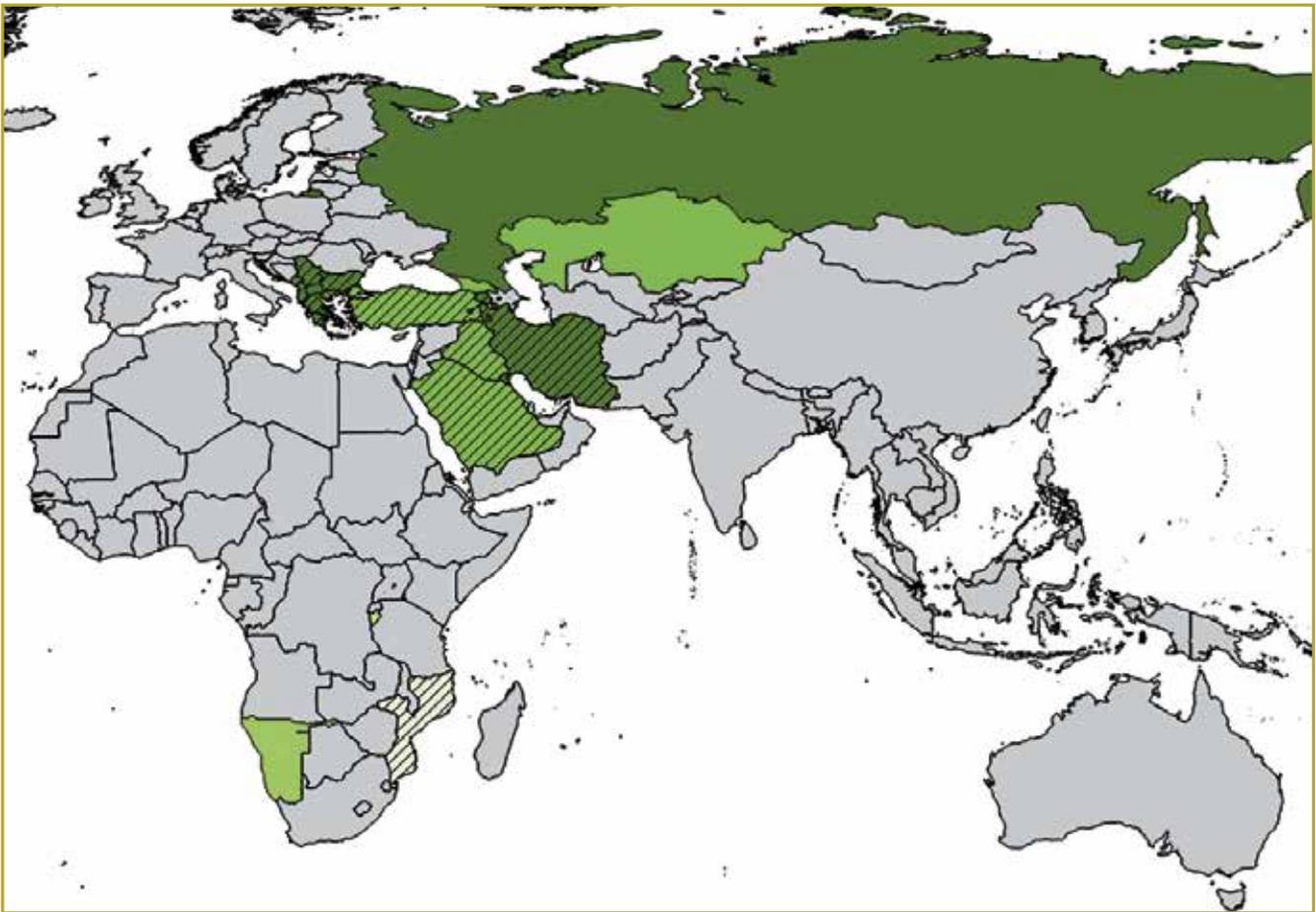
1. surveillance measures, which include screening and surveillance outside or within a containment or protection zone;
2. other control measures, which include vector control, dipping/spraying, movement control inside the country, and zoning; and

3. outbreak measures which include (modified) stamping out, disinfection, official destruction of animal products, official disposal of carcasses, by-products and waste, quarantine, treatment (symptomatic), and traceability.

Results

Simple linear regression was employed in Figure 4 to demonstrate the positive linear relationship between time (1 January 2005 to 2 December 2016) and the percentage of countries reporting LSD as present per year. The coefficient of determination ($R^2=0.7245$) implies that 72.45% of the variance in the percentage of countries reporting LSD is positively correlated with the year in which the data were recorded. The results show an increase in the percentage of countries reporting





LSD measures

- Other control measures
- Surveillance and other control measures
- Surveillance and outbreak measures
- Other control and outbreak measures
- Surveillance and other control and outbreak measures
- Vaccination in response to outbreak(s)
- No immediate notifications

Fig. 3

Map showing the preventive and control measures implemented in cattle by countries that provided an immediate notification of lumpy skin disease (first occurrence or reoccurrence) between 1 January 2015 and 28 November 2016

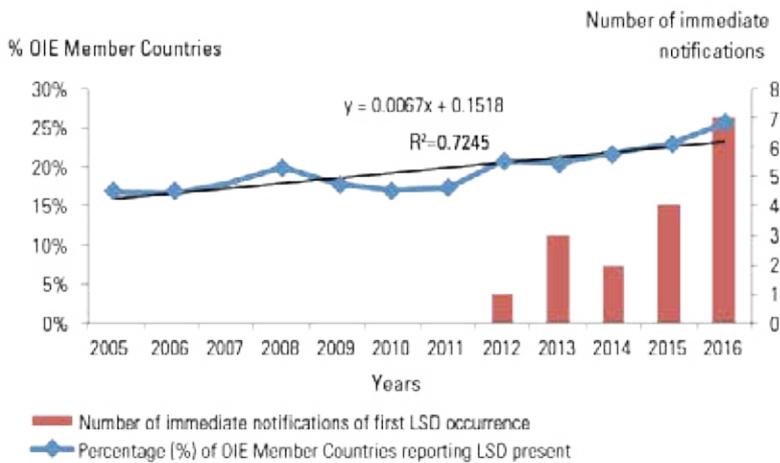


Fig. 4

The percentage of OIE Member Countries reporting lumpy skin disease (LSD) as present in cattle, with a linear regression line, and the number of immediate notifications of first LSD occurrence sent to the OIE between 1 January 2005 and 2 December 2016



LSD present, from 17% in 2005 to 25% in 2016. Figure 4 also shows the overall increase in the number of immediate notifications of first reported occurrences of LSD per year, from one notification in 2012 in Western Asia to seven notifications in 2016 (as of 2 December), in southern Europe (**country number, c=5**) and Western and Central Asia (**c=2**). These results highlight the increase in LSD spread that has been observed since 2005, with the potential for further spread to previously unaffected countries.

From 2005 to 2014, as shown by Figure 1a, reports of LSD presence or infection for 16 to 20 semesters have been restricted to Sub-Saharan Africa (SSA) (**c=20**); LSD presence or infection for 11 to 15 semesters was reported in SSA (**c=5**) and Western Asia (**c=1**); LSD presence or infection for 6 to 10 semesters was reported in SSA (**c=9**), North Africa (**c=1**) and Western Asia (**c=3**). In addition, LSD presence or infection for 1 to 5 semesters was reported in SSA (**c=6**), Western Asia (including Turkey) (**c=6**), Southern Asia (**c=2**) and Oceania (**c=1**). Among the countries that had provided disease timelines, 32.02% (**c=65**) did not provide disease information for one or more semesters.

From 2015 to 2016, LSD outbreaks were recorded in SSA (**c=2**), Western and Central Asia (including Kazakhstan) (**c=4**) and Europe (including Russia) (**c=7**). As shown in Figure 1b, 79.91% (**outbreak number, n=1038**) and 18.30% (**n=239**) of reported outbreaks were concentrated in southern Europe (Albania, Bulgaria, Greece, Macedonia, Montenegro and Serbia) and Southern Russia, respectively; LSD presence or infection had not been reported in these two geographical areas prior to 1 January 2015. In Russia, 61.92% (**n=148**) of reported outbreaks were continuing, 15.06% (**n=36**) were less than 60 days and 17.99% (**n=43**) were 60 to 119 days in duration. In southern Europe, 71.68% (**n=744**) of reported outbreaks were continuing, 0% of reported outbreaks were less than 60 days and 19.17% were 60 to 119 days in duration. Outbreaks were also reported in Armenia (**n=150**), Burundi (**n=1**), Kazakhstan (**n=1**), Kuwait (**n=4**), Namibia (**n=7**) and Saudi Arabia (**n=8**). During this time period, the shortest and longest recorded outbreaks of LSD lasted 22 and 169 days, respectively.

As shown in Figure 2, LSD was reported absent or never reported by 107 countries in North America, South

America, Europe, Africa, Southern, Eastern and Southeastern Asia, and Australia during the period 2005 semester 1 to 2016 semester 1. Of these countries, 51.40% (**c=55**) implemented surveillance measures only, 38.32% (**c=41**) implemented other control measures in addition to surveillance measures, and 10.28% (**c=11**) had not implemented LSD measures. LSD presence, suspected presence or infection were reported predominately by countries in all regions of Africa, Europe (including Russia) and in Western and Central Asia (including Kazakhstan) during the period 2005 semester 1 to 2016 semester 1. Of the countries in these areas, 30.6% (**c=15**) implemented surveillance measures only, 57.14% (**c=28**) implemented other control measures in addition to surveillance measures, and 12.24% (**c=6**) had not implemented LSD measures in 2015 semester 2 or 2016 semester 1. An official vaccination programme was employed by 42.86% (**c=21**) of these countries. Countries that did not provide information on LSD occurrence during the period 2005 semester 1 to 2016 semester 1 are situated predominately in Central and Southeastern Asia. Notably, 71.43% (**c=5**) of these countries



did not report any surveillance or other measures for LSD. Figure 2 highlights countries which did not provide information on LSD measures implemented in 2015 semester 2 or 2016 semester 1.

Figure 3 shows that immediate notifications of LSD from 1 January 2015 to 28 November 2016 were received from Southern and East Africa ($c=3$), South and East Europe (including Russia) ($c=7$), and Western and Central Asia (including Turkey, Georgia and Kazakhstan) ($c=8$). Of countries reporting immediate notifications, 55.56% ($c=10$) implemented surveillance and other control measures and outbreak measures, including all countries in Europe. In addition, 27.78% ($c=5$) implemented other control and outbreak measures and were situated in Western or Central Asia. The majority of countries providing immediate notifications during this period (61.11%, $c=11$) implemented vaccination in response to outbreaks. Of these countries, 45.45% ($c=5$), 45.45% ($c=5$) and 9.09% ($c=1$) were located in Europe, Asia and Africa, respectively.

Discussion

The transcontinental spread of LSD has led to a heightened global awareness of the severe economic and animal welfare implications of LSD outbreaks in cattle [11, 12]. Direct economic losses attributable to clinical disease and stamping-out policies, and the indirect impacts of trade restrictions, must be considered.

The increase in first reported occurrences of LSD reflects the spread of LSDV to previously unaffected regions. The concentration of outbreaks in southern Europe and South Russia represents two focal points from which disease could spread to adjacent countries.

The results suggest that countries may adopt additional or specific LSD measures in response to an outbreak, including vector control, (modified) stamping out and zoning, in addition to an official vaccination programme. The majority of countries that have provided immediate notifications of LSD since January 2015 adopted a wide range of measures, including vaccination in response to outbreaks. These results suggest a robust response to LSD by these countries and an awareness of available control measures. Chapter 11.11 of the *Terrestrial Code* [8] is currently

being revised to contain standards on the recovery of LSD-free status. One measure under discussion is the use of preventive vaccination in LSD-free countries or zones in response to a threat of LSD incursion.

This article supports current literature on the pattern of LSDV spread between countries from 2005 to 2016. Accordingly, the following recommendations can be made:

- **Clear characterisation of LSD transmission mechanisms is needed to develop a comprehensive understanding of the spatial and temporal dynamics of LSDV in cattle.**
- **Quantification of the effect of different control strategies on outbreak dynamics would aid rapid selection of suitable control measures in response to an outbreak.**
- **Worldwide compliance with OIE recommendations for the reporting of LSD occurrence and the provision of epidemiological information via WAHIS would improve transparency in the global LSD situation.**

<http://dx.doi.org/10.20506/bull.2017.1.2594>



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Chronic wasting disease in Norway

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Keywords

Cervid – chronic wasting disease – Norway.



the OIE and its partners

Norway is a country that has been free from most contagious diseases in both domesticated and wild animals. This is a circumstance of great value for farmers, consumers and society as a whole. To be the first country outside North America/Canada with cases of chronic wasting disease (CWD) therefore came as a surprise. Our efforts are now directed towards getting a good overview of the situation and doing what we can to mitigate the spread of the disease within Norway and to other countries.

The first Norwegian cases of CWD

Chronic wasting disease was diagnosed by the Norwegian Veterinary Institute in March 2016 in a wild reindeer (*Rangifer tarandus tarandus*) from the Nordfjella mountain area in Sogn og Fjordane County. In May and June, two moose (*Alces alces*) tested positive in Selbu, Sør-Trøndelag County, approximately 300 km north of the first case. A fourth and a fifth case of CWD were diagnosed in August. These animals were wild reindeer from Nordfjella, the area in which the index animal was found.

The Norwegian Scientific Committee for Food Safety (Vitenskapskomiteen for mattrygghet – VKM) has made a risk assessment for CWD, which was published in June 2016. They have stated the following concerning the origin of the disease in Norway: there is currently no information to determine the origin of CWD agents in Norway. The sporadic or genetic (somatic mutation) occurrence of prion diseases in cervids cannot be excluded, nor can introduction from North America or other countries. Furthermore, there is no evidence that it has not been circulating at low levels in the Norwegian

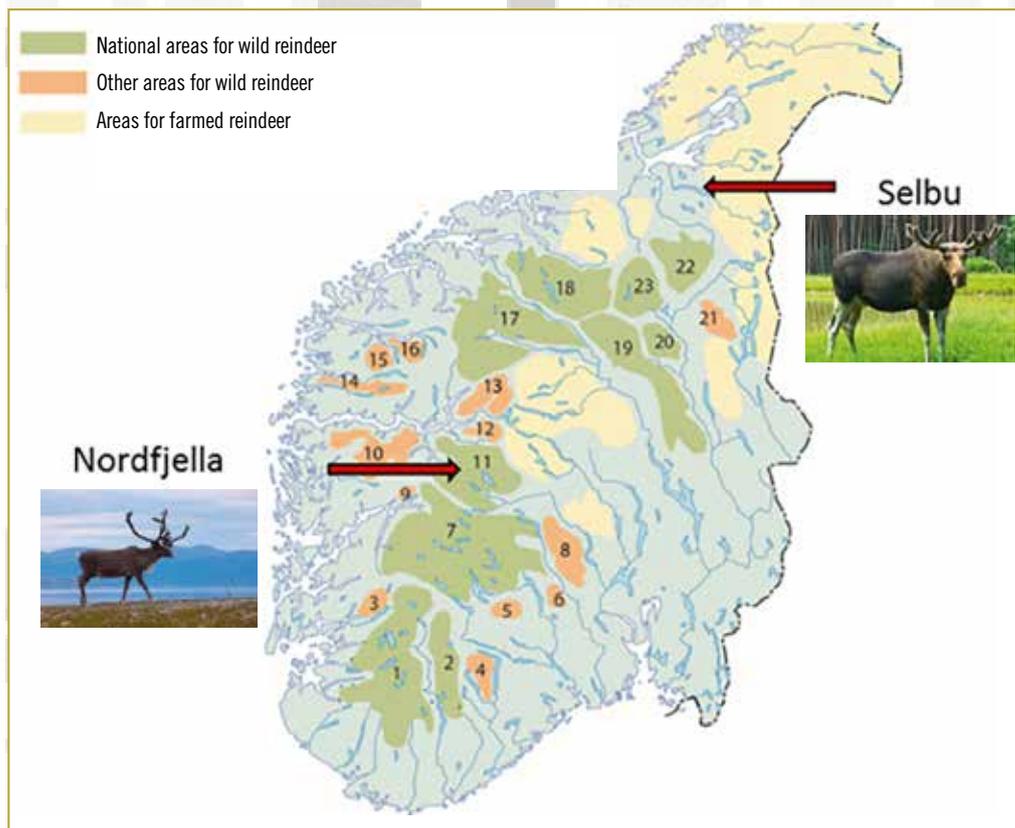
cervid population for years but had not previously been identified.

Overview of the situation

The Norwegian Food Safety Authority (Mattilsynet), which is responsible for combating and controlling animal diseases in Norway, together with the Norwegian Environmental Agency, which is responsible for managing the populations of wild animals, have decided that the most important task in the current situation is to get a good overview of the occurrence of CWD in Norway. This is important for three reasons:

1. to give a good scientific basis for management of the disease in wild cervids in Norway,
2. to secure the production of meat from farmed reindeer, which has a long tradition in our country, and
3. to secure the trust of the public through fact-based information.





The Norwegian surveillance programme for CWD

Norway plans to run a surveillance programme for CWD in both wild and farmed cervids in 2016–2017. The programme started in mid-August 2016, when the hunting season for wild reindeer started, and will be concluded in early Spring 2017, when the slaughtering season for farmed reindeer ends¹.

The plan is to sample and analyse approximately 13,000 animals, as follows (all numbers are approximate):

- 3,000 semi-domesticated reindeer**
(1,500 slaughtered animals + 1,500 fallen stock)
- 620 wild reindeer** (600 hunted animals + 20 fallen stock)
- 4,000 moose** (hunted animals)
- 200 farmed red deer** (slaughtered animals)
- 3,000 wild red deer** (2,000 hunted animals + 1,000 fallen stock)
- 500 roe deer** (fallen stock)
- 1,000 cervids sent to cutting plants** (hunted)
- 800 other cervids where the hunter has requested testing** (hunted).

Fallen stock older than approximately one year from the whole of Norway will be tested for CWD.

For hunted wild reindeer, moose and red deer, CWD testing will be carried out on animals from areas where the CWD-positive animals were discovered in Selbu and Nordfjella, as well as from certain other areas in Norway. For semi-domesticated reindeer a number of slaughtered animals from both the southern regions and the northern region of Finnmark will be tested. Farmed red deer from the whole of Norway will also be tested. Furthermore, we hope to test hunted cervids sent to cutting plants.

Testing of slaughtered or hunted animals will not include this year's calves.

Some comments on the plan

'Risk animals' are sick and dead animals, and the term also includes animals wounded or killed in traffic accidents. In this risk group of animals, the chance of finding CWD is most probable. The handling of risk animals will only be carried out by competent personnel.

The programme is planned and financed by Mattilsynet and the Norwegian Environmental Agency. The collection of samples involves cooperation between local hunters, the Norwegian Environmental Agency, the Norwegian Institute for Nature Research,

1. For an overview of the population of Norwegian wild and farmed cervids, see detailed information in the recent report of the VKM Panel on Biological Hazards: www.vkm.no/dav/c90d2f3b4c.pdf



Mattilsynet and the Norwegian Veterinary Institute. All samples will be analysed by the Norwegian Veterinary Institute, which is the national laboratory for transmissible spongiform encephalopathies (TSEs). Cooperation with the OIE Reference Laboratory for CWD in Canada² has been established.

Other actions

The Norwegian Ministry of Agriculture and Food adopted, on 11 July 2016, a regulation concerning temporary measures to reduce the spread of CWD. This regulation was updated and prolonged in December 2016.

Main content of the new regulation:

- **prohibition of export of live cervids from Norway**
- **authorisation requirements for movements of cervids between counties**
- **prohibition of import and use of urine lures from countries with CWD**
- **prohibition of the deposition of licking stones and feeding of wild cervids**
- **extended duty of notification for owners and transporters of cervids**
- **some derogations are made for domestic reindeer.**

There is close cooperation between the authorities and the local personnel in the municipalities who manage wildlife.

Information for hunters can be found on the website of Mattilsynet³.

Good cooperation with other countries, the European Union and the OIE

Norway has established good contact with both our neighbouring countries, Sweden and Finland, the European Union (EU) and the OIE.

With Sweden and Finland we are discussing joint measures. This is relevant because there is migration of both wild and farmed cervids over the borders, especially between Norway and Sweden.

Norway, together with Iceland and Liechtenstein, belongs to the European Economic Area (EEA), in which the Agreement on the EEA provides for the free movement of persons, goods, services and capital within the European Single Market. To have access to the inner market Norway has to implement EU regulations. This includes the laws and regulations concerning animal diseases.

Norway has been a Member of the OIE since 1947; it conforms to the standards of the organisation and notifies diseases to the World Animal Health Information System (WAHIS) database, including *WAHIS-Wild*, the worldwide monitoring system for wild animal diseases.

Control of chronic wasting disease in cervids in Norway

The risk assessment underlines that control and eradication of CWD in the wild cervid population is currently considered to be very difficult. If CWD has already disseminated into cervid populations in Norway, implementation of measures such as culling of older animals, reducing population densities or physical separation of populations may be relevant. Knowledge of the actual prevalence (proportion of a population found to have CWD) is a prerequisite to determining which measures could be used. The surveillance programme will provide us with this important information.

A new risk assessment will be carried out by VKM, based on the results of the surveillance programme. The report is planned to be published in Spring 2017. The European Food Safety Authority (EFSA) will also publish scientific reports on CWD on request from the European Commission. The first report was published in January 2017 [1] and the second is due at the end of the year.

2. Dr Gordon Mitchell, Ottawa Laboratory (Fallowfield), Animal Disease Research Institute, Canadian Food Inspection Agency
3. www.mattilsynet.no/language/english/animals/chronic_wasting_disease_in_norway.23274





US Fish & Wildlife Service

Table I
Status of the CWD monitoring programme as of 15 December 2016

Type of cervid	CWD negative	CWD positive	Total
 Moose	4,372	2	4,374
 Wild red deer	2,418	0	2,418
 Farmed red deer	149	0	149
 Wild reindeer	846	3	849
 Semi-domesticated reindeer	1,549	0	1,549
 Roe deer	448	0	448
Total	9,782	5	9,787

Chronic wasting disease and food safety

The risk assessment states that there are no epidemiological data that link CWD to human prion disease, but that the possibility cannot be excluded. The scientific opinion of the risk assessment considered the zoonotic risk of CWD to be very low. It is recommended that the principal focus be directed towards collecting as much information as possible

about the occurrence of CWD in the Norwegian cervid population, both wild and semi-domesticated.

All animals tested will be held to await the results from the laboratory testing. Cervids that have tested positive will not be used for human consumption. Their carcasses and by-products will be disposed of in accordance with the TSE regulations and the animal by-products regulations.



Status of the monitoring programme

The status, as of 15 December 2016, is that **9,782 animals have been tested for CWD. So far five animals have tested positive for CWD (Table I).**

<http://dx.doi.org/10.20506/bull.2017.1.2595>

Reference

1. EFSA BIOHAZ Panel (EFSA Panel on Biological Hazards), Ricci A., Allende A., Bolton D., Chemaly M., Davies R., Fernández Escámez P.S., Gironés R., Herman L., Koutsoumanis K., Lindqvist R., Nørrung B., Robertson L., Sanaa M., Skandamis P., Snary E., Speybroeck N., Kuile B.T., Threlfall J., Wahlström H., Benestad S., Gavier-Widen D., Miller M.W., Ru G., Telling G.C., Tryland M., Ortiz Pelaez A. & Simmons M. (2017). – Scientific opinion on chronic wasting disease (CWD) in cervids. *EFSA Journal*, **15** (1), 4667. doi:10.2903/j.efsa.2017.4667.

Weekly update on the website of Mattilsynet, the Norwegian Food Safety Authority:
<https://goo.gl/cpvleK>



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2016

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Available at: www.fao.org/3/a-i6316e.pdf

Peste des petits ruminants global eradication programme –

Contributing to food security, poverty alleviation and resilience – Five years (2017–2021)

FAO/OIE Joint Publication

The five-year Peste des Petits Ruminant Global Eradication Programme (PPR-GEP) highlights the technical and policy tools foreseen as appropriate to lay the foundation for and commencement of PPR eradication by reducing the prevalence of PPR in currently infected countries. The programme will also develop capacity for non-infected countries to demonstrate the absence of PPR virus, leading towards official endorsement of PPR-free status by the OIE. During its course, the programme will strengthen national Veterinary Services, which are the key players in the successful implementation of the PPR-GEP. When appropriate, the programme will also support action taken to reduce the prevalence of other prioritised small ruminant diseases if it helps in the implementation of the PPR-GEP.

activities of Reference Laboratories & Collaborating Centres

OIE Collaborating Centres on animal welfare



October 2015 – Representatives of the four OIE Collaborating Centres for animal welfare meeting at the Faculty of Veterinary Medicine and Animal Husbandry of the National Autonomous University of Mexico

Animal Welfare and Livestock Production Systems

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Universidad Nacional Autónoma de México (UNAM)

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www.fmvz.unam.mx/fmvz/departamentos/etologia/acerca.html

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Facultad de Veterinaria

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Facultad de Ciencias Veterinarias

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Animal Welfare Science and Bioethical Analysis (the David Bayvel Consortium – comprises):

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Animal Behaviour and Welfare Research Centre

AgResearch Ltd

Ruakura Research Centre

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Activities of the OIE Collaborating Centre for animal welfare production systems (Chile–Uruguay–Mexico)

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Keywords

Animal welfare – OIE Collaborating Centre.

In **Chile**, the Collaborating Centre conducted knowledge transfer activities in connection with Law 20380 on the protection of animals and throughout industrial production systems, transport systems and slaughterhouses, being the first institution to be accredited by the competent authority – Chile’s Agriculture and Livestock Service (SAG¹) – to deliver official courses for personnel handling animals. The Collaborating Centre also taught courses for dairy farm workers, one for slaughterhouse workers and another for transporters, training a total of 146 people. In addition, it developed four manuals on the management of animals (cattle and sheep) during transport and at the slaughterhouse, as well as a manual on animal welfare in dairy farms².

At university level, ethology and animal welfare began to be taught as a compulsory subject for second-year veterinary students at the Southern University of Chile. A Bioethics Committee was established at the university, which includes several academics from the Collaborating Centre and is chaired by one of these academics, the main task of which is to review and approve test protocols, as well as to conduct annual educational

workshops to ensure that the three Rs (replacement, reduction and refinement) are applied in animal research. The Collaborating Centre also contributed to a number of book chapters on animal welfare issues relating to meat quality and dairy cattle herds.

In **Mexico**, the first online diploma course on animal welfare and sustainable animal production was held, with the support of the federal government, to coincide with the first meeting of the



Leopoldo Stuardo

1. SAG: *Servicio Agrícola y Ganadero*
 2. Material available at: www.bienestaranimal.cl



and livestock

four OIE Collaborating Centres for Animal Welfare in October 2015. The first edition of the course was aimed at the staff of Mexico's National Health, Food Safety and Agrifood Quality Service (SENASICA³) and its second edition is currently being taught to 40 participants from a number of countries in the region⁴. Forty speakers from eight countries (Australia, Brazil, Canada, Chile, Mexico, Spain, United States of America and Uruguay) contributed to the diploma course. Collaboration with other institutions included formal participation of the Faculty of Veterinary Medicine and Animal Husbandry (FMVZ) of the National Autonomous University of Mexico (UNAM) in the Universities Federation for Animal Welfare (UFAW). The Collaborating Centre is also involved in research projects and in the discussion group on Mexico's new animal welfare act.

In **Uruguay**, the Collaborating Centre delivered postgraduate, continuing education and optional courses on animal welfare issues, focusing mainly on production animals. It is also working with the production sector on a project concerning animal welfare, silvopasture and sustainability, and is validating a device to protect cattle from bruising during transport.

<http://dx.doi.org/10.20506/bull.2017.1.2596>

3. **SENASICA: Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria**

4. More information at: www.fmvz.unam.mx

Connecting globally and acting locally

Animal welfare Collaborating Centre initiatives in the diversity of Asia, the Far East and Oceania

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Keywords

Animal welfare – Asia–Pacific – OIE Collaborating Centre.

Care for the wellbeing of animals has been one of humanity's defining traits for as long as we have interacted with and depended on animals for our sustenance and livelihoods. The wider Asian region encompasses some of the centres of the development of agriculture many thousands of years ago and, not surprisingly, the region's modern animals and people are quite diverse.

While concern for the care of animals has escalated in modern times with the development of more intensive systems of production, as well as large-scale animal transport and slaughter, this has largely, albeit initially, occurred in western, educated, industrial, rich and democratic parts of the world. Correspondingly, critiques, such as Ruth Harrison's *Animal machines* and the UK's Brambell Committee into the welfare of intensively farmed animals, have underpinned efforts such as the OIE's in championing animal welfare. However, being respectful of the ecological paradigm that 'diversity begets productivity' it is important to remember that much of the world has different histories, and biological and social systems of animal use, especially in agriculture. The opportunity for the wider Asian region's systems and peoples to contribute to and shape the future of society's expectations of global animal welfare should not be dismissed.

Alex Thiermann



The Asia, Far East and Oceania region also hosts the OIE's first Collaborating Centre. The Animal Welfare Science and Bioethical Analysis Collaborating Centre, a multicentre partnership between the New Zealand and Australian Governments, comprises New Zealand's Massey University and AgResearch, and Australia's Melbourne and Queensland universities, and CSIRO (Commonwealth Scientific and Industrial Research Organisation), collectively called 'The David Bayvel Consortium'. David had a long and distinguished career in veterinary and animal welfare science¹ and was instrumental in establishing the Collaborating Centre.

The Collaborating Centre's role is distinctive, connecting the OIE's global animal welfare aspirations with the reality of animals and people in countries including Bangladesh, Nepal and Japan, as well as New Zealand and Australia. The complex, multifaceted nature of modern animal welfare, with its scientific, ethical, economic, religious, cultural and trade dimensions, was brought together in *Animal welfare: Focusing on the future*, one of the OIE's *Scientific and Technical Review* series. Edited by Massey University's David Mellor, along with David Bayvel, its various international contributors

1. See OIE *Bulletin*, No. 2015-2, p. 118

looked to the future through the implementation of standards, and the wider ownership of issues, in both private and public sectors. Drs Mellor and Bayvel concluded, and were encouraged, that animal welfare is increasingly being recognised as a critical element in wider international public policy issues concerned with, among other things, poverty alleviation, climate change and sustainable agriculture. The expertise of Massey University's Animal Welfare Science and Bioethics Centre (AWSBC) also extends to understanding the welfare of vulnerable neonatal animals, the humaneness of different methods of slaughter, and methods of promoting animal welfare in zoos and in conservation.

One of the Collaborating Centre's major initiatives has been to facilitate a cooperative project to enhance stakeholder knowledge of the OIE's slaughter and transport standards in Southeast Asia. Led by the University of Queensland, in partnership with the University Putra Malaysia, it involved training workshops in China, Vietnam, Malaysia and Thailand, with resources in English, Mandarin, Bahasa, Thai and Vietnamese (www.animalwelfarestandards.org). A number of related research projects also investigated attitudes, motivations and barriers to improving welfare practices. Queensland University's Centre for Animal Welfare and Ethics (CAWE) is also involved in the welfare of animals being exported, and in the heat stress livestock may experience in feedlots.

The regional links and opportunities the OIE provides through its animal welfare Collaborating Centres, engendering a richer understanding of complex scientific and ethical animal welfare issues, were evident in a project undertaken by AgResearch. A study involving reversible head-to-body electrical stunning in lambs, goats and calves brought together expertise in animal behaviour (AgResearch), electroencephalographic recording (Massey University) and the requirements of Halal slaughter (University Putra Malaysia). AgResearch's Animal Behaviour and Welfare Research Centre also works with dairy cows and goats, especially those not being farmed in more traditional pasture-based environments.



animal welfare STANDARDS

CARING FOR THE WELFARE OF ANIMALS DURING SLAUGHTER

- Be patient, competent and considerate throughout the slaughter process, including while loading, moving, or lairage in pens, and during restraint, stunning, slaughter and bleeding of animals.
- Always handle animals gently and with kindness. Never handle them in a way that causes distress, pain or injury, such as kicking, hitting or throwing them.
- Provide safe and suitable facilities that minimise fear and stress to the animals. Avoid handling the animals, which might cause them to fall and injure themselves.
- Prevent animals in lairage from adverse weather conditions and provide adequate ventilation, time and space to lie down, drink and eat where appropriate.
- Actively manage the most vulnerable animals as a priority, including emergency slaughter for severely injured animals unable to walk.
- Use the most humane methods of restraint for slaughter. Avoid excessive pressure that causes them to struggle and resist.
- Ensure effective pre-slaughter stunning wherever possible so that the animal is unconscious until death.
- Restrain and load animals as rapidly as possible.
- Confirm death through the absence of reflex twitching, blinking and ocular bleeding before proceeding with cutting or dressing procedures.
- Monitor slaughter practices to ensure they comply with OIE standards and local animal welfare regulations, and make improvements where required.

The messages are based on the OIE World Animal Health Organization's standards for animal welfare, outlined in the Technical Manual Code and brought to you by

www.animalwelfarestandards.org

animal welfare STANDARDS

关注屠宰过程中的动物福利

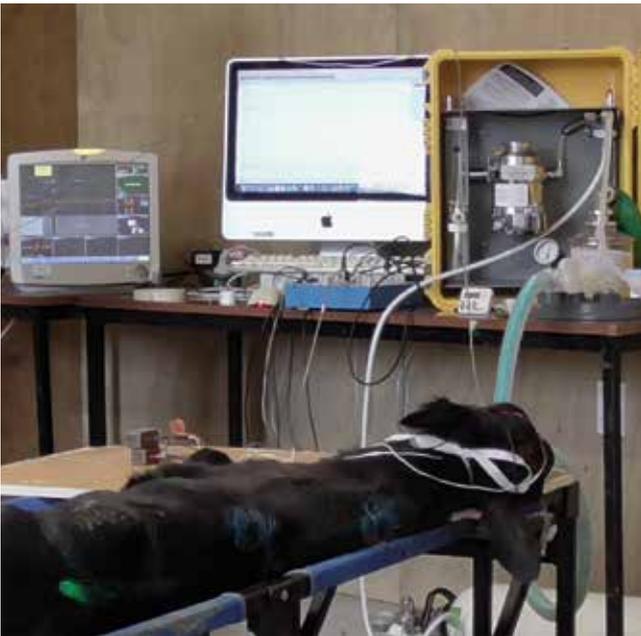
- 在整个屠宰过程中保持耐心、专业和体贴。包括在装运、移动或在圈舍中饲养时，以及在保定、击晕、屠宰和放血过程中。
- 始终温和且富有同情心地对待动物。切勿以踢打、投掷或其他方式造成动物痛苦、疼痛或伤害，例如踢打、摔打或投掷。
- 为动物提供安全且适宜的设施，以最大限度地减少恐惧和压力。避免处理动物，这可能会导致它们摔倒并受伤。
- 防止圈舍中的动物遭受恶劣天气条件，并提供适当的通风、时间和空间，以便它们可以躺下、饮水和进食。
- 优先管理最脆弱的动物，包括对无法行走的严重受伤动物进行紧急屠宰。
- 使用最人道的保定方法。避免使用过度的压力，导致动物挣扎和抵抗。
- 尽可能在可行的情况下，确保有效的击晕，使动物在死亡前处于无意识状态。
- 尽可能快速且有效地保定和装载动物。
- 通过眨眼、眨眼和眼部出血的缺失来确认死亡，然后再进行切割或宰杀程序。
- 监控屠宰实践，以确保其符合 OIE 标准和当地动物福利法规，并在需要时进行改进。

主要信息来源于世界动物卫生组织 (OIE) 技术手册代码中概述的动物福利标准。详情

www.animalwelfarestandards.org

The Top 10 messages for improving animal welfare at slaughter and during transport, adapted from the OIE animal welfare standards, in English and Mandarin

AgResearch Ltd.



AgResearch Ltd.



A study of methods to produce insensibility, followed by recovery of consciousness and normal behaviour, to help harmonise animal welfare, religious and commercial requirements in Halal meat production



Jeremy Skuse



CSIRO



Australian Pork Limited

The expertise of the Collaborating Centre's institutions is seen in the range of animals of interest, from pigs (University of Melbourne) to crocodiles (CSIRO)

address pig and poultry welfare, heat stress in more extensively farmed livestock, and the relationships between humans and dogs. Similarly, CSIRO Livestock Industries is working to be able to show welfare improvements in the red meat industries, investigating the cognitive abilities and welfare of free-range hens, and finding ways to humanely slaughter crocodiles and buffaloes.

The Collaborating Centre also provides a wonderful opportunity for students and developing researchers, government officials, veterinarians and others, to be exposed to world-leading animal welfare centres with links to this increasingly important part of the global economy. For example, the University of Melbourne's Animal Welfare Science Centre (AWSC) focuses on, among other things, the training of stockpersons in a number of industries, including pig farming, and in livestock transport and slaughter. Research efforts also

Finally, the Centre's 'connecting' role is important in other ways as well. Recognising that animal welfare is everyone's responsibility, and increasingly everyone's business, the Centre enjoys the formal collaboration it has with the regional offices of *World Animal Protection* and the *International Society of Applied Ethology* and, increasingly, the other three OIE animal welfare collaborating centres.

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Broader perspectives on laboratory animal welfare

Advancing animal welfare in the 21st Century

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Keywords

Animal welfare – education – laboratory animal – OIE Collaborating Centre – research – standard.

Historical and ethical roots of laboratory animal welfare

Human and animal welfare have been inextricably linked to advances in scientific knowledge, technology and economic growth. The English philosopher, Thomas Hobbes (1588–1679), observed that human life was: ‘solitary, poor, nasty, brutish, and short’. Animal life was almost certainly no better and economic

growth was non-existent [1]. The first Industrial Revolution (circa 1760–1840) unleashed sustained economic growth and unprecedented improvements in living standards in Europe and North America through the use of scientific knowledge and technology [2], and, notably, the first social efforts to recognise and promote the more humane treatment of animals (e.g. the founding of the

Society for the Prevention of Cruelty to Animals, or SPCA, in Britain in 1824 [3] and adoption of the Cruel Treatment of Cattle Act of 1822 and Cruelty to Animals Act of 1835). The second Industrial Revolution (circa 1860–1914) witnessed continued economic growth and improvements in living standards in developed countries linked to health care (anaesthesia, analgesia and

antiseptis/antibiotics), pharmaceutical development (analytical, organic and medicinal chemistry), and applied animal research (testing using animals as human surrogates) [4]. Coincidentally, it also saw the first national efforts to regulate the humane treatment of laboratory animals (i.e., the adoption of the Cruelty to Animals Act, 1876 by the Parliament of the United





Kingdom) and pharmaceuticals (i.e., the adoption of the United States Biologics Control Act in 1902¹). Finally, the period following World War II to 2007 witnessed the largest and most sustained advances in global economic growth and living standards, again driven by the implementation of scientific knowledge and new technologies (recombinant DNA/biopharmaceuticals, genetically modified organisms, molecular biology, robotics, etc.). This period also saw the most pronounced global advances in animal welfare, beginning with the concepts of Replacement, Refinement and Reduction (the '3Rs') [5] and the adoption of the first standards for appropriate animal welfare in biomedical research [6] and agriculture [7], culminating with efforts to replace animal experimentation with non-animal methods and technologies.

The global financial crisis that began in 2007 has resulted in a decade of minimal-to-zero economic growth and, for the first time since the Industrial Revolution, flat or declining living standards in most global economies. The reasons for stagnation are complex, but appear to include a slowdown in the implementation of scientific knowledge and technology to drive new economic growth [2]. In this apparent global stagnation, will the trajectory of improvements in animal welfare continue? Herein lies the vital role of OIE Collaborating Centres, such as the one established for animal welfare in the Institute for Laboratory Animal Research (ILAR)², part of the US National Academies of Sciences, Engineering and Medicine, and related entities. OIE Collaborating Centres should work together with similar bodies and professional and trade associations,

such as the American Veterinary Medical Association (AVMA) and the International Consortium for Innovation and Quality in Pharmaceutical Development (IQ Consortium), to support continued advances in the 3Rs and the concepts of 'One Welfare' [8] and 'Lives worth Living' [9], for the advancement of the welfare of all animals across the globe.

OIE Collaborating Centres, professional organisations and national academies as sources of authoritative welfare standards and educational goals

ILAR, the OIE Collaborating Centre for Laboratory Animal Welfare and Science, and AVMA recognise the importance of providing clear and practical science-based standards for animal-based

1. <https://history.nih.gov/research/downloads/PL57-244.pdf>
2. <http://dels.nas.edu/ilar>

research activities and have actively supported their development.

Examples include the Guide for the care and use of laboratory animals [10] and the *AVMA Guidelines for the euthanasia of animals* [11].

Documents of this type establish performance standards that can be used in education, assessment and accreditation, while permitting the exercise of professional judgement in facilities and programmes, and supporting the Institutional Animal Care and Use Committee (IACUC) process.

Given the diversity of research activities and the ever-growing scientific literature, it is important that documents of this type provide support in all major areas of activity, and are reviewed and updated at a rate that encourages ongoing, sustainable improvement in performance – in accordance with national animal welfare standards and international models, such as the *Terrestrial Animal Health Code* [12] and the new Global Animal Welfare Strategy. These guidelines become living documents, updated under the purview of expert standing committees according to the needs established by peer-reviewed publications and best practice.

For example, in 2017, the AVMA Guidelines on Euthanasia will be undergoing a review, while new Guidelines on the Depopulation of Animals (meant to assist facilities in the creation of emergency plans) will be published.

These documents provide independent expert analysis outside the resources or scope of individual research facilities. They promote consideration of animal welfare based on reliable evidence and a degree of standardisation. As a result,

adopting these standards is more effective and efficient than an uncoordinated, *ad hoc* approach. In the face of continuing criticism and doubts about the scientific rigour of published data [13, 14], it is important that funding agencies support the creation of guidance documents that benefit the global community by improving the reproducibility and transparency of animal-based research. (One example would be the consideration of sex as a biological variable in research, funded by the National Institutes of Health – NIH³). The work of animal welfare specialists, including veterinarians who have received specific training in this area, has been crucial in elevating the fundamentals of animal welfare to a core competency for all those engaged in research and other activities involving live animals or animal remains or tissues.

On this basis, OIE Collaborating Centres on Animal Welfare are working with other key agencies to ensure that animal welfare is part of a national strategy to prioritise animal welfare education as well as an explicit core subject of all applicable educational programmes. For example:

- The ILAR Roundtable on Science and Welfare in Laboratory Animal Use⁴ in the US has worked to elevate discussion and improve knowledge on key topics such as reproducibility, transportation standards, and gene editing/genetic modification of animal species.
- The Collaborating Centre⁵ for Veterinary Training, Epidemiology, Food Safety and Animal Welfare in Teramo,

Italy, assists countries in Europe to implement and assess OIE intergovernmental standards on animal welfare.

- The Collaborating Centre for Animal Welfare Science and Bioethical Analysis, a multicentre partnership between the New Zealand and Australian Governments, collectively called The David Bayvel Consortium, trains key people involved in transportation and slaughter in good practice and conducts research to determine attitudes, motivations and barriers to improving welfare practices in South-East Asia.
- The tripartite Collaborating Centre for Animal Welfare and Livestock Production Systems in Chile, Mexico, and Uruguay assists with the implementation of the OIE Animal Welfare Regional Strategy for the Americas and the production of training materials for use in veterinary schools in the region.
- AVMA has developed a model animal welfare curriculum for veterinary programmes and the Intercollegiate Animal Welfare Judging/Assessment Competition⁶.

The challenge over the next few years will be to ensure a harmonious integration of these programmes with other educational initiatives so that animal welfare becomes completely assimilated as a core tenet of science, alongside topics such as animal anatomy and experimental design, and animal welfare competency is universally elevated, while maintaining a climate of open discussion about research, ethics, and the stewardship of animals used for scientific purposes.

3. <https://grants.nih.gov/grants/guide/notice-files/NOT-00-15-102.html>

5. www.izs.it/IZS/

4. <http://nas-sites.org/ilar-roundtable/>

6. www.awjac.org

Safeguarding animal welfare is an inherent component of conducting research responsibly, an issue that many National Academies of Science have embraced (e.g. the US National Academies of Sciences, Engineering, and Medicine International Initiatives on Responsible Science⁷), and which is detailed in numerous textbooks and educational materials⁸.

The expression, 'May you live in interesting times', appropriately characterises the state of animal

welfare in the 21st Century. The last 200 years have produced unprecedented advances in comparison to the hundreds of years of human history that went before. The past decade has shown unexpected decelerations in global economic growth and human welfare, possibly suggesting an uncertain future for the progress of animal welfare policies. The OIE Collaborating Centres, working strategically with other partners, can

help bridge those uncertainties by strengthening their commitment to strategies that have proven successful in the past (e.g. the promulgation and distribution of evidence-based standards) and to the introduction of animal welfare learning as a critical component in professional education.

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7. www.nas-sites.org/responsible-science/

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IZSAM

IZSAM headquarters in Teramo

Animal welfare priorities for the OIE Europe region and role of the OIE Collaborating Centre for Veterinary Training, Epidemiology, Food Safety and Animal Welfare

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Keywords

Animal welfare – Europe – OIE Collaborating Centre – slaughterhouse – stray dog – transport.

Introduction

The *Istituto Zooprofilattico Sperimentale dell'Abruzzo e del Molise 'G. Caporale'* (IZSAM), with headquarters in Teramo, is a public health body and part of the Italian national health system, which is tasked with protecting human health and welfare through the development and application of veterinary science. Its mission is to provide citizens and the national health system with an appropriate response to public health needs, through scientific knowledge and expertise on food safety, animal health and

welfare; the control and prevention of transmissible animal diseases, including zoonoses; food safety and support for food production; and environmental protection.

In 2004, IZSAM was appointed as the OIE Collaborating Centre (OIE CC) for Veterinary Training, Epidemiology, Food Safety and Animal Welfare covering the European Union (EU), which, for decades, has been leading the world in animal welfare policy-making, and other Member Countries from the OIE European region, which have taken a far more recent interest in animal welfare.





The OIE CC's Expert Group on Animal Welfare operates on the premises of the Human-Animal Relationship and Animal Welfare Laboratory of IZSAM.

The need for a regional mechanism to improve animal welfare in Europe and enhance regional dialogue in this area has been raised on several occasions at regional OIE National Focal Point seminars for animal welfare. Moreover, in 2012, the 25th Conference of the OIE Regional Commission for Europe recognised 'contrasting levels of implementation of animal welfare policies in national legislation'. It was therefore recommended that a common approach by all 53 Member Countries of the OIE Europe region was required, to provide a step-by-step, coordinated method for achieving an identical level of implementation of OIE standards on animal welfare across all these countries.

This led to the establishment, in December 2013, of an OIE regional platform for animal welfare in Europe. The platform's overall objective is to assist countries in the OIE Europe region (especially those in Eastern Europe) to improve compliance with OIE intergovernmental standards on animal welfare. A special action plan was drawn up for the 2014-2016 period, which identified three priority areas: land transport, slaughter, and stray dog population control.

The Collaborating Centre is permanently represented in the platform's steering group and contributes its multidisciplinary and cross-sector expertise to implementing the platform's action plan.

Three years on, the platform has become a well-established mechanism and a second action plan has been launched for 2017-2019 to address evolving animal welfare priorities in the OIE Europe Region.

Animal welfare during transport

A staggering number of live animals are transported all over the world. In Europe alone, around 37 million cattle, pigs, small ruminants and horses, and more than 1 billion poultry, are transported every year [1]. The transportation process — including handling, loading, travelling and unloading — can have a detrimental impact on the welfare of animals. Long journeys are more likely to jeopardise animal welfare than shorter ones as they prolong an animal's exposure to certain stressors. Such long journeys often extend beyond EU borders and, on 23 April 2015, the EU Court of Justice stated that, in cases where animals are transported from an EU Member State to a third country, animal protection requirements during transportation should equally apply beyond EU borders [2].

For the latest Eurobarometer on the attitudes of Europeans towards animal welfare [3], a total of 27,672 EU citizens from different social and demographic categories were interviewed. Almost all considered that the welfare of farmed animals should be better protected than it is now. A majority also agreed that it is important to establish animal welfare standards that apply to products sourced from within and outside the EU and that 'imported products from outside the EU should respect the same animal welfare standards as those



Leopoldo Stuardo



Fig. 1
Website for the animal transport guides project

applied in the EU'. Nine out of ten respondents (90%) agreed that 'it is important to establish animal welfare standards that are recognised across the world'. This would allow greater harmonisation of animal welfare assessment on a global scale and enable equivalence criteria on animal welfare to be established between the EU and non-member countries in the context of global trade. More recently, Denmark, Germany, the Netherlands and Sweden tabled suggestions to the European Commission on the establishment of an EU animal welfare platform that would help to further increase recognition and awareness of animal welfare in the EU and internationally.

In recent years, the European Commission has launched two multi-annual projects^{1,2}, to improve the conditions of animals during long journeys, in which IZSAM participated. The main aim of these projects was to develop science-based certification schemes for long-distance transport and control posts (i.e. staging points used to unload and rest animals travelling over long distances), in order to improve animal welfare and provide an alternative to the 'regulatory approach'. Protocols were developed for assessing the welfare of cattle, pigs, horses and sheep that have travelled long distances, and for cattle and pigs at control posts. The resulting tools could provide an opportunity to develop routine checking instruments for certification purposes, in collaboration with the transport industry, and to address society's concerns about the welfare of animals exported to countries outside the EU.

Together, information dissemination and training are the driving forces to put innovation into practice. To this end, IZSAM designed, coordinated and implemented specific Web-based strategies in both these European projects. Besides e-Learning courses for official veterinarians, animal transporters, control post owners and staff, and key stakeholder groups, in eight languages, IZSAM developed and adopted social media management strategies for capacity-building in the context of animal transport, within the most popular professional virtual communities, such as LinkedIn.

In May 2015, a new three-year EU project was launched to develop and disseminate guides on good and best practice (GGPs) for the five main animal species (cattle, horses, pigs, poultry and sheep) transported within Europe and to non-EU countries for slaughter, fattening and breeding³ (Fig. 1). IZSAM is part of the project consortium, along with 15 members from 10 EU countries. The consortium receives support and advice from a stakeholders' platform, consisting of ten members representing international organisations that have a direct interest in this field, and cooperates with national working groups of end-users in nine different EU Member States. A final version of these guides is expected to be published by the second semester of 2017.

1. Evaluation of the feasibility of a certification scheme for high-quality control posts (Grant Agreement No. SANCO/2010/D5/CRPA/SI2.578062)

2. Development of an EU-wide animal transport certification system and renovation of control posts in the European Union (Grant Agreement No. SANCO/2011/G3/CRPA/SI2.610274)

3. Animal Transport Guides project: <http://animaltransportguides.eu/about-the-project/>



IZSAM is deputy leader of the project dissemination component, which aims to maximise access to the project's outputs, and assist end-users to turn this information into practical action.

A dedicated website, managed by IZSAM, is already available, while a 'knowledge e-Library' is also being built up to provide relevant materials on the GGPs and related topics.

In addition, an innovative dissemination methodology will be developed in the near future, with the involvement of all project partners. 'Road Shows' for all species in the selected target countries (the United Kingdom, Germany, Italy, Spain, Romania, France, Poland, and Greece) will be organised and promoted among the primary target audience (Competent Authorities and business operators).

The role of public veterinarians, in carrying out official controls on the welfare of transported animals, and collaboration among public authorities are crucial to ensure better conditions for animals during transport. As part of the Better Training for Safer Food (BTSF) programme⁴, IZSAM has been delivering basic and advanced training courses on animal welfare for EU Member States and selected non-EU countries, with a total of 2,473 official veterinarians having been trained since 2007. Of these, 545 attended courses on long-distance transport.

Animal welfare at slaughter

While the slaughter of animals is an inevitable step in meat production, it may induce pain, distress, fear or other forms of suffering, even under the best available technical conditions. Council Regulation (EC) No. 1099/2009 was issued to improve the welfare of animals at slaughter in the EU.

Furthermore, the EU exports two million cattle and sheep a year to the Middle East, North Africa and Turkey [4], some of which are at risk of being slaughtered in breach of OIE international standards on animal welfare. Necessary measures shall be taken to avoid animal suffering and pain as much as possible during the slaughter process.

Proper training of slaughterhouse operators and the provision of appropriate facilities and equipment will play a key role. In addition, there should be checks on stunning effectiveness and death to make sure that animals are not conscious during processing. Veterinarians are expected to play a key role in providing staff with appropriate guidance. Under the Service Contract 2010 96 12, signed with the Consumers,

Health, Agriculture and Food Executive Agency (CHAFAEA), IZSAM – in its role as consortium leader – developed a BTSF e-Learning module for the European Commission, to train official veterinarians on how to apply Council Regulation (EC) No. 1099/2009, which takes into account OIE international standards on handling, restraining, stunning and bleeding animals in the slaughterhouse and on killing animals for disease control purposes. A second, similar BTSF e-Learning module is dedicated specifically to poultry welfare at slaughter and killing poultry for disease control purposes. This was also designed and produced by IZSAM, under Service Contract 2011 96 15 with CHAFAEA⁵. From the 54 editions of these two e-Learning modules delivered since March 2014, some 3,672 official controllers from 67 countries have received training in English, French, German, Portuguese and Spanish.

The availability of e-Learning modules has allowed, for the first time under the BTSF programme, the implementation of residential advanced courses on animal welfare during the slaughter of cattle, pigs and sheep and an advanced course on poultry slaughter. Attended by 159 official veterinarians from 37 countries in 2015 and 2016, such courses have the aim of enhancing levels of competence through a very practical training approach.

Moreover, there is growing scientific evidence that food safety is intimately related to farm animal welfare [5]. Studies on poultry have shown that certain farm and slaughterhouse characteristics, as well as management and pre-slaughter practices, could affect shedding of pathogenic microorganisms such as *Campylobacter* and *Salmonella*. A novel field of study is the assessment of how animal welfare could influence compliance with mandatory microbiological criteria. Broiler chickens are the most abundant farm animals in the EU, and IZSAM is involved in a number of studies to assess the welfare of these animals, as well as in relation to consumer safety.

Since 2014, IZSAM has been conducting a three-year research project, funded by the Italian Ministry of Health, to study the effects of farm and pre-slaughter stress factors on microbiological contamination of poultry meat, with particular reference to *Salmonella* and *Campylobacter*⁶ (Fig. 2). The objective is to investigate the efficacy of 'animal-welfare-friendly' management methods capable of reducing carcass contamination as an innovative tool for the poultry industry to improve the microbiological quality

4. Better Training for Safer Food: <http://ec.europa.eu/chafea/food/>

5. Animal welfare at slaughter and killing for disease control: www.btsf-elearning-campus.eu/moodle/

6. Young Researcher Project GR-2011-02349917, 'Farm animal welfare and food safety: effect of on-farm and pre-slaughtering stress factors on microbiological contamination of poultry meat'



IZSAM



Fig. 2
Activities of a project evaluating the effects of on-farm and pre-slaughter stress on the microbiological safety of poultry meat

of foodstuffs and reduce risks to consumers. The project is ongoing and final results are expected by the end of 2017.

IZSAM is currently involved in another important EU-funded project under the Animal Health and Welfare ERA-Net (ANHIWA). The main aim of the iMBData project⁷, as it is known, is to standardise the data already collected in different EU Member States on broiler welfare at farm and slaughterhouse level. This will ensure further data processing to deliver outputs that can be used to achieve the ultimate goal of improving broiler health and welfare, thus offering the potential to reduce antimicrobial use across the EU, a matter of growing concern for European consumers, producers and legislators. The iMBData software tool will be capable of integrating this routinely collected data. The project was launched in 2016 and will be completed by the end of 2018.

Companion animal welfare and stray dog population control

Stray dog population control is a prominent issue in several EU and non-EU countries. Furthermore, the OIE acknowledges the risk posed by stray dogs to both human health and animal health and welfare. In 2009, recommendations on stray dog population control were included in the *Terrestrial Animal Health Code (Terrestrial Code)* [6] to provide Veterinary Services and other relevant government institutions with guidance on

tackling the issue. These standards also identify the bodies responsible for developing and implementing appropriate training to regulate dog capture, transport and holding, as well as minimum housing and care criteria.

In fact, the control of stray dogs remains problematic in several European countries and the adoption of no-kill policies leads to a proliferation of long-term shelters. As a consequence,



7. iMBData project: www.anihwa-submission-era.net/imbddata



©Christolabuschagne. Disease Surveillance

a significant number of stray dogs are likely to spend all or most of their lives in confinement, with very little chance of being adopted or re-homed. With this in mind, IZSAM researchers have developed the Shelter Quality protocol⁸, a dog welfare-assessment protocol aimed at addressing gaps in the management of long-term shelters and reducing the imbalance between high numbers of dogs entering a shelter and low adoption rates. This protocol is built around the four welfare principles: good feeding, good housing, good health and appropriate behaviour⁹. The emphasis is on animal-based measures, in an attempt to evaluate the actual welfare status of animals in terms of behaviour, health and physical condition. By taking this approach, the assessment system will be partially independent of the shelter facilities and management parameters.

The Shelter Quality protocol was developed within the framework of a research project funded by the Italian Ministry of Health¹⁰ and currently represents a valid, reliable and practical tool for Competent Authorities, shelter managers and non-governmental organisations to monitor and control the welfare status of long-term sheltered dogs. The possible areas of application of this protocol are even broader: it could help to identify other critical areas needing intervention and, in the future, might be used to develop quality certification schemes for public, private and commercial dog shelters. This protocol

will be further updated thanks to a new IZSAM study that will investigate, together with the health and welfare of shelter dogs and stray dogs cared for by local communities, the relationship between humans and dogs and the prevalence of zoonotic agents in companion animals, in order to identify risk factors and to promote efficient 'One Health' strategies in this area.

IZSAM also participated in a study on the welfare of cats and dogs involved in commercial practices in Europe¹¹, funded by the Directorate General for Health and Food Safety of the European Commission. The study identified five main areas of concern which could potentially place the welfare and health of dogs and cats in Europe at risk:

- breeding
- transport
- lack of knowledge and information for the keeping of pets
- discrepancies in pet market data
- consumer protection.

Two concerns are common to all of the issues raised: first, the proper enforcement of the legislation and secondly, that an exchange of knowledge between Member States would be of considerable benefit. This could include science-based animal welfare indicators to facilitate welfare assessment and best practices covering a wide variety

8 Shelter Quality Protocol: www.carodog.eu/wp-content/uploads/2014/02/Shelter-Quality-Protocol-2014.pdf

9. Welfare Quality[®] project: www.welfarequality.net/everyone

10. Research Project IZS AM 05/10 RC: Tools for the assessment, classification and management of urban stray dog and cat populations

11. Specific Contract SANCO 2013/12364: https://ec.europa.eu/food/sites/food/files/animals/docs/aw_eu-strategy_study_dogs-cats-commercial-practices_en.pdf



of subjects. It would help to improve the enforcement of legislation and the general approach to animal health and welfare. Documents such as self-assessment tools, checklists and guidelines for all EU citizens would encourage consumers to provide better animal care and foster responsible ownership.

With regard to planned activities by the OIE platform for animal welfare in Europe, IZSAM supported the implementation of a self-assessment and monitoring tool. This tool was developed to help ten countries in the Balkan area (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Kosovo, the Former Yugoslav Republic of Macedonia, Romania, Serbia and Turkey) ascertain their current state of compliance with OIE standards on stray dog population control and to measure progress achieved over time. The tool's core component is a survey, mirroring the *Terrestrial Code* Chapter 7.7. [6], which is designed to support these OIE Member Countries in implementing dedicated national roadmaps and becoming fully compliant with OIE standards on stray dog population control by 2025.

Conclusions

IZSAM was one of the first veterinary public health institutions to pioneer a prestigious international policy based

on cooperation and ongoing sharing of knowledge and expertise among OIE Member Countries.

Since 2004, it has served as the OIE Collaborating Centre for Veterinary Training, Epidemiology, Food Safety and Animal Welfare, and works to build a common culture where animal welfare, animal health and food safety are part of a sustainable integrated system.

Indeed, IZSAM is of the firm belief that a supra-national approach to animal welfare protection is the only sustainable way to ensure effective integration and harmonisation of international policies and actions in this area. A multi-disciplinary approach and multi-stakeholder engagement are the key to success.

Accordingly, the OIE Collaborating Centre network of expertise has been progressively enlarged and strengthened through research projects and innovative programmes, regional workshops, meetings, collaborative web-based activities, field actions and technical assistance.

The only way to maximise these efforts is by ensuring stronger and more efficient collaboration among existing OIE Collaborating Centres for animal welfare, since they represent strategic nodes of networks that enable knowledge to be exchanged across all regions. This knowledge can be used to support OIE Member Countries in a proactive approach to tackling present and future animal welfare challenges.

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International Meat Secretariat activities in animal welfare (animal care)

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'THE INTERNATIONAL MEAT SECRETARIAT IS A NON-PROFIT ORGANISATION CATERING EXCLUSIVELY TO THE REQUIREMENTS OF THE WORLDWIDE MEAT AND LIVESTOCK SECTOR'

The International Meat Secretariat (IMS) works together with international organisations and partners along the agri-food chain, sharing expert advice with policy-makers and stakeholders on a range of complex scientific, policy and regulatory issues. The IMS cooperation agreement with the OIE (since 2003) covers several activities of mutual interest². Management for the health and welfare of animals, and reducing dangers to human health are key strategic goals.

IMS membership covers livestock producer associations, comprising more than 75% of global livestock production. The IMS network, working closely with the IMS Scientific Advisor, is well placed to provide practical advice on such matters as outcome-based criteria or measurables, which reflect real-world complexities in evaluating animal

welfare. IMS supports the concept of 'One Health', and is committed to facilitate the identification of useful tools through technical expertise, data, and best practices.

IMS is a member of the OIE Animal Welfare Working Group, guiding the development of the 'animal welfare in livestock production systems' chapters included in the *Terrestrial Animal Health Code*. IMS actively participates in OIE global and regional meetings related to animal welfare.

The IMS Animal Care Committee meets regularly to review IMS' input to the OIE, as well as to other international organisations with which IMS has cooperation agreements (FAO, Codex Alimentarius, and OECD). IMS has also provided important private-sector input as part of the working group that developed the

new ISO technical specification ISO/TS 34700:2016, Animal welfare management – *General requirements and guidance for organizations in the food supply chain*, which was published on 1 December 2016. This working group, which brought together experts from all regions of the world, included a broad range of stakeholders (private sectors, competent authorities, non-governmental organisations or NGOs).

Animal care is an important topic in IMS congresses, regional meetings, and technical symposia. Increasing societal concerns related to animal care and health was a key topic at the recent IMS World Meat Congress in Punta del Este, Uruguay (November

1. www.meat-ims.org

2. www.oie.int/en/about-us/key-texts/cooperation-agreements/





Martin-Bisof

2016, more than 700 participants). The panel discussed several topical questions, including:

- Who is developing and implementing animal welfare standards, and under what criteria?
- What are the strategies for ensuring good welfare and health? Do they consider the differences among production systems?
- Will standards facilitate or hinder trade between companies and countries?

Livestock plays a vital role in agriculture and economies around the world. Given the diversity of livestock production systems, it is important both to have a strategy at the global level and provide solutions that work at the local level to meet the increased demands for animal protein while ensuring food safety and quality. IMS provides a platform for members to share and exchange knowledge and to network, using a fact- and science-based approach, on several topics in addition to animal welfare, including food safety, sustainability, and

human health and nutrition. In fact, there are many interlinkages between these topics.

In summary, IMS places the highest priority on facilitating science-based exchanges between the private sector and international organisations. Therefore, the OIE is a key partner for IMS activities on animal welfare.



Animal welfare for a better world: a partnership ambition

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As I came back from the Fourth OIE Global Conference on Animal Welfare, which took place in Guadalajara, Mexico, in December 2016, I had the opportunity to reflect on the many milestones that World Animal Protection's global work on animal welfare has reached in recent years, and how our collaborative work with the OIE has been of key importance to achieve this.

Our interest in this partnership is only natural, considering the importance that the veterinary profession has for animal welfare. This is why *World Animal Protection* (then the World Society for the Protection of Animals) formalised an agreement with the OIE in May 2007, with the aim of strengthening the collaboration between the two parties in areas of common interest. This has been a fruitful partnership that has allowed us to participate in positioning animal welfare high on the scale of priorities of the OIE's 180 Member Countries.

We believe that, in order to achieve global change, our solutions-based work must take into account the challenges and priorities that humans face globally. Global agreements are in place to provide ways to address many of these problems. As such, the best way to achieve change is to work with stakeholders who have an interest in and an impact on animals, such as the OIE.

World Animal Protection became the first animal welfare non-governmental organisation to contribute to the OIE World Animal Health and Welfare Fund in 2014, a commitment that we renewed in 2015. This grant provided support to the Philippines' humane slaughter 'Training of Trainers' programme². It promoted various activities of the OIE Platform on Animal Welfare for Europe³, and was used to co-sponsor the WHO/OIE conference on rabies which took place in Geneva in December 2015.

Those international agreements remind us that animals are a hugely important part of our world, and how they are managed is critical in a sustainable world. In our view, management that benefits animal welfare contributes, on balance, to economic profitability, environmental health and social equity.

As well as animal health and welfare, *World Animal Protection* – alongside our partner organisations in the International Coalition for Animal Welfare (ICFAW) – has experience and involvement in areas such as food security, public health and disaster resilience. We encourage governments and intergovernmental organisations to collaborate with us to fulfil global commitments, addressing the welfare interests of both humans and animals. The OIE will continue to be a valued partner in this journey.



international news

special events



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Keywords

Alternative to antibiotics – antimicrobial agent – antimicrobial resistance – anti-virulence – CRISPR – immune modulation – phytochemical – regulatory pathway – vaccine – World Organisation for Animal Health (OIE).

Summary

The 2nd International Symposium on Alternatives to Antibiotics, held at OIE Headquarters in December 2016, provided a scientific forum for researchers to share developing technologies that may reduce the need for antibiotic use in production animals. Finding alternatives to antibiotics for animals is critical to reducing their use and combating the global problem of antimicrobial resistance, one of the priority goals of the OIE.

Introduction

From 12 to 15 December 2016, the '2nd International Symposium on Alternatives to Antibiotics (ATA): Challenges and Solutions in Animal Production' was held at OIE Headquarters in Paris. This conference, organised by the United States Department of Agriculture Agricultural Research Service (USDA-ARS), with support from the OIE, followed the '1st International Symposium on Alternatives to Antibiotics' also held in Paris in September 2012. These conferences provided a scientific forum for promising research on novel technologies that may reduce the need for antibiotic use in animal agriculture, as well as regulatory



Dr Cyril Gay (USDA-ARS) and Dr Monique Éloit (Director General, OIE) welcome attendants to the symposium

and funding strategies to support their development into usable products.

Antimicrobial resistance (AMR) is a pressing concern of our time, caused and sustained by the overuse and misuse of antibiotics. Resistant infections result in veterinary treatment failures, leading to decreased animal health, welfare and production. Every use of an antibiotic agent increases selection pressure on bacteria and, consequently, the risk of the development of resistant pathogens. Reducing antibiotic use in all sectors, including agriculture, is therefore necessary to

reduce the worldwide burden of AMR. Given the augmented need and desire for animal protein for a growing world population, global food security and safety are dependent on agricultural production. While antibiotics play an essential role in maintaining animal health and welfare, their responsible and prudent use is critical to conserving their efficacy for both human and animal health. [1]

Antibiotic resistance is one of the priority issues of the OIE, which recognises the necessity of intergovernmental cooperation to combat this global problem. The OIE supports

The 2nd ATA Symposium presented compelling research with these necessary solutions in mind. Focusing on progress made towards the development of alternatives to antibiotics since the last meeting, topics for this conference were divided into six different sessions.

1) Vaccines

Quality vaccines are crucial to improving animal health and preventing diseases that trigger antibiotic use. Dr Elisabeth Erlacher-Vindel of the OIE presented the results of the *ad hoc* Group on prioritisation of diseases for which vaccines could reduce antimicrobial use in animals [3]. Other presentations focused on novel vaccine delivery mechanisms to increase host immunity at the site of infection and to facilitate administration to different animal species.

2) Microbial-derived products

Microbial-derived products are obtained from other microbes, such as other bacteria, bacteriophages or yeasts, that combat pathogens in a variety of ways. Promising technologies include antimicrobial peptides, microbiome transplants, novel antibiofilm compounds from marine sponges, and use of the innovative CRISPR¹ gene-editing tool to target resistant bacteria [4].

3) Phytochemicals

Phytochemicals are naturally derived products of plant origin, which are studied for their immune enhancing and antibacterial effects. Some phytochemicals have been shown to increase disease resistance in the animals that consume them, and can also increase feed efficiency and animal growth. The latter effect may be particularly significant to support livestock production because antibiotic use for the purpose of growth promotion is considered to be misuse, and is being phased out globally.

4) Immune-related products

Immune-related products work to boost the naturally occurring processes in the body of an animal that protect it from disease. The immune system produces a variety of compounds that attack pathogens, such as host defence peptides, cytokines and immunoglobulins. Research presented in this session showed that, by supplementing with or modifying these compounds, an animal's resistance to disease can be improved.

5) Innovative drugs, chemicals and enzymes

This session introduced new compounds, synthetic or naturally derived, that target bacteria more specifically than traditional antibiotics, and therefore reduce the likelihood of the development of resistance. One such strategy is anti-virulence therapy, intended to stop pathogens from producing compounds that harm their host, without killing the bacteria as many antibiotics do. [5]

6) Regulatory pathways to enable the licensing of alternatives to antibiotics and issues and opportunities from the funders' perspective

During this session, regulatory officials from the United States, Europe and Asia explained pathways available in their countries for these novel products to be approved for market. Representatives from funding agencies also described grant opportunities for scientists to further develop their research.

More conference materials (programme, abstract book, presentations...):
www.ars.usda.gov/alternativestoantibiotics/Symposium2016/index.html

1. CRISPR: clustered regularly interspaced short palindromic repeats



Dr Elisabeth Erlacher-Vindel (OIE), Dr Filip van Immerseel (Ghent University) and Dr Karin Hoelzer (The Pew Charitable Trusts) presented papers during the session on vaccines



Conference attendees at the 2nd International Symposium on Alternatives to Antibiotics

its Member Countries in combating AMR and reducing national antimicrobial consumption, as outlined in 'The OIE Strategy on Antimicrobial Resistance and the Prudent Use of Antimicrobials'. The four objectives of the strategy are: *a)* improving awareness and understanding; *b)* strengthening knowledge through surveillance and research; *c)* supporting good governance and capacity building; and *d)* encouraging implementation of international standards. [2]

Included in the workplan of the second objective is the OIE commitment to guide and support research into alternatives to antibiotics. In order to successfully reduce antibiotic use in food producing animals, alternative solutions to the significant needs fulfilled by antibiotics for animal agriculture must be developed.

Future steps

Expert panel discussions held during the different sessions identified future directions for research to be

elaborated. The audience expressed a desire to better understand the mechanisms of action of some compounds presented, and the need to work towards regulatory harmonisation to facilitate product development in a global economy. *Review* articles summarising promising technologies presented in each session and areas for future research will soon be published in scientific journals, including *Veterinary Research and Animal Nutrition*.

Conclusion

While some research into ATAs is still in its nascence, the field shows incredible promise to reduce the need for antibiotics in animal agriculture by improving animal health, resilience and production. The OIE looks forward to encouraging research on alternatives to antibiotics in the future, while continuing to develop international standards, supporting veterinary legislation and promoting judicious use of antibiotics in animal production.

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One Health case studies Addressing complex problems in a changing world

Edited by Susan Cork, David Hall & Karen Liljebjelke



In English

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‘One Health’ refers to an interdisciplinary approach to solving complex problems at the interface of human and animal health and the wider ecosystem. It represents an integrated and collaborative approach and addresses diverse issues such as the detection and management of emerging and re-emerging infectious and non-infectious diseases, food and water security, food hygiene and global trade. Many complex problems that we currently face must consider anthropogenic factors as well as climate change, environmental impact,

international collaboration, tourism, the human-animal bond, economics, plant health and myriad other factors.

This book discusses complex concepts in One Health such as preparedness planning, national level governance, inter-agency co-operation, climate change, human activity in sensitive ecosystems, the global food trade and food safety, antimicrobial resistance, surveillance, and communication from policy level to practical application. The book uses real-world case studies from different geographical regions ranging from Asia to the Arctic, different environments from the jungle to the oceans, and different species including bees, fish, domestic and wild animals and humans. The cases are prepared by experts with a diverse range of experience and provide a unique and fascinating on-the-ground approach to One Health topics in practice.

One Health case studies is an ideal resource for students and practitioners in veterinary medicine, human medicine, public health, agriculture, wildlife management, ecosystem health and environmental management.

The Director General visits a rural community in Bolivia



Dr Monique Éloit, with Dr Javier Ernesto Suárez Hurtado (on her left), the OIE Delegate for Bolivia, colleagues from the Bolivian Veterinary Services, and farmers from the Aguas Dulces community



Dr Monique Éloit, with women and children from the Aguas Dulces community

On the margins of the 23rd Conference of the OIE Regional Commission for the Americas, which took place in Cruz de la Sierra (Bolivia) from 15 to 18 November 2016, Dr Monique Éloit, OIE Director General, was invited to visit the rural community of Aguas Dulces in Saavedra Municipality.

The visit was an opportunity for the OIE's new Director General to meet livestock farmers and talk to them about

the health gains achieved in the past few years through systematic vaccination against foot and mouth disease (FMD). Dr Éloit was able to observe first hand the strong involvement of the Bolivian Veterinary Services and farmers in the annual FMD vaccination campaign.

Bolivia is recognised as FMD-free without vaccination in one zone in the Macro region of the Altiplano, and FMD-free with vaccination in a zone consisting of four merged zones

covering the regions of Amazonas, Chaco, Chiquitania, Valles and part of Altiplano¹.

Dr Éloit thanked everyone for their warm welcome and praised the farmers for their efforts, despite the daily hardships they face, because they are helping to improve their families' livelihoods. She also thanked the Veterinary Services for organising the informal visit.

1. See Resolution 16 of 24 May 2016

The Director General makes an official visit to Brazil



Left to right: Mr Blairo Maggi, Minister of Agriculture, Livestock and Supply; Dr Guilherme Henrique Figueiredo Marques, OIE Delegate for Brazil and Chief Veterinary Officer; H.E. Mr Michel Temer, President of the Federative Republic of Brazil; and Dr Monique Éloit, OIE Director General

Dr Monique Éloit, Director General of the OIE, made an official visit to Brazil on 21 and 22 November 2016, at the invitation of Brazil's Minister of Agriculture, Livestock and Supply.

The Director General officially met with the President of the Federative Republic of Brazil, with whom she discussed Brazil's status in regard to various diseases, including foot and mouth disease (FMD), and the leading role that Brazil can play in helping to eradicate FMD from Latin America. Since Brazil is a major exporter of live animals and products of animal origin, the Director General and the President also discussed expected changes to border veterinary inspections and the likely impact of the new WTO Trade Facilitation Agreement.

Dr Éloit warmly thanked the President of the Republic and the Minister of Agriculture for Brazil's support for the OIE's work through a significant voluntary subsidy and the secondment of Brazilian veterinarians to work at OIE Headquarters in Paris and at the Regional Representation in Buenos Aires.

In light of Brazil's current FMD status, Dr Éloit invited the President of the Republic to attend the opening ceremony of the 86th General Session of the World Assembly of Delegates in May 2018, at which Brazil could be recognised for its nationwide FMD-free status, with or without vaccination.

During her visit, the OIE Director General signed an agreement with Brazil's Minister of Agriculture, Livestock and Supply, under which Brazil will continue its significant financial support for the OIE, particularly for activities to promote the eradication of FMD in the Americas and for research to improve the diagnosis of glanders. In addition to its support for the work of the OIE Regional Representation for the Americas, Brazil also intends to encourage those countries in the region that are not yet OIE Members to join the Organisation.

In Brasília, Dr Éloit also had an opportunity to meet staff from Brazil's Veterinary Services, as department heads presented the work of their departments. The state heads of the Federal Veterinary Services of Brazil also took part in the meeting via teleconference. Dr Éloit expressed her interest in the team set up to evaluate veterinary programmes, which has developed a tool based on the OIE's PVS Tool. She was delighted with the initiative, which, as she pointed out, confirms the success of the PVS Pathway.

On the second day of her visit, Dr Éloit met the leaders of livestock industry bodies, both national bodies and Rio Grande do Sul State bodies, at the opening ceremony of the Fifth AVISULAT Conference, a poultry, pig and dairy farming trade fair. Dr Éloit was invited to give a lecture on global animal health issues and public-private partnerships. Lastly, the chairperson of the livestock aid fund for Rio Grande do Sul State (FUNDESA) expressed his interest in contributing to the OIE's World Fund to support projects that would benefit other countries. Consequently, the OIE will be delighted to host a colleague from the Brazilian Veterinary Services, who will be in charge of monitoring this programme.

2017

May

GALVMed/OIE stakeholder workshop on harmonization of the registration of veterinary medicinal products
9–11 May
Johannesburg, South Africa

Information seminar for recently appointed OIE Delegates
20 May
Paris, France

85th General Session of the OIE World Assembly of Delegates
21–26 May
Paris, France

June

GF-TADs Seminar on peste des petits ruminants (Roadmap)
(dates to be confirmed)
Cairo, Egypt

18th International Symposium of the World Association of Veterinary Laboratory Diagnosticians (WAVLD)
7–10 June
Sorrento, Italy
www.wavld2017.org

Regional (Europe) Seminar for OIE National Focal Points for Veterinary Laboratories
19–23 June
Ljubljana, Slovenia

Workshop on veterinary legislation and biological threat reduction (for OIRSA countries)
20–22 June
Panama

Regional (Asia–Pacific) Seminar on the recognition of health status and national disease control programmes
20–22 June
Tokyo, Japan

July

AU–IBAR/OIE/FAO (VETGOV) Regional Seminar on the harmonisation of veterinary legislation at community level (for COMESA countries)
3–7 July
Lusaka, Zambia

Regional (Asia–Pacific) Seminar for OIE National Focal Points on Wildlife
4–6 July
Indonesia

OIE workshop on the drafting of applications for OIE endorsement of official control programmes (English-speaking participants from Africa, except SADC countries)
18–20 July
Kigali, Rwanda

American Veterinary Medical Association (AVMA) Annual Convention
21–25 July
Indianapolis, USA
www.avma.org/Events/Convention/Pages/default.aspx

August

Regional (Asia–Pacific) workshop on rabies, in collaboration with OIE Reference Centres in China
14–18 August
People's Rep. of China

Regional (Americas) workshop on the implementation of OIE standards
22–24 August
Buenos Aires, Argentina

SEACFMD National Coordinators Meeting
23–25 August
Bangkok, Thailand

33rd World Veterinary Congress 2017
27–31 August
Incheon, Republic of Korea
www.wvc2017korea.com

Workshop on the OIE World Animal Health Information System (WAHIS)
28–31 August
Paris, France

10th Symposium on Diseases in Asian Aquaculture (DAA 10)
28 August – 1 September
Bali, Indonesia
<http://daa10.org>

Regional (Asia–Pacific) workshop for veterinary education establishments (VEEs) and veterinary statutory bodies (VSBs)
30–31 August
Incheon, Rep. of Korea

September

10th meeting of the Regional Steering Committee of the GF-TADs for Africa
(dates to be confirmed)
(venue to be confirmed)

One Health: Combating emerging zoonotic diseases
5–6 September
Hong Kong, SAR of the People's Rep. of China

Training session: facilitation of the movement of high performance horses for international competition
12–15 September
Turkmenistan

7th Tripartite Regional Workshop on One Health
19–21 September
(venue to be confirmed)

42nd World Small Animal Veterinary Association (WSAVA) Congress
25–28 September
Copenhagen, Denmark
www.wsava2017.com

7th meeting of the Regional Steering Committee of the GF-TADs for Europe
25–29 September
Brussels, Belgium

SEACFMD LabNet-EpiNet Meeting
27–29 September
Bangkok, Thailand

October

14th Conference of the OIE Regional Commission for the Middle East
2–6 October
Istanbul, Turkey

2nd meeting of the stray dog Roadmap for West Eurasia
(dates to be confirmed)
Uzbekistan

Regional (Asia–Pacific) Workshop on antimicrobial resistance
(dates to be confirmed)
(venue to be confirmed)



Regional (Europe) Seminar for OIE National Focal Points for Communication
(dates to be confirmed)
Latvia

Regional (Middle East) Seminar for OIE National Focal Points for Veterinary Products
10–12 October
Amman, Jordan

Global Conference on Biothreat Reduction
31 October – 2 November
Ottawa, Canada

November

GF-TADs Global Steering Committee Meeting
(dates to be confirmed)
Rome, Italy

30th Conference of the OIE Regional Commission for Asia, the Far East and Oceania
(dates to be confirmed)
Kuching, Malaysia

9th meeting of the OIE Platform on Animal Welfare for Europe
(dates to be confirmed)
Turkey

Seminar of the American Committee Veterinary Medicinal Products (CAMEVET) on Harmonization of Registration and Control of Veterinary Medicines in the Americas
(dates to be confirmed)
Paraguay

OIE Sub-Regional (SADC) Seminar on Veterinary Statutory Bodies
14–16 November
Victoria, Seychelles

December

Regional (Africa) Seminar for OIE National Focal Points for Veterinary Products (in English)
5–7 December
Mbabane/Manzini, Swaziland

OIE World Conference on Antimicrobial Resistance
(dates to be confirmed)
South Africa

2018

January

Regional (Africa) Seminar for OIE National Focal Points for Veterinary Products (in French)
(dates to be confirmed)
(venue to be confirmed)

Regional (Africa) Seminar on the implementation of OIE standards (in English)
23–25 January
(venue to be confirmed)

May

86th General Session of the OIE World Assembly of Delegates
20–25 May
Paris, France

miscellaneo

The first OIE global list of veterinary education establishments

A quick look at the global situation

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Keywords

Veterinary education – Veterinary Education Establishment (VEE).

The OIE Global List of Veterinary Education Establishments (VEEs) 2015 was established on the basis of the reports of 157 Member Countries and incorporates information on 553 VEEs throughout the world. The list has been made publicly available on the OIE website¹. Principal findings were presented, region by region, at the 4th OIE Global Conference in June 2016². This paper presents a global overview and brief discussion of the major findings.





Background

The 3rd OIE Global Conference on Veterinary Education, in December 2013, identified the fact that reliable knowledge of the number of, and basic information on, existing Veterinary Education Establishments (VEEs) is critical for achieving the established educational goals promoted by the OIE.

In response to the recommendation adopted at that Conference, the OIE decided to establish a global list of VEEs and requested all Member Countries to provide information by replying to a questionnaire.

Summary

A questionnaire was subsequently developed, composed of 16 questions, some of which requested free description and others tick-box responses. Some of the tick-box questions allowed multiple answers (Fig. 1).

The overall response rate by 180 Member Countries was 87%, which is reasonable in comparison to the various other surveys the OIE conducts in Member Countries. For example, the response rate for the WAHIS six-monthly report on terrestrial animal diseases for the first semester of 2015, as of 22 March 2016, was 82%³. This suggests progress among Member Countries in appreciating the importance of veterinary education as an element of national Veterinary Services. However, a close look at the reports revealed that several Member Countries reported only on some of the VEEs in their country, not on all. At this stage, it is not possible to determine whether this simply reflects a lack of close communication between veterinary authorities and VEEs or indicates recognition of only certain VEEs by the veterinary authorities.

1. Number of VEEs, distribution and growth

A total of 157 Member Countries responded: 553 VEEs were reported by 114 Member Countries, while 43 Member Countries reported no VEEs within their borders (Table I). A higher concentration is observed in most, but not all, Member Countries in the Americas, Western Europe and Asia (Fig. 2).

Since the initial creation of VEEs in the 18th century, Europe has had a proud tradition of veterinary education. The first VEE outside Europe was reportedly founded in 1836 in Egypt. In the latter half of the 19th century, the presence of VEEs expanded to some countries in the Americas, Oceania and Asia. In 1900, however, 28 out of the global total of 52 VEEs were still in Europe. The global expansion of VEEs became noticeable in the 1930s, and the steady rate of creation that continues into the present century has led to a global number of 553 in 2015 (Fig. 3). Some noteworthy points include the growth of VEEs in Africa since the 1960s, and that 44% of VEEs newly created in the present century are in the Americas.

2. Characteristics/profiles of VEEs

For reported VEEs, the number of years of veterinary education ranges from four to seven years. A majority of VEEs (321) require five years, followed by six years (156), accounting for 86% of the reported VEEs (Table II). Among the 73 VEEs that require only four years, a majority require pre-veterinary science education as an admission qualification, notably all VEEs in the USA and Canada. There are 28 VEEs with four-year curricula that accept students with only 'high school university entrance qualification', and these are mostly in Asia. Three VEEs, one each in Guatemala, Azerbaijan and Slovenia, were reported to require seven years of professional veterinary education.

The question about the class size (average annual graduates) provided five response options. About

1 www.oie.int/en/support-to-oie-members/veterinary-education/oie-global-list-of-vees/

2 www.oie.int/eng/vet-education-conf2016/introduction.html

3 *Current animal health situation worldwide: analysis of events and trends* (document 84SG/2, OIE, 2016)





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- a. Name of VEE
- b. Hosting academic institution (where relevant)
- c. Address of VEE
- d. Country of VEE
- e. Website (URL)
- f. Institution type: public / private / both
- g. Year of creation
- h. Veterinary degree(s) granted:
 - Specific Veterinary Diploma / Bachelor / Master / Doctor / PhD / Other
- i. Number of years of veterinary education required for Veterinary Statutory Body (VSB) (or equivalent) registration
- j. Average number of veterinary students per class within the establishment
- k. Average number of veterinary graduates per year from the establishment
- l. Minimum education required for admission to the establishment
 - High school university entrance qualification
 - Pre-veterinary science diploma
 - Pre-veterinary science degree
 - Other specific VEE entrance qualifications
- m. Is there a selection procedure at National level, State level or Establishment level?
- n. National accreditation/certification/approval: Yes or No
- o. Regional accreditation/certification/approval: Yes or No
- p. International accreditation/certification/approval: Yes or No

Fig. 1

List of questions

Table I

Number of veterinary education establishments (VEEs) reported by Member Countries

OIE Region	OIE Members	Number of Members reported as having VEE	Number of Members reported as having no VEE	Total number of VEEs in the region
Africa	54	25	20	51
Americas	29	21	5	180
Asia-Pacific	32	21	9	162
Europe	53	41	7	145
Middle East	12	6	2	15
Total	180	114	43	553





43% VEEs are in the category of ‘up to 50 graduates per year’, which is the most common size for all regions except Europe, followed by the categories of ‘51–100’ and ‘101–150’ (Table III). The 43 VEEs with more than 150 annual graduates are found in Europe (21), mainly in northern and Eastern Europe, as well as in Asia, most notably China (13).

Close to 90% (487/553) of the VEEs are reported as being public institutions. Private institutions (63) are more prevalent in the Americas (42/180, 23%), especially in Chile (7/8, 88%), Nicaragua (5/7, 71%), Colombia (12/20, 60%) and the USA (9/31, 29%), compared to the global ratio of 11% for private institutions. Outside the Americas, Japan has a relatively high proportion of private VEEs (5/16, 31%). In the Middle East, all reported VEEs are public and in Africa there is only one private VEE, in Cameroon. Three VEEs, one in Cuba and two in Nepal, were ticked for institution type as ‘both’.

Class size was analysed against the type of institution for four regions where private institutions were reported (Table IV). Defining VEEs having more than 100 average annual graduates as ‘large’, the category of public institutions shows a much higher percentage of large VEEs than the category of private institutions in the Americas. In Europe and Africa, no private VEE has more than 100 annual graduates. The situation is reversed in Asia and the Pacific, but it is notable that all four large private institutions are in Japan.

A third of VEEs (190) have an establishment-level selection procedure, either alone or in combination with national- and/or state-level selection, most notably in North America (all but one VEE in the USA and Canada), the Far East (all VEEs in Japan, Republic of Korea and Mongolia) and Oceania (all in the sub-region, except one VEE in Australia) (Table V). The majority of VEEs



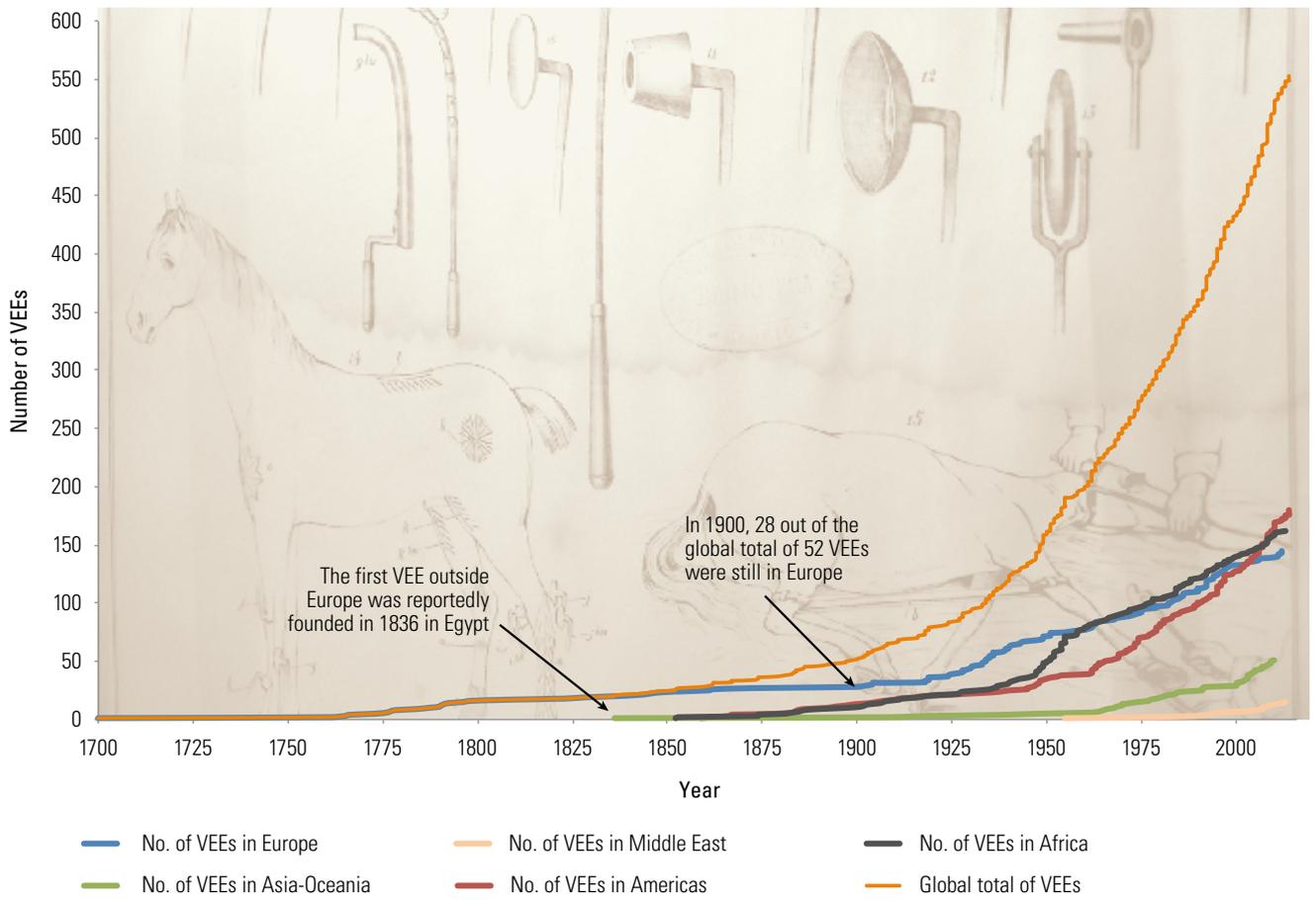
* No Member Country reported having more than 20 but fewer than 31 VEEs

Fig. 2
Global distribution of veterinary education establishments (VEEs)





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The growth of VEEs in the five OIE regions and globally

Fig. 3
Growth of veterinary education establishments (VEEs), by region

Table II
Duration of veterinary education

OIE Region	Number of VEEs	Number of VEEs with...			
		4-year education	5-year education	6-year education	7-year education
Africa	51	4	15	32	0
Americas	180	36	126	17	1
Asia-Pacific	162	30	69	63	0
Europe	145	3	97	43	2
Middle East	15	0	14	1	0
Total	553	73	321	156	3





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miscellaneous

(306) select new students by utilising a selection mechanism at either national or state level, or both, without a VEE-level selection process. For 10% of VEEs (57), including all 38 reported VEEs in Russia and 8 VEEs in Argentina, there was no tick of any of three choices of selection procedure, i.e. national level, state level or establishment level, the meaning of which is unknown.

3. Quality assurance mechanism

Nearly 80% of VEEs (429/553) are reported to be accredited, certified or approved by at least one recognition body at the national, regional or international level. The remaining 124 VEEs replied 'No' to all questions related to accreditation/

certification/approval, and are spread over 36 Member Countries in all regions, but with a higher percentage in the Middle East and Far East, where regional accreditation mechanisms have yet to be developed (Table VI). Judging from the names of the accreditation bodies indicated in the replies, however, it seems that these questions invited different interpretations of the meaning of both 'accreditation/certification/approval' and 'national/regional/international'.

Conclusion

It is a significant achievement to establish the first global list of VEEs with a consistent set of information about their education systems. While, in some respects,

Table III

VEEs stratified by the number of graduates per year

OIE Region	Number of graduates per year				
	0-50	51-100	101-150	151-200	> 200
Africa	34	11	4	0	2
Americas	82	66	26	3	3
Asia-Pacific	71	55	23	6	7
Europe	38	53	33	11	10
Middle East	12	2	0	1	0
Total	237	187	86	21	22

Table IV

Public and private VEEs stratified by the number of graduates per year

OIE Region	Type	Number of graduates per year					% with >100
		0-50	51-100	101-150	151-200	>200	
Africa	Public	33	11	4	0	2	12.0
	Private	1	0	0	0	0	0.0
Americas	Public	53	55	23	3	3	21.2
	Private	28	11	3	0	0	7.1
Asia-Pacific	Public	62	51	20	5	7	22.1
	Private	7	4	3	1	0	26.7
Europe	Public	36	50	33	11	10	38.6
	Private	2	3	0	0	0	0.0





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Table V
Student selection procedure

OIE Region	Total number of VEEs reported in the region	VEEs with establishment-level selection procedure	VEEs with national- and/or state-level selection procedure only	VEEs without any selection procedure indicated
Africa	51	16	33	2
Americas	180	73	96	11
Asia–Pacific	162	64	95	3
Europe	145	34	70	41
Middle East	15	3	12	0
Total	553	190	306	57

the analysis was not valid because some questions had apparently invited differing interpretations, the survey and database nevertheless provide a global overview of the growth, distribution and basic characteristics of VEEs. With the reports hopefully to come from the remaining 23 Member Countries and additional provision of information about yet-to-be-reported VEEs, it is hoped that, in the near future, this OIE global list will be used as the recognised source of such information.

The author expresses her appreciation to Dr Ron DeHaven, Chairman of the OIE *Ad hoc* Group on Veterinary Education, for his kind advice in developing this paper. She also thanks Dr Takeshi Haga, Dr Ana Bravo, Dr Francisco Trigo, Dr Aaron Mweene and Dr Ehab Abu-Basha for providing regional views. Finally, it should be noted that two interns at the OIE, Dr Gowoon Jung and Dr Harry Kwok, greatly contributed to the work through data compilation.

Table VI
Granting of recognition

OIE Region	Total number of VEEs reported in the region	VEEs without any type of recognition
Africa	51	13
Americas	180	31
Asia–Pacific	162	50
Europe	145	16
Middle East	15	14
Total	553	124

<http://dx.doi.org/10.20506/bull.2017.1.2603>



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In addition to changes in public attitudes towards animal health and welfare, there has been a shift in the way the world uses and views economics. The neo-classical basis of economic assessment is under scrutiny and alternative views of how to assess people's behaviour have been proposed. These are applicable to an animal health context and need to be explored if economics is to add value to animal disease management and to overall leadership on animal health and welfare policies and standards.

This issue of the *Scientific and Technical Review* allows the presentation of what is currently considered best practice in the use of economics in animal health, and it looks at where economics could be incorporated into animal health investments and programmes to ensure that the allocation of resources is both proportionate and timely.

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