



# One Health legislation: Contributing to pandemic prevention through law

*"AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE"*

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## INTRODUCTION

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The COVID-19 pandemic and other emerging infectious diseases, as well as the continuing threat of antimicrobial resistance (AMR), are reminding us of the close connections between human, animal and environmental health and the urgent need to address them in a holistic manner. Among newly discovered or emerging infectious diseases (EIDs), 75 percent are zoonotic (i.e. transmitted from animals to humans) (Taylor, Latham and Woolhouse, 2001). The unregulated expansion of livestock farming encroaches upon pristine habitats, pushing domestic animals, humans and wildlife into closer and more frequent contact, creating the same tinderbox for disease in animals as they do in humans (FAO, 2011a). Deforestation and other land use changes have an important part in the emergence of disease (Wilcox and Ellis, 2006).

To address these increasing and inter-linked health challenges, while ensuring the biological integrity of the planet, it will be important to strengthen inter-disciplinary and cross-sectoral approaches that address not only disease prevention but also biodiversity conservation, climate change, and sustainable development overall (Wildlife Conservation Society, 2019). The Sustainable Development Goals (SDGs), in particular SDG 3 ("Ensure healthy lives and promote well-being for all at all ages") and SDG 15 ("Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss") provide a unique opportunity to break the silos and to work in a coordinated manner on human, animal and environmental health.

"One Health' is an approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes" (WHO, 2017). FAO is committed to promoting One Health in the food and agriculture sectors and to the protection of the human rights to health and to a healthy environment. This involves coordination across various sectors, ranging from plant and animal health, food safety, nutrition and biodiversity, to climate change, forestry and environmental protection. It also requires embedding the principles of gender equality, economic and social responsibility into FAO normative and operational capacity development activities. To this end, FAO closely collaborates with the World Health Organization (WHO), the World Organisation for







**Mainstreaming biodiversity considerations into legislation on food and agriculture plays an important role in addressing human and environmental health.** For example, legislation can incentivize agroecology and organic agriculture production systems. Plant health legislation addresses the control, surveillance of invasive alien species in wild areas, and the prevention of their propagation. By improving biodiversity protection, legislation would contribute to more resilient ecosystems and reduce the likelihood of wildlife-related pandemics.

## FORESTRY, WILDLIFE AND FISHERIES LEGISLATION

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Emerging infections<sup>2</sup>, are infections that are rapidly increasing in incidence or geographic range, including such previously unrecognized diseases as HIV/AIDS, severe acute respiratory syndrome (SARS), Ebola hemorrhagic fever, and Nipah virus encephalitis.

“Forests and trees supply an abundance of ecosystem services that help in creating healthy living environments and in restoring degraded ecosystems. In addition to tangible products, forests for example mitigate floods, droughts and the effects of noise, purify water, bind toxic substances, maintain water quality and soil fertility, help in erosion control, protect drinking water resources, and can assist with processing wastewater” (Karjalainen, Sarjala and Raitio, 2010). Thus, forests are a major component in the complex web of interactions between human, animal and environmental health. They play a significant role in food security and livelihoods.

**Ensuring health through forests requires the conservation of their ecosystems and halting the degradation of their biodiversity.** “An increasing number of studies on emerging infectious diseases point to changes in land cover and land use - including forest cover change (particularly deforestation and forest fragmentation) – along with urbanization and agricultural intensification, as major contributors to the emergence of infectious diseases” (Wilcox and Ellis, 2006). Up to 60 percent of infectious diseases that have emerged in humans, including HIV, Ebola virus disease, Zika virus disease and Nipah virus infection, originated in forest-dwelling animals, and were transmitted by a range of animals, the vast majority of them wildlife. Almost one third of emerging disease outbreaks are linked to land-use change, including deforestation (Loh *et al.*, 2015), which created the conditions for diseases to jump from animals to humans (Morrison, 2016). In many respects, deforestation surpasses other global environmental issues in terms of its immediate global effects in both tropical and temperate regions (Sehgal, 2010).

**Legislation pertaining to the conservation and management of forests and their resources which establish effective enforcement mechanisms, is key for the preservation of forests and trees.**

Understanding the main causes of unregulated deforestation and forest degradation is central to designing forest and environmental legislation to address them. Commercial agriculture (for the production of food, feedstock, fibre and biofuel), local or subsistence agriculture, infrastructure expansion, mining and urban expansion, are all direct drivers of deforestation. These are in turn driven by several underlying factors, such as national interests, economic development, population growth and lack of capacity and resources to enforce legislation and manage forest resources in a sustainable manner (FAO, 2020). A cross-sectoral multidisciplinary approach should be followed when developing and/or assessing policies and legislation that impact forests, be it directly or indirectly, which would contribute to improve coherence and harmonization. They should support the sustainable exploitation of these resources and address

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<sup>2</sup> As defined in Relman, David, Hamburg, Margaret A., et al.; 2009

their impact on forests and the global environment as a whole, notably global warming. Restoration of ecosystems damaged by these activities is likewise crucial.

The **role of wildlife and fisheries legislation in the One Health approach is clear**. Overlooking or under-regulating certain aspects of the wildlife or fisheries value chains, whether for consumptive or non-consumptive purposes, may result in health risks for humans and animals. On the other hand, excessively stringent regulations, indiscriminate prohibitions and the suspension of rights during emergencies are likely to negatively impact on the food security of IPLCs, who will be even more dependent on these resources for their subsistence during emergencies.

Wildlife and fisheries legislation should reflect and give effect to a wide range of relevant cross-sectoral policies. This includes environmental sustainability (including biodiversity and ecosystem preservation), socio-economic development, gender equity, and animal health and food safety. In addition to these, legislation should consider customary use and traditional knowledge, vulnerable and indigenous peoples' rights, and human-wildlife conflicts (FAO, 2010). Traditionally, wildlife and capture fisheries legislation regulate the hunting and fishing sectors through the establishment of licensing systems, the determination of hunting/fishing species, total allowable catch, quotas, seasons and methods. In recent years, legislation in these areas has witnessed innovative and dynamic trends by addressing the non-consumptive uses and conservation of these resources, thereby promoting a more diversified range of options to achieve the sustainable management of wildlife. A participatory and inclusive approach towards wildlife and fisheries management should be promoted in contemporary tenure and management frameworks, supported through relevant legislation (FAO, 2012b). Effectively addressing human-wildlife conflicts, including zoonotic diseases and illegal wildlife trade, would alleviate the position of some of the less advantaged people in rural communities who live close to wildlife and rely on it for subsistence and cultural identity. However, this ubiquitous phenomenon is poorly addressed in both international and domestic laws and this grave omission has led to disastrous effects on humanity, as COVID-19 has shown.

### AMR LEGISLATION

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Antimicrobial resistance (AMR) has been described as the “quintessential One Health issue” (Robinson et al., 2016) as it has **clear links to human, animal and environment health**. AMR refers to microorganisms – bacteria, fungi, viruses, and parasites – that have acquired resistance to antimicrobial (AM) substances (FAO, 2016). While the phenomenon of AMR occurs naturally through microbial adaptation to the surrounding environment, it has been exacerbated by inappropriate use of AMs, especially in the human health and agriculture sectors. AMR is receiving renewed attention, as the current COVID-19 crisis reminds the world how destructive public health emergencies can be. **Though AMR's effects are unlikely to be as acute as COVID-19's, over the long term it is predicted to cause far more deaths**. A slow-moving pandemic, it causes about 700,000 deaths yearly, including over 200,000 people who die from tuberculosis that is resistant to at least one drug. It has been projected that multi-resistant bacterial infections will be the main cause of death by 2050, surpassing 10 million fatalities annually around the globe. Secondary bacterial infections have been noted as one of the causes of death for COVID-19 patients (Zhou *et al.*, 2020).

Legislation is essential in addressing the abuse, overuse, misuse and release into the environment of AMs and resistant bacteria to minimize the development and spread of AMR.

Regulatory mechanisms to control and reduce AMR are found in a variety of different legal instruments at the national level. As is the case for other aspects of the One Health approach, legislation relevant for AMR is not typically developed to directly address AMR and might not include specific references to AMR. Nonetheless, legislative frameworks for human and animal health, veterinary medicinal products, pesticides management, environmental protection, food safety, water or waste management normally include the regulatory powers and mechanisms (prohibitions, licenses, permits) necessary to effectively address AMR.

### CONCLUSION

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It is increasingly recognized that human, plant and animal health, environmental health and food security are inter-linked and that the degradation of ecological systems has significantly increased the overall risk of zoonotic disease outbreaks, in addition to having other complex effects on human health. The devastating human, social and economic effects of COVID-19 should force the global community to ensure prevention of another similar event.

The One Health approach provides a platform to work on the interface between human, animal and plant health and their shared environment. Working on the synergies among these areas is key to preventing the outbreak, or mitigating the impact of new diseases, and improving the immunological response of all organisms to existing and new biological threats. Under a One health approach, economic development and agriculture production pay attention to the impact of anthropogenic activities on the environment, animal health and welfare. Attention is also paid to wild animals and fauna, the protection of forests and biodiversity and mitigation of climate change. A well preserved environment, together with healthy animals, plants and ecosystems are more resilient and better prepared to react against new pathogens or mitigate their impact.

Recognising the fundamental importance of a stable and co-managed natural environment for human, animal and environmental health highlights the need to adopt a One Health approach, not only to ensure a rapid response to mitigate the immediate effects and impact of the COVID-19 pandemic, but to reduce the possibility of future prevalence and outbreaks.

**Legislation can pave the way to a solid and sustainable implementation of the One Health approach**, providing the regulatory basis to strengthen animal and plant health in agriculture and wildlife, as well as to ensure food safety. It also contributes to safeguarding and restoring ecosystems by introducing mechanisms to prevent and control environmental contamination, the degradation of forests, and climate change. It provides regulatory tools to preserve biodiversity in all areas of food and agriculture, including wildlife and fisheries. The implementation of a One Health approach would benefit from regulatory instruments that clarify the roles and responsibilities of the various actors involved in One Health, including procedures for participatory and coordinated decision-making and accountability. In doing so, legislation can address and re-establish the rights of local communities, and more broadly the realization of the right to health and a healthy environment of the population.

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