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## White Paper on One Health

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White Paper 22

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# one health

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## Presentation of the White Paper and summary of the main findings

The purpose of this White Paper is to examine the One Health concept (also called “approach” or “dimension”) from an international law and global governance perspective and to contribute to discussions on the integration of this term into the international legal system. It is largely based on interviews with twelve experts in the various domains related to One Health.

While the One Health concept arose in the international discourse around fifteen years ago, most of the international community, including those working in the field of health law, had not heard of the term or had at least not paid much attention to it until recently. The COVID-19 pandemic singlehandedly changed all that, with the concept of One Health now receiving privileged attention within the draft pandemic treaty and International Health Regulations (IHR) reform discussions at the World Health Organization (WHO).

It is against this background that this White Paper seeks to contribute to our understanding of One Health. It first seeks to lay the normative and institutional evolution of One Health. It

then seeks to contribute to current discussions in international fora as to how it could or should potentially be advanced and included in the international law and governance system.

What is One Health? While definitions vary and are under discussion, at its essence, the concept of ‘One Health’ captures the basic idea that human health, animal health and the state of the environment are closely related, and that human health relies on a virtuous relationship between humankind and nature. One Health thus aims to overcome silo-thinking linked to anthropocentrism<sup>1</sup> – where human health is considered in isolation from the environment – and calls for intersectoral collaboration.

Historically, the separation between human health, animal health and the environment has taken on many forms. There has been a disciplinary separation between human medicine, veterinary medicine, and environmental sciences. At the international institutional level, this separation is reflected in the establishment of separate governing international organizations for each field that reflect similar structures at the national level: the WHO, the Food and Agriculture Organization (FAO), the World Orga-

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**Note 1** Interview with Wanda Markotter.

nization for Animal Health (WOAH, founded as OIE) and the United Nations Environmental Program (UNEP). At the normative level, this separation led to legal fragmentation between human health instruments, instruments related to animal health, and instruments designed to protect the environment.

Collaboration on One Health has been going on between WHO, FAO and WOAH/OIE for almost 15 years, but in a rather discreet and at times competitive way. In 2020, the COVID-19 pandemic brought One Health out of the shadows. Various studies on the origins of the COVID-19 pandemic highlighted the role of human interactions with wildlife in the transmission and spreading of the virus to the human population, through what is called a “zoonotic spill over” (exploration of caves sheltering bats, trade of pangolins on traditional markets, intensive farming with poor hygienic conditions, laboratory leak of a wildlife pathogen...). Whether valid or not, these assumptions have brought the One Health concept to the forefront of international discussions on how to improve pandemic prevention, preparedness and response. The international community realized that effective pandemic prevention depends on preventing or at least reducing the risk of zoonotic spillovers, and that the human, animal and environment interface must be better managed to that end. Thus, many WHO Member States expressed their view

that the future treaty on pandemic prevention, preparedness, and response – whose negotiation was launched in December 2021 in view of its adoption in 2024<sup>2</sup> – should reflect the One Health concept and include provisions on the risks of zoonotic spill overs, the integrated surveillance of diseases and drivers, and the sharing of data relevant for One Health<sup>3</sup>. Indeed, the preliminary working draft circulated in July 2022 integrates a One Health approach<sup>4</sup>. Additionally, the 75<sup>th</sup> World Health Assembly decided in May 2022 to open the IHR to “targeted amendments” to be adopted in May 2024<sup>5</sup>. Some Member States are calling for the inclusion of a One Health approach also in the IHR, including through a better involvement of FAO, WOAH/OIE and UNEP.

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**Note 2** [WHA decision SSA2\(5\)](#). In July 2022, the Intergovernmental Negotiated Body (INB) agreed that this instrument would be a treaty adopted under Article 19 of the WHO Constitution ([Report of the second meeting of the Intergovernmental Negotiating Body, A/INB/2/5](#), 21 July 2022, para. 4).

**Note 3** [Sixth meeting of OHHLEP, 6 May 2022, Note for the Record, p. 4.](#)

**Note 4** [WHO, Working draft, presented on the basis of progress achieved, for the consideration of the Intergovernmental Negotiating Body at its second meeting, A/INB/2/3](#), 13 July 2022.

**Note 5** [WHA decision WHA75\(9\)](#), 27 May 2022.

Since the One Health approach has been acknowledged as a viable approach to pandemic prevention and response by the international community only recently, the consensus necessary for deciding whether there is an international law solution and what new norms could look like needs much background work<sup>6</sup>. Participatory decision-making processes should be developed so that different stakeholders, at the national and international levels, can voice their concerns and proposals in the development and implementation of the One Health approach<sup>7</sup>. This White Paper is designed as a contribution to the background work accompanying the current international discussions to amend the IHR, to adopt a new pandemic treaty reflecting the One Health approach as well as to develop and strengthen ongoing joint work among international institutions.

One Health is a broad term, which could encompass many types of interfaces between human, animal, and environmental health. Indeed, that is one of the criticisms targeted against this concept. One of the interviewees felt that it is so broadly formulated that

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**Note 6** Confidential interview.

**Note 7** Id.

it is difficult to draw boundaries, covering too many areas at once<sup>8</sup>. Another expert considers that the proliferation of similar concepts – such as ‘Planetary Health’ and the health components of the ‘Sustainable Development Goals’ – leads to an increased confusion and potential contradictions. In her opinion, what is ultimately needed, whatever the terminology, is to address the source of the problem of communicable disease pandemics, and not only focus on individualized medicine<sup>9</sup>.

Be that as it may, in practice, in the context of One Health debates, most of the focus has been on zoonotic diseases and antimicrobial resistance (AMR) spreading amongst animal and human pathogens. Thus, these aspects are addressed extensively in this White Paper, as well as closely related topics such as nutrition, trade in animals, and environmental protection. The findings of the White Paper are directly based on the interviews with twelve experts in various domains related to One Health (public health, veterinary medicine, biology, virology, epidemiology, nutrition, anthropology, law).

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**Note 8** Id.

**Note 9** Interview with Maria Neira.



**Part I** of the White Paper lays out three main and most urgent One Health related challenges: (1) The risk of zoonotic spill overs, which occur when there is a transmission of pathogens from animals to humans. Spillovers are caused by many complex and sometimes poorly understood factors, some of which are addressed in this White Paper; (2) Antimicrobial resistance (AMR), which occurs when pathogens no longer respond to antimicrobial medicines, and is mostly caused by the overuse or misuse of antibiotics, antivirals and pesticides on humans, animals and plants; and (3) Laboratory accidents, which can spread dangerous pathogens for which the human population has no immunity.

**Part II** gives an overview of current international norms and institutional arrangements that have relevance for the One Health approach. From a normative point of view, since One Health gained traction only recently, its incorporation as a discrete regulatory approach into international law is very limited. Current instruments mirror the traditional divide between humans, animals, and the environment. That said, the White Paper points out diverse instruments on epidemic and pandemic prevention, animal welfare, human rights and environmental protection which touch on aspects of One Health and offer potentialities for mutual support between environmental protection and conservation, animal health and welfare and

protection of human health. On laboratory safety, there is to date, no mandatory international supervision of biosafety and biosecurity standards. As suggested by an interviewee, binding legal commitments might be desirable in this respect.

From an institutional perspective, the White Paper highlights how the WHO, WOAHO/OIE and FAO have been collaborating on One Health for more than a decade. This cooperation has taken a new turn after the COVID-19 pandemic emerged. It expanded to UNEP and is underpinned by a Quadripartite Memorandum of Understanding<sup>10</sup>. The four organizations have recently created the One Health High Level Expert Panel (OHHLEP). The OHHLEP is composed of scientists charged with developing knowledge and providing guidance and advice on One Health-related matters that will support cooperation among governments and collaboration among the four organizations. Despite these important developments, institutional cooperation still faces obstacles and resistance and is not always properly funded. In fact, there are difficulties to implement a genuine One Health approach at the global institutional level.

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**Note 10** Memorandum of Understanding between the FAO and the WOAHO and the WHO and the UNEP regarding Cooperation to Combat Health Risks at the Animal-Human-Ecosystems Interface in the Context of the "One Health" Approach and Including Antimicrobial Resistance.

As negotiations are underway at the WHO on a new pandemic treaty and amendments to the IHR, [Part III](#) presents options for reinforcing the One Health approach through international law. Some of them directly relate to international law and global governance; some others are more related to scientific cooperation or methodology, both of which can be supported by international instruments. These suggestions can be divided into four categories: (1) The adoption of a “deep prevention approach” to zoonotic spillovers through international law; (2) Better regulation and stronger implementation in the field of antimicrobial resistance; (3) The need to keep in mind that human health is also an aspect of development; (4) The need to overcome silo-thinking at all levels, which relies on a change of mindset.

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# 1.

the challenges  
posed by tomorrow's  
world

This part addresses three main health-related challenges: (1) The risk of zoonotic spill overs, which occur when there is a transmission of pathogens from animals to humans, are caused by countless factors, some of which are addressed in this White Paper, and can provoke an epidemic or a pandemic; (2) Antimicrobial resistance, which occurs when pathogens no longer respond to medicines, and is caused by the overuse or misuse of antibiotics and pesticides on humans, animals and plants; (3) Laboratory accidents, which can spread dangerous pathogens taken from nature, for which the human population has no immunity.

## Scenario 1: The risk of zoonotic spill overs

As highlighted in the World Conservation Congress of 2004<sup>11</sup> and by UNEP in 2016<sup>12</sup>, zoonotic events underscore how pathogens, and the diseases they cause, do not necessarily abide

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**Note 11** IUCN World Congress, resolution 3.011.

**Note 12** UNEP Frontiers 2016 Report, Emerging Issues of Environmental Concern.

by interspecies barriers<sup>13</sup>. Most epidemic or pandemic outbreaks caused by new and re-emerging human diseases stem from zoonoses. Cases in point are past and current diseases caused by zoonotic viruses, such as Rabies, Rift valley fever, Lassa fever, Marburg haemorrhagic fever, Nipah virus disease, HIV/AIDS, avian influenza A (H5N1), A (H1N1) influenza, the SARS and the MERS epidemics, Zika virus disease, Ebola virus outbreaks in central and West Africa, monkeypox, and most likely COVID-19<sup>14</sup>.

Several experts pointed out that factors such as overexploitation of resources, loss of biodiversity, land use change, and encroachment on ecosystems are leading to unexpected interactions between humans and animals. The food system is a good example of this phenomenon. The heavy industrialization of food production and its expansion lead to certain practices, such as deforestation, that bring humans closer to wildlife and its pathogens and increase the risk of zoonotic spillover<sup>15</sup>. A

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**Note 13** WHO, Zoonoses (29 July 2020).

**Note 14** Carl Zimmer and Benjamin Mueller, "New Research Points to Wuhan Market as Pandemic Origin", The New York Times (27 February 2022).

**Note 15** Interview with Francesco Branca.

zoonotic spill over can also occur as a result of illegal wildlife trade or bushmeat consumption<sup>16</sup>. The varying degrees of food safety across different regions are problematic, as not all have the same standards<sup>17</sup>. Furthermore, the climate nexus in pandemic preparedness has become more visible in light of the migration of pathogens as well as vectors of diseases, such as mosquitoes<sup>18</sup>. Although most of these events do not lead to devastating pandemics, the risk thereof is present and these threats are always brewing.

The spread of zoonotic diseases is exacerbated by international travel and trade. One interviewee considered that the current premises of these two must be revisited, while acknowledging how challenging it can be to do so<sup>19</sup>.

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**Note 16** Interviews with Francesco Branca, Wanda Markotter, and Tamara Giles-Vernick.

**Note 17** Interview with Thomas C. Mettenleiter.

**Note 18** Xavier Rodó *et alii*, "Changing Climate and the COVID-19 pandemic: more than just heads or tails" (2021) 27 *Nature Medicine* 576-579.

**Note 19** Interview with Wanda Markotter.

Several interviewees concurred on the impossibility of eliminating all risks of future zoonotic spill overs, both with regard to wildlife as well as livestock and pet animals<sup>20</sup>. However, there are several ways of mitigating the risks, and all interviewees made suggestions in this regard (see part. III).

## Scenario 2: The threat of antimicrobial resistance (AMR)

While virus-driven communicable diseases are currently the focus of global attention, other issues should not be overlooked. The ballooning danger posed by antimicrobial resistance (AMR) is partially driven by the overuse of antimicrobial medication in animals, including healthy animals, as preventive prophylaxis to increase meat production<sup>21</sup>. If it reaches a critical point, the problem could trigger a new pandemic through the contami-

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**Note 20** Interviews with Thomas C. Mettenleiter, Tamara Giles-Vernick and Wanda Markotter.

**Note 21** A/RES/71/3, Political Declaration of the High-Level Meeting of the General Assembly on Antimicrobial Resistance (19 October 2016) at paras 3, 12(a).

nation of the food chain for which current medicines may be insufficient.

Interviewees also referred to the risks posed by the use of pesticides with antibacterial and antifungal properties in the environment as a potential trigger of rising AMR. Whereas some countries, like India, have introduced legislation to limit the release of antimicrobials in the water, these laws have yet to become more widespread. Enhanced regulation and tracking of antimicrobial and antifungal drug usage is needed, whilst keeping in mind that a full ban thereof is not a realistic option<sup>22</sup>.

AMR requires addressing pharmaceutical research and development (R&D) more closely. The private sector has provided considerable funding to develop remedies against AMR through specific initiatives, such as the Global Antibiotic Research and Development Partnership (GARDP). A challenge is creating an R&D funding scheme that both encourages R&D and guarantees that the resulting benefits will be available for all countries and populations in need<sup>23</sup>.

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**Note 22** Interview with Marteen Van Der Heijden.

**Note 23** Id.

Another challenge is to reach consensus on regulating medical practices, including on drug prescription in both hospitals and ambulatory care<sup>24</sup>.

## Scenario 3: Laboratory accidents

Laboratory accidents have long represented a concern for the international community. For example, in 1978 a laboratory accident in Birmingham (UK) led to a smallpox virus outbreak, in turn leading to the last known death caused by the disease<sup>25</sup>. This happened just one year before smallpox eradication. Such incidents are a cautionary tale about the risks of underestimating the need to monitor how maximum biosecurity facilities comply with minimum safety standards.

Indeed, one of the theories related to the origins of COVID-19 posits that a laboratory accident at the Wuhan Institute of Vi-

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**Note 24** Id.

**Note 25** Marc Strassburg, "The global eradication of smallpox" (1982) 10 *American Journal of Infection Control* 53-58; Alasdair Geddes, "The history of smallpox" (2006) 24 *Clinics in Dermatology* 152-157.

rology – which has been studying bat coronaviruses for years – had been the source of the first human infection with SARS-CoV-2<sup>26</sup>. The WHO's Scientific Advisory Group for the Origins of Novel Pathogens (SAGO) recently agreed that “it remains important to consider all reasonable scientific data that is available [...] to evaluate the possibility of the introduction of SARS-CoV-2 into the human population through a laboratory incident”. It called for “further investigations” to assess this possibility<sup>27</sup>.

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**Note 26** Richard Horton, “Offline: The origin story—towards a final resolution?” (2022) 399 *The Lancet* 11.

**Note 27** WHO, Scientific Advisory Group for the Origins of Novel Pathogens (SAGO), [Preliminary Report of the SAGO](#), 9 June 2022, 27-28. Three members of SAGO (Dr Vladimir Dedkov, Dr Carlos Morel, Professor Yungui Yang) did not agree with this recommendation.

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# 2.

the international  
normative  
and institutional  
framework  
on one health:  
an overview of what  
exists today



This part gives an overview of (1) current norms, and (2) institutional arrangements that have relevance for the One Health approach.

## 1. Normative Framework

As mentioned above, One Health is a relatively new concept. Its integration into international law is still very limited. Current international legal instruments reflect the traditional division between humans, animals, and the environment. The first attempt to integrate One Health in international law has taken place during the on-going discussions on a 'pandemic treaty' and IHR revisions. That said, there are diverse instruments in the field of human health (A), wildlife (B), the environment (C), and human rights (D) which touch on elements of One Health and offer potentialities for mutual support between environmental conservation, animal health and protection of human health. The purpose of this section is to lay out these instruments. With respect to laboratory safety, there is currently no mandatory international oversight of biosafety and biosecurity standards for laboratories dealing with dangerous or deadly pathogens (E).

### A. Instruments Regarding Human Health

#### The International Health Regulations (IHR)

The latest version of the [International Health Regulations](#) (IHR) was adopted in 2005 under Article 21 a) of the WHO Constitution. They entered into force in 2007. Their purpose and scope "are to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and which avoid unnecessary interference with international traffic and trade."<sup>28</sup>

One Health is not included in the IHR. The IHR are event-based and focus on human health, in particular the early detection and containment of diseases that may spread internationally. They do not deal with animal health surveillance and the risk of zoonotic spillovers. Similarly, they do not address systemic problems such as climate change and AMR that do not fit within the concept of "event". Yet these matters grow in complex manners, gradually increase in effect, and have long-term conse-

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**Note 28** IHR, art. 2.

quences on the spread of diseases. Article 21 (a) of the WHO Constitution is quite narrow, not leaving much room for amendments that would transform the IHR into a broader instrument addressing the spread of diseases comprehensively<sup>29</sup>. Therefore, States recently decided to resort to Article 19 to adopt a new pandemic convention including the One Health perspective.

Even though the IHR do not address explicitly a One Health dimension, AMR and zoonotic diseases are mentioned in the Joint External Evaluation Tool and other monitoring tools developed by the WHO Secretariat to assist States Parties in assessing their own preparedness. The [Joint External Evaluation Tool](#) is a voluntary monitoring tool whose purpose is to improve Member State compliance with the core capacity obligations under the IHR and its Annex 1. Surveillance of animal health, zoonotic diseases and AMR are expressly included as required core capacities under the rubric of prevention. Thus, the One Health approach seems to have a place in the IHR. Moreover, [the 2022 USA proposal for amendments to the IHR](#) includes a requirement that, in accordance with a One Health approach,

any notifications to the WHO under Article 6 of the IHR would be forwarded to the FAO, WOAHO/OIE and UNEP. Thus, the IHR could potentially also be revised to become a One Health tool.

### Instruments on AMR

Through the [2016 Political Declaration on Antimicrobial Resistance \(A/RES/71/3\)](#), the United Nations General Assembly (UNGA) recognized the magnitude of the global problem of AMR and the need to take action to prevent a post-antimicrobial era:

- Paragraph 12 endorsed the [WHO Global Action Plan on AMR \(WHA68.7\)](#) as the central instrument for national action and international cooperation.
- Pursuant to Paragraph 15, an *ad hoc* Interagency Coordination Group (ICG) on AMR transmitted a [report on securing the future from drug-resistant infections](#) to the UN Secretary General.
- Paragraph 13 called upon the WHO, FAO and OIE/WOAH, to finalize a global development and stewardship framework (Global Framework). In 2017 and 2018 WHO Member States held consultations, yet due to political difficulties, the draft of the Global Framework was put on hold. As it stands, the

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**Note 29** Art. 21 (a) of the WHO Constitution states that the World Health Assembly can adopt regulations concerning “sanitary and quarantine requirements and other procedures designed to prevent the international spread of disease”.

[2018 Draft of the Global Framework](#) sets the parameters of a global agenda on antimicrobial development and stewardship:

- Ensuring access for all through price policy, while avoiding over-selling due to the need to sell large quantities to generate profit.
- Ensuring access to R&D and funding R&D in a way that is useful for all countries (this appears even more necessary since the shortage of antimicrobials and antifungals was aggravated during the COVID-19 pandemic).
- Tackling substandard drugs, for which a global solution is pending. There are some positive initiatives such as the [WHO Mechanism on Substandard and Falsified Medical Products](#) and the Council of Europe Convention on the Counterfeiting of Medical Products and Similar Crimes involving Threats to Public Health ([Medicrime Convention](#))<sup>30</sup>. It could have a positive impact on AMR by putting substandard drugs out of

the market, but so far only 21 states are parties to this treaty (including some African countries).

Due to the COVID-19 pandemic, the 2021 UNGA high-level meeting on AMR was cancelled. This pre-empted the possibility of reviving the Global Framework.

The role of pesticides in the development of AMR has also been recently highlighted. In 2019, the Commission on Phytosanitary Measures that governs the International Plant Protection Convention (IPPC) acknowledged that “large volumes of antimicrobials are applied to crops to control plant pests”, that “the overuse or misuse of antimicrobials can also trigger the development of resistant microorganisms relevant to human and animal health”, that “there is scientific evidence that foods of plant origin serve as a vehicle for foodborne exposure to resistant bacteria” and that “the IPPC community could play an important role in multi-sectoral efforts to decrease the risks with AMR”<sup>31</sup>. A [joint FAO/WHO expert group](#) also acknowledged that there is “clear scientific evidence that foods of plant origin may serve

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**Note 30** Entered into force in 2016.

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**Note 31** FAO, Commission on Phytosanitary Measures, Fourteenth Session, 1-5 April 2019, “Antimicrobial resistance (AMR) – Antimicrobial Resistance (AMR) in relation to plant health aspects”, prepared by the IPPC Secretariat, CPM 2019/INF/12.

as vehicles of foodborne exposure to antimicrobial-resistant bacteria". However, these important statements have not led to the adoption of specific standards or guidance.

## B. Instruments Regarding Wildlife

The [Convention on International Trade in Endangered Species of Wild Fauna and Flora](#) (CITES)<sup>32</sup> is a conservation-related treaty that uses trade measures to achieve its objectives, through permits or certificates. It applies to species threatened with extinction or that may become so, listed in three Annexes<sup>33</sup>. As John E. Scanlon explains:

"CITES is a good instrument, but it has a very narrow scope. It is purely focused on the species *in* international trade. This Convention does not look at how the wildlife was captured and transported prior to international trade, nor the end-market and what happens after it arrives; it does not address the issue

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**Note 32** Signed in 1973 and entered into force in 1975. This Convention has 184 Parties, including the European Union.

**Note 33** Currently 38,000 species, which represents 0.5% of the world's 8 million species.

of possible implications to human or animal health, either at the point where it is taken, or when it is transported, or where it is consumed. From an illegal trade point-of-view, it does not deal with poaching or harvesting. About the listing in Annexes, the criteria are purely biological (status of the species in the wild) and trade-related (whether the species is in trade, or could be in trade). There are no criteria relating to impacts on human or animal health. So for example, horseshoe bat [an important reservoir of coronaviruses] is not listed"<sup>34</sup>.

The efficiency of CITES regarding wildlife trade is indeed questioned by Jonna Mazet:

"The criminals who are trafficking wildlife pay no attention to the regulations. So the people who are working on conserving wildlife are the only ones complying with the regulations, and these regulations drag the whole system down and block researchers from doing a lot of good work. I have worked a long time on One Health, including with gorillas and people (in DRC, Rwanda, Uganda). When there is something that cannot be diagnosed in the country and we need to bring the samples in

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**Note 34** Interview with John E. Scanlon.

the United States, we have all the permits, but because they are endangered species, we have had those valuable samples just get stuck at the airport. It happens constantly”<sup>35</sup>.

In 2017, the UNGA (A/RES/71/326) encouraged Member States “to adopt effective measures to prevent and counter the serious problem of crimes that have an impact on the environment, such as illicit trafficking in wildlife and wildlife products, including fauna and flora as protected by [CITES]”<sup>36</sup>. Several years before, the CITES Secretariat, Interpol, the UN Office on Drugs and Crime, the World Customs Organization and the World Bank created the International Consortium on Combatting Wildlife Crime. The 2010 [Letter of Understanding](#) recognizes that “cross-border smuggling of live animals and plants carries with it possible risks to human health through the spread of disease”. In 2015, these zoonotic risks posed by wildlife trade led to a [Cooperation Agreement](#) between the CITES Secretariat and OIE/WOAH. This Agreement is a recognition that wildlife trade transcends conservation issues and is also a matter of animal

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**Note 35** Interview with Jonna Mazet.

**Note 36** At para. 3.

and human health. Despite these steps related to the recognition of zoonotic risks, the CITES Secretariat issued in 2021 an [Official statement on COVID-19](#), to declare that “[m]atters regarding zoonotic diseases are outside of CITES’s mandate, and therefore the CITES Secretariat does not have the competence to make comments regarding the recent news on the possible links between human consumption of wild animals and COVID-19”. Although legally correct, this statement appears as a step backwards from the movement to recognize the health implications of wildlife trade

### C. Instruments Regarding Climate Change and the Environment

The link between the key drivers of environmental degradation and downstream health impacts is well documented. The protection of the environment is thus fully part of an effective One Health approach. The UN Conference on the Human Environment 1972 in Stockholm highlighted the need for coordinated international action including explicit recognition of the health dimension of the environment. At the 1992 Rio Earth Summit, States adopted the Declaration on Environment and Development and Agenda 21. Principle 1 of the Rio Declaration recognises

that human beings are at the centre of concerns for sustainable development and are entitled to a healthy and productive life in harmony with nature. Over time, Agenda 21 and the sustainable development agenda could be used as a platform to promote health through international environmental law.

#### UN Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, Paris Agreement (the UN Climate Change Regime)

Climate change is expanding the range of many infectious diseases, especially zoonotic diseases<sup>37</sup>. Against this background, the Paris Agreement has been described as the strongest public health agreement of the century<sup>38</sup>. The climate change-health nexus was reaffirmed in the [WHO's COP26 Special Report on Climate Change and Health: The Health Argument for Climate Action \(2021\)](#). In its recent [6<sup>th</sup> Assessment Report](#), the Intergovernmental Panel on Climate Change (IPCC) gave a grave assess-

ment of the projected increase in global temperature and consequential long-term changes in world climate which can be expected to affect many of the prerequisites for health<sup>39</sup>.

However, the climate change-health nexus is not well referenced in the climate change instruments. Their provisions are geared towards the stabilization of greenhouse gas emissions or limiting temperature increase with few mentions of health<sup>40</sup>. The specific commitments with respect to national greenhouse gas inventories bear limited direct relevance to health-related objectives or the role of the health sector. While there have been steps to address the health-climate nexus in Conferences of the Parties (COP), this has taken place somewhat sporadically<sup>41</sup>.

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**Note 37** Research Outreach, [Climate change is driving the expansion of zoonotic diseases](#), April 30, 2020.

**Note 38** WHO, [COP24 Special Report – Health & Climate Change](#) (2018), p. 12.

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**Note 39** *Eg* provision of food, safe and adequate drinking water, secure housing. The direct impacts (mortality due to heat waves or floods) and indirect health impacts (disturbance in complex ecological processes), may in turn influence the distribution and abundance of vectors and infectious diseases.

**Note 40** See UNFCCC Art 1.1, Art 4.1(f).

**Note 41** COP2 (1996) noted the adverse effects of climate change on human health were potentially irreversible; COP6 (2000) highlighted adaptation and monitoring for health in relation to diseases and disease control; COP7 (2001) Marrakesh Accords: Parties recognised that human health is at the centre of problems deserving global attention (Decision 1/CP7). Parties also noted the importance of health in global climate change policy-making and specific health related priorities and initiatives (Decision 5/CP7); CMP7 (2011): No significant risk to human health referenced

Nonetheless, the preamble to the Paris Agreement exhorts Parties to consider their obligations on the right to health when taking action to address climate change. This allows the Paris Agreement mechanisms and goals to be understood in a manner that incorporates public health and ecosystems considerations.

Decision adopting the Paris Agreement flagged the health co-benefits of climate mitigation actions<sup>42</sup>. Several States Parties to this agreement have included health adaptation strategies and needs in their Nationally Determined Contributions (NDCs) communications to highlight the impact of climate change on health and the support needed to address this. There are also collaborative efforts outside of the main COP negotiations addressing the health-climate change linkages, such as [the 10<sup>th</sup> Focal Point Forum on Health and Adaptation \(COP22\)](#)<sup>43</sup>, or the

[special initiative to address climate change impact on health in Small Island Developing States \(COP23\)](#)<sup>44</sup>.

Thus far, health features mainly in the legal and policy framework for adaptation while climate mitigation measures are typically not health focused. For the first time, COP26 (2021) included a health programme in the Presidency programme<sup>45</sup>, where over 50 countries committed to an initiative to bring a strong health focus and ambition to COP26 and to develop climate resilient, sustainable and low carbon health systems. The [WHO's COP26 Special Report on Climate Change and Health](#) further set out 10 specific recommendations to maximise the health benefits of tackling climate change in various sectors<sup>46</sup>.

Such efforts to mainstream health perspectives in climate mitigation may face inherent challenges, given the lack of a clear

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as one of the criteria for the use of geological storage sites to store carbon dioxide project activities (Decision 10/CMP7); COP20 (2014): Health featured in the technical examination of opportunities with high mitigation potential (Decision 1/CP20).

**Note 42** Decision 1/CP21.

**Note 43** At SBSTA 44 (May 2016), Parties mandated the Nairobi Work Programme to investigate climate change impacts on human health. The 10<sup>th</sup> Focal Point Forum presented the key findings of the submissions. Parties and organisations like the WHO also discussed the range of actions needed to counter the deterioration of health due to climate change and to build resilient health systems.

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**Note 44** UN Climate Press Release, [Launch of special initiative to address climate change impact on health in Small Island Developing States](#), 12 November 2017.

**Note 45** [The COP26 Health Programme](#), 12.11.2021; WHO, [What has COP26 achieved for health?](#), 21 November 2021.

**Note 46** Recommendations include to (a) protect and restore nature as foundation for our healthy lives, sustainable food systems and livelihoods; and (b) promote healthy, sustainable and resilient food systems – that deliver climate and health outcomes.

treaty basis. These efforts are highly dependent on Parties' political initiative. While international climate law provides a space to apply the One Health concept, health considerations have yet to be fully integrated into climate mitigation action.

### Convention on Biological Diversity (CBD)

Biodiversity conservation reduces the risk of zoonotic diseases when it provides additional habitats for species and reduces the potential contact between wildlife, livestock, and humans<sup>47</sup>. Biodiversity conservation has been described as enhancing the ecosystems' ability to regulate zoonotic spill overs<sup>48</sup>. The [Convention on Biological Diversity](#) is the main international legal instrument addressing the global protection of biological diversity. It seeks to ensure the conservation and sustainable use of genetic resources as well as the fair and equitable sharing of benefits arising out of their utilisation.

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**Note 47** Frank Van Langeveld et alii, [The link between biodiversity loss and the increasing spread of zoonotic diseases](#), European Union, December 2020.

**Note 48** Elliott Carleton, [Biodiversity conservation to control zoonotic disease spillover](#), International Livestock Research Institute, 3 August 2022.

Notwithstanding the limited direct references to health in the CBD and the Strategic Plan for Biodiversity including the Aichi Biodiversity Targets (2011-2020 period)<sup>49</sup>, the Strategic Plan refers to the critical importance of conservation and sustainable use of biodiversity for meeting global food and health needs.

Several COP decisions have also underlined the connectedness between biodiversity and health. [Decision XII/21 on health and biodiversity \(2014\)](#) explicitly "[r]ecognized the value of the "One Health" approach to address cross-cutting issues on biodiversity and human health, as an integrated approach consistent with the ecosystem approach that integrates complex relationships between humans, microorganisms, animals, plants, agriculture, wildlife and the environment".

[Guidance on Integrating Biodiversity Considerations into One Health Approaches \(2017\)](#) was issued to assist Parties developing policies and programmes aligned with One Health approaches. It facilitates a balanced and integrated consideration for ecosystem and human health dynamics<sup>50</sup>. However, one inter-

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**Note 49** [Decision COP X/2](#).

**Note 50** Examples of such guidelines are set out in Annex II to the Guidance.



viewee underlined that this Guidance is a non-binding guideline whose implementation relies on Parties' discretion<sup>51</sup>.

Other COP decisions speak to the need for mainstreaming biodiversity considerations into the health sector<sup>52</sup>. They also affirm the value of an integrated One Health approach to address crosscutting issues of biodiversity and health and sets out a detailed list of activities which Parties, Governments and relevant organizations are invited to carry out<sup>53</sup>.

There are, however, questions about their effectiveness. It was only during the COVID-19 pandemic that serious consideration was given to the importance of mainstreaming biodiversity into health. One Health as an approach is not yet fully embedded into the mindset of governance and there remains a lack of

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**Note 51** Interview with Theresa Mundita Lim.

**Note 52** Decision COP 14/4.

**Note 53** Decision COP 13/6. The activities include facilitating cross-sectoral dialogue between responsible agencies; considering linkages in national policies and programmes; strengthening monitoring capacities and data collection; considering linkages in the conduct of environmental impact assessments; addressing, monitoring and evaluating the negative impacts of biodiversity interventions on health and health interventions on biodiversity.

understanding of the notion of One Health and whether or not it includes biodiversity<sup>54</sup>.

Looking ahead, the decision to consider biodiversity-human health interlinkages when addressing the follow up to the Strategic Plan for Biodiversity and the Aichi Biodiversity Targets<sup>55</sup> will be of particular relevance and should be monitored for further developments<sup>56</sup>.

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**Note 54** Interview with Theresa Mundita Lim.

**Note 55** Decision COP 13/6.

**Note 56** The CBD Secretariat, WHO and other partners developed a [draft Global Action Plan on Biodiversity and Health](#) in line with Decision 14/4 to support Parties in mainstreaming biodiversity and health linkages into national policies, strategies and programmes, and is intended to catalyse operationalisation of the biodiversity inclusive One Health approach.

### Other Conservation related instruments

In addition to the above there are several treaties on the protection of the environment, including regional conservation related instruments. Examples include:

- The [UN Convention to Combat Desertification \(1994\) \(UN-CCD\)](#) (197 Parties) is the only legally binding framework to address desertification and the effects of drought. Based on the principles of participation, partnership, and decentralization, the UNCCD aims to mitigate the effect of land degradation and ensure the sustainability of the planet's ecosystem and biodiversity.
- The [African Convention on the Conservation of Nature and Natural Resources \(1968\)](#) (33 parties) and [Revised African Convention on the Conservation of Nature and Natural Resources \(2013\)](#) (17 parties). The revised Convention is a comprehensive treaty on environment and natural resources conservation, addressing a wide spectrum of sustainable development issues. Parties agree to undertake measures necessary to ensure conservation, utilization and development of soil, water, floral and faunal resources in accordance with scientific principles and with due regard to the best interests of African people. The right of all peoples to a

satisfactory environment favourable to their development guides the revised Convention. Notably, Art IV (Fundamental Obligation), refers to the application of the precautionary principle, and due regard to ethical and traditional values, as well as scientific knowledge in the interest of present and future generations, when implementing the measures necessary to achieve the objective of the Convention.

- The [Council of Europe Convention on Conservation of European Wildlife and Natural Habitats \(1979\) \(the Bern Convention\)](#) (50 Parties). It is the only regional Convention of its kind worldwide and was the first international treaty to protect both species and their natural habitats.
- The [ASEAN Agreement on the Conservation of Nature and Natural Resources \(1985\)](#). This agreement has not entered into force<sup>57</sup>. It calls for the adoption of the measures necessary to maintain essential ecological process and life-support systems, to preserve genetic diversity, and to ensure the sustainable utilization of harvested natural resources.

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**Note 57** The requisite number of ratifications was not achieved.

Ecological factors are recognized as an integral part of development plans, along with economic and social factors.

### Soft Law Instruments

While not legally binding, soft law instruments can, depending on the extent of support and implementation, be impactful and influential in the One Health approach over time:

- The [UN Environmental Assembly of UNEP Resolution 3/4 of 6 December 2017](#) recognized “that human, animal, plant and ecosystem health are interdependent” and emphasized “the value of the ‘One Health’ approach, an integrated approach that fosters cooperation between environmental conservation and the human health, animal health and plant health sectors”. The resolution also described efforts under the Paris Agreement to address climate change as essential contributors to improve health, and recognized biodiversity loss as a health risk multiplier<sup>58</sup>.

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**Note 58** At para. 18, 19, 23, 24.

- The [WHO’s Strategy on Health, Environmental and Climate Change \(2020\)](#) was developed and broadly supported by countries during the 72<sup>nd</sup> World Health Assembly (May 2019). It aims to transform the manner of tackling environmental risks to health by accounting for health in all policies and scaling up disease prevention and health promotion. It focuses “action on upstream determinants of health, the environment and determinants of climate change in an integrated and mainstreamed approach across all sectors [...]” (para. 17).
- The goal of the [FAO/WHO International Code of Conduct on Pesticide Management](#) is to establish voluntary rules of conduct for all public and private organizations involved in or associated with pesticide management, particularly where national legislation regulating pesticides is non-existent or inadequate. While not legally binding, the Code has been implemented by countries<sup>59</sup>.

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**Note 59** Interview with Marteen Van Der Heijden.

### Precautionary Principle – Due Diligence

Principle 15 of the [Rio Declaration on Environment and Development](#)<sup>60</sup> calls on States “according to their capabilities” to apply the precautionary approach in order to protect the environment. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. The International Tribunal for the Law of the Sea (ITLOS) has stated that “the precautionary approach is an integral part of the general obligation of due diligence” and noted the “trend towards making this [approach] part of customary international law”<sup>61</sup>. The importance of this principle in the context of environment and health was affirmed in [UNEP Environment Assembly Resolution 3/4 on Environment and Health \(2017\)](#)<sup>62</sup>.

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**Note 60** UN Doc. A/CONF.151/26 (Vol. I), 14 June 1992.

**Note 61** *Responsibilities and obligations of States with respect to activities in the Area, Advisory Opinion, 1 February 2011* at para 131, 135. This principle was applied by ITLOS in the *Southern Bluefin Tuna (New Zealand v Japan; Australia v Japan), Provisional Measures, Order of 27 August 1999* at para 77-80.

**Note 62** At para. 2.

### D. Instruments Regarding Human Rights

The concept of One Health supports the full realization of the right to health, since it calls for the recognition of health risks generated at the interface between humans, animals and the environment. The right to health is recognized in several international instruments:

- Art 25.1 of the [Universal Declaration of Human Rights](#) (UDHR) affirms the right to a standard of living adequate for the health of himself and of his family.
- Art 12 of the [International Covenant on Economic, Social and Cultural Rights](#) (ICESCR) guarantees the highest attainable standard of physical and mental health. Notably this right embraces a range of socio-economic factors including the improvement of all aspects of environmental hygiene as well as the prevention, treatment and control of epidemics and diseases<sup>63</sup>.

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**Note 63** Committee on Economic, Social and Cultural Rights, [General Comment n° 14 on the Rights to the Highest Attainable Standard of Health \(Article 12\)](#), at paras 4, 9, 11, 15, 17.

Variations of this right are also recognized in several regional human rights instruments<sup>64</sup>.

There also appears to be increasing traction in support of a right to a healthy environment, which is a recognition of the link between human health and the state of the environment<sup>65</sup>:

- Art 11 of the Additional Protocol to the American Convention on Human Rights in the Area of Economic, Social and Cultural Rights ([Protocol of San Salvador](#)) (17 Nov 1988)<sup>66</sup> provides for “the right to live in a healthy environment” and the obligation for States to “promote the protection, preservation, and improvement of the environment”<sup>67</sup>.

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**Note 64** See for example, Art 16 of the African Charter on Human and Peoples' Rights (27 June 1981); Art XI of the American Declaration of the Rights and Duties of Man (1949); Part I para. 11 and Art 11 of the Revised European Social Charter of 1996; para. 29(1) of the ASEAN Human Rights Declaration (19 Nov 2012).

**Note 65** See also Art 2 of [International Law Institute Resolution of 1997 on the Environment](#) (Session of Strasbourg), which advocated the right to live in a healthy environment. Art 3 also advocates that “[t]he effective realization of the right to live in a healthy environment should be integrated into the objectives of sustainable development”.

**Note 66** Entered into force in 1999.

**Note 67** IACHR, [Advisory Opinion OC-23/17](#), November 15, 2017, para. 56 ss.

- [Human Rights Council Resolution 48/13](#) (adopted 8 Oct 2021)<sup>68</sup> recognizes for the first time the human right to a “clean, healthy and sustainable environment” and encourages States to adopt policies for the enjoyment of the right, “including with respect to biodiversity and ecosystems”.
- [UNGA Resolution 76/300](#) (adopted on 28 July 2022) recognizing “the human right to a clean, healthy and sustainable environment”<sup>69</sup>.

How are these rights to be interpreted, translated and applied operationally by States at all levels of law and policy in a One Health approach? Art 4.1 of the [IDI resolution on Epidemics, Pandemics and International Law](#) (4 Sept 2021) posits, as *lex ferenda*, that “States shall take all necessary steps for the prevention, reduction and control of epidemics and their adverse effects, as well as to ensure equitable access to medical services, vaccines and medicines to all” under the umbrella of the right to life and full enjoyment of health.

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**Note 68** The resolution was passed with 43 votes in favour, none opposed and 4 abstentions (China, India, Japan and Russia).

**Note 69** Passed with 161 votes in favour, none opposed and 8 abstentions.

## E. Gap in Laboratory Safety

Biosafety level 4 laboratories store highly pathogenic viruses and other infectious agents across the world<sup>70</sup>. These laboratories are built to operate with “maximum containment measures” meant to offer the highest level of protection. There are, however, no generally accepted biosafety and biosecurity standards nor mandatory supervision requirements at the international level of whether and to what extent these laboratories comply with safety measures. Prevention measures against future pandemics will require tackling this gap in global oversight. There is a need for enforceable protocols for minimizing laboratory accidents and ensuring laboratory safety. The inclusion of this topic in the future pandemic treaty might be desirable as well, as it would introduce a higher level of standardization and more transparency<sup>71</sup>.

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**Note 70** Filippa Lentzos and Gregory Koblenz, *Mapping Maximum Biological Containment Labs Globally*, King's College London Policy Brief, 2021.

**Note 71** Interview with Dennis Carroll.

## 2. Institutional Framework

One Health challenges functional decentralization because it does not fall into the responsibility of any single organization of the UN system. The UN Charter encourages “the co-ordination of the policies and activities of the specialized agencies”<sup>72</sup> but this has always been difficult to achieve in every sector. The specialization of each agency tends to generate silo-thinking and a lack of interagency interaction. Specialized agencies have gained great independence and are unwilling to give up their autonomy. This phenomenon is aggravated by the varying organizational cultures, governance approaches, and power relations from one agency to another. Since the 1970's, several initiatives have been launched to improve the overall consistency of the UN system action, but the results have been uneven.

Against this background, it should be noted that the WHO, WOAHO/OIE and FAO have been collaborating on One Health for more than a decade. This cooperation has taken a new turn after the COVID-19 pandemic emerged (A). However, despite some important developments, institutional cooperation on

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**Note 72** Articles 58 and 63.

One Health still faces some limits, showing the difficulties to implement a genuine One Health approach at the global institutional level (B).

### A. Institutional arrangements on One Health

In 2008, there was an attempt by the FAO, OIE/WOAH, WHO, the UN System Influenza Coordinator, UNICEF and the World Bank to collectively promote One Health through the adoption of the [One World, One Health Strategic Framework for Reducing Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface](#). However, the organizations involved in this initiative did not develop this initiative into a more comprehensive and inclusive One Health cooperation. Subsequently, the UNGA did adopt the [2016 Political declaration on AMR \(A/RES/71/3\)](#) – an important dimension on One Health – but no comprehensive One Health program was adopted by either the UNGA or the Economic and Social Council (ECOSOC). Further, when discussion regarding the need for a pandemic treaty began in 2020, One Health was rapidly included as a core topic in the negotiations. Yet, without any discussion about a system-wide international conference which would bring together the various special

agencies involved in One Health<sup>73</sup>, Member States identified the WHO as the appropriate forum. In other words, the realization, following the COVID-19 pandemic, as to the importance of One Health, has not yet translated into a change in the institutional paradigm.

That said, the FAO, OIE/WOAH and WHO ('the Tripartite') have been collaborating on important aspects of One Health (AMR, rabies and zoonotic diseases) for more than a decade. This collaboration relies on a corpus of documents whose legal character is becoming stronger with time, from a mere 'Concept Note' (2010) – a soft and narrative document without any legal character – towards a 'Commitment' (2017) – whose form and content are close to the Concept Note's but whose title suggests a stronger engagement – and then to a 'Memorandum of Understanding' (2018) – whose form and content remind one of a legally binding agreement. One of the interviewees declared that the 2018 MOU has been working well and efficiently<sup>74</sup>.

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**Note 73** Article 62 of the UN Charter authorizes ECOSOC to "prepare draft conventions for submission to the General Assembly, with respect to matters falling within its competence" and to "call [...] international conferences on matters falling within its competence".

**Note 74** Confidential interview.

In 2021, this Tripartite collaboration extended to UNEP. The four organizations created the [One Health High Level Expert Panel](#) (OHHLEP), composed of scientists charged with developing knowledge and providing guidance and advice on One Health-related matters that will support cooperation among governments and collaboration among the four partners<sup>75</sup>. The OHHLEP is an independent expert body, but must report to the four organizations. The OHHLEP consequently embodies tension between science and politics. Certain topics – such as traditional wildlife markets or the consequences of deforestation on the development of zoonotic diseases – are politically sensitive. The OHHLEP, thus, provides scientific advice, but decisions and actions remain within the final authority of the organizations and their Member States<sup>76</sup>. Judging by the ‘Notes for the Record’ issued after each of its meetings, the OHHLEP is working efficiently<sup>77</sup>. So far, its most important accomplishment has been the adop-

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**Note 75** Terms of Reference for the One Health High Level Expert Panel (OHHLEP), adopted by FAO, OIE, UNEP and WHO.

**Note 76** Interview with Francesco Branca.

**Note 77** See the [OHHLEP webpage](#).

tion of an operational definition of One Health<sup>78</sup>. In the future, OHHLEP’s terms of reference – which are largely limited to zoonotic events – could be expanded to cover other issues, and the OHHLEP could be expanded to include experts from additional disciplines<sup>79</sup>.

After UNEP’s joining, the parties were initially referred to as “Tripartite and UNEP”. Since “most of the important issues lie within UNEP’s mandate”<sup>80</sup>, this title failed to reflect a genuine One Health approach. Thus, UNEP was eventually admitted as a full and equal partner, and the parties are now referred to as the [Quadripartite](#). Their collaboration is based on a [Quadripartite Memorandum of Understanding](#) signed on March 2022.

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**Note 78** The One Health definition developed by the OHHLEP states: “One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. / It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. / The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development”.

**Note 79** Interview with Thomas C. Mettenleiter. [Sixth meeting of OHHLEP, 6 May 2022, Note for the Record, p. 1.](#)

**Note 80** Interview with Wanda Markotter.



The four parties concluded, with OHHLEP support, a [One Health Joint Plan of Action \(2022-2026\)](#). The Action Plan is a non-binding technical document which provides a set of activities that aim to strengthen collaboration, communication, capacity building, and coordination across all sectors responsible for addressing health concerns at the human-animal-plant-environment interface. The Quadripartite will then develop an implementation framework and a resource mobilization plan for the activities identified within the plan. Joint funding is described as a major step forward because “if the money is in silos, how do we function as a collective?”<sup>81</sup>. This was confirmed by one interviewee: “in the past, the only time when the WHO-FAO-OIE/WOAH collaboration worked better was when we had money to carry out joint projects”<sup>82</sup>.

In comparison to other One Health areas, collaboration on AMR between international organizations is relatively well established. In 2019, FAO, WHO and OIE/WOAH set up the [AMR Multi-Partner Trust Fund \(MPTF\)](#). Several countries are providing funds to

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**Note 81** Id.

**Note 82** Interview with Sylvie Briand.

support national projects and tripartite activities that are in line with the One Health approach. In 2022, the FAO, WHO, OIE/WOAH and UNEP (the Quadripartite) adopted a [Joint Strategic Framework for Collaboration on Antimicrobial Resistance](#). This collaboration has been described as “a good model to examine and be inspired by”<sup>83</sup>.

## B. Persistent limitations to cross-sectoral collaboration on One Health

Despite these important developments, the Quadripartite collaboration still faces obstacles and resistance. For example, depending on their internal policies, the people involved, and their margins of action as determined by their member states, each of the partners has a different approach to openness and cooperation. While OHHLEP asked the four partners to “officially endorse” the unified definition of One Health adopted by the Panel<sup>84</sup>, the four entities have so far merely said they “welcome

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**Note 83** Confidential interview.

**Note 84** Third virtual meeting of OHHLEP, 30 September – 1 October 2021, Note for the Record, p. 1.

the newly formed operational definition of One Health” and declared they “will continue to coordinate and implement One Health activities in line with *the spirit* of the new OHHLEP definition”<sup>85</sup>. This reference to the mere “spirit” of what is supposed to be an operational definition suggests a desire to safeguard their autonomy and maintain a margin of freedom. Moreover, a brief survey of the four entities’ webpages illustrates that there is no unified practice regarding the definition of One Health. OIE/WOAH still displays its own definition<sup>86</sup>.

Furthermore, the sectoral approach has not been abandoned. Under the OHHLEP terms of reference, each of the four entities is presented as “the leading organization/authority in the field of...” or “the organization responsible for...” or “the directing and coordinating authority on...”<sup>87</sup>. Although legally correct, this wording tends to reinforce the siloed rather than a more holistic approach.

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**Note 85** Joint Tripartite (FAO, OIE, WHO) and UNEP Statement, 1 December 2021 (emphasis is ours).

**Note 86** <https://www.woah.org/en/what-we-do/global-initiatives/one-health/>

**Note 87** Terms of Reference for the One Health High Level Expert Panel (OHHLEP), adopted by FAO, OIE, UNEP and WHO (introduction).

The experts interviewed mostly commented on technical and normative matters, and did not offer many comments about these institutional concerns. That said, one expert suggested that having general fora like the UNGA adopt resolutions on One Health might encourage a more comprehensive approach among the UN special agencies and other organizations<sup>88</sup>. This could be further encouraged if the UNGA or ECOSOC would also set up a new One Health fund or program<sup>89</sup>. What appeared key, thus, is the possibility of creating an “umbrella approach” capable of encompassing all UN programmes and specialized agencies. How to include those organizations that are outside of the UN system besides OIE/WOAH, such as the World Trade Organization (WTO), remains, however, an additional concern<sup>90</sup>.

A further challenge to collaboration is funding, as scarce resources undermine possibilities for closer collaboration<sup>91</sup>. Past

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**Note 88** Interview with John E. Scanlon.

**Note 89** Id.

**Note 90** Interview with Dennis Carroll.

**Note 91** Interviews with Sylvie Briand and Wanda Markotter.

examples of productive collaboration between the WHO, FAO and OIE include the H1N1 influenza pandemic of 2009-2010, where the availability of funding allowed for closer collaboration between them<sup>92</sup>. But nowadays, as explained by one expert, disease surveillance in animal reservoirs is severely underfunded<sup>93</sup>. Another interviewee explained how financial support is needed for the implementation of the WHA [Global Action Plan on AMR](#) in each country and for the development of national-level action plans<sup>94</sup>.

As negotiations are underway at the WHO on a new pandemic treaty and amendments to the IHR, one prominent question is: do we need new international norms and what for? Is it an effective approach to address One Health at an international normative level? Isn't One Health mostly about scientific cooperation and methodology?

Discussions with the twelve interviewees, experts in various fields of One Health, led to many suggestions to reinforce the One Health approach through international law. Some of these suggestions directly relate to international law and global governance; some others are more related to scientific cooperation or methodology, both of which can be supported by international instruments. These suggestions can be divided into four categories: (1) the adoption of a “deep prevention approach” to zoonotic outbreaks through international law; (2) better regulation and stronger implementation in the field of antimicrobial resistance; (3) the need to keep in mind that human health is also an issue of development; (4) the need to overcome silo-thinking at all levels, which requires a change of mindset.

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**Note 92** Interview with Sylvie Briand.

**Note 93** Id.

**Note 94** Interview with Marteen Van Der Heijden.

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# 3.

options for potential  
solutions

# 1. Integrating ‘Deep Prevention’ of Zoonotic Outbreaks into International Law

The IHR essentially kick in once an outbreak has occurred. They rely on ‘downstream prevention’, that is, prevention through the early detection of human diseases, containment and coordination. As several experts have mentioned, one of the IHR’s main shortcomings is that it does not focus on ‘deep prevention’, that is the prevention of zoonotic spill overs at the midstream and upstream level<sup>95</sup>. Upstream prevention relates to the drivers of zoonotic disease outbreaks, such as climate change, deforestation, illicit wildlife traffic or land use change. Midstream prevention relies on mapping the risks and identifying hotspots and pathogens with zoonotic potential, before issuing recommendation and offering technical support for national policies and measures<sup>96</sup>. The experts agreed that while ‘deep prevention’

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**Note 95** Interviews with Sylvie Briand and Wanda Markotter.

**Note 96** Vinuales J, Moon S, Le Moli G, Burci GL. A global pandemic treaty should aim for deep prevention. *Lancet*. 2021 May 15;397(10287):1791-1792.

can mitigate the risks of zoonotic spillover, they will not eliminate them<sup>97</sup>. Zoonotic spill overs are a basic matter of biology and ecology, they occur throughout evolution<sup>98</sup> and have been happening for millenia<sup>99</sup>. Nonetheless, a ‘deep prevention’ approach would create many downstream benefits, and thus several interviewees expressed their support for including ‘deep prevention’ into a normative framework<sup>100</sup>. Current WHO negotiations could be an avenue for adopting norms allowing for deep prevention.

Further, to ensure better representation of all stakeholders in the One Health approach, John E. Scanlon recommended that voices and experts from the field of animal health and environmental conservation should be included in the WHO negotiation process. Currently, the accreditation criteria are narrowly defined and should be expanded.

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**Note 97** Interviews with Sylvie Briand, Wanda Markotter, Thomas C. Mettenleiter and Tamara Giles-Vernick.

**Note 98** Interview with Thomas C. Mettenleiter.

**Note 99** Interview with Tamara Giles-Vernick.

**Note 100** Interviews with Jonna Mazet and Theresa Mundita Lim.

As regards the norms and measures that could be applied within a deep prevention strategy, experts made several suggestions. Some of the measures have a legal nature, others are technical, financial, operational, or political, but they can all be formulated in a normative way, whether in a new pandemic treaty, in amendments to or interpretation of existing instruments, or in non-binding standards. Across their diversity, the proposals fall into four categories: (A) The need for data; (B) Using trade law as a driver for One Health; (C) Reconsidering food systems; (D) Protecting the environment and biodiversity.

### A. The Need for Data

There was a broad consensus among the interviewees that one of the biggest gaps in terms of deep prevention is the lack of data about the animal-human-environment interface. Generating such data will help identifying hotspots where zoonotic spillovers are most likely to happen, enabling states to develop early warning systems which are not exclusively human-centred, and invest in containment and health care systems<sup>101</sup>.

Accordingly, all experts stressed the need to generate data extensively, to aggregate these data, to centralize the data and to use data to assess spillover risks.

'Data' refers to empirical data, or 'raw' scientific data. In the context of One Health, this includes:

- pathogen data
- disease outbreak data
- wildlife population mapping
- land use and demographic data
- anthropological data about consumption practices/local practices
- livestock and agricultural data
- ecosystem/biodiversity change data
- climate change data.

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**Note 101** Interviews with Sylvie Briand and Wanda Markotter.

### Generating Data and Mapping the Risk at the Local Level

As one expert stressed, we already know what the most likely places and practices are, that enable zoonotic spill overs, and that “we could have prevented COVID-19, pure and simple”<sup>102</sup>. He explains that “it was documented that there are 40,000 individual wildlife animals (spanning 38 species) that move through the Wuhan market. We should be able to use these data to understand the risk”. Thus, many experts are calling for centralized data. An example of a recent initiative to this end has been the establishment of the [WHO Hub for Pandemic and Epidemic Intelligence](#).

Nevertheless, gathering data is not as easily done as said. As Wanda Markotter acknowledges:

“We don’t actually know where the animal farms or the wildlife farms are, how many animals there are, and what are the human practices with these animals. We are just modelling, guessing, extrapolating. We need to know, so that we do not call a place

“a hotspot” based on biodiversity, while there are no people there”<sup>103</sup>.

Further, as Tamara Giles-Vernick explains, much of the data is based on assumptions and outdated data. For example, scientists are speculating about how Ebola and COVID-19 made their way to the human population, without clear cut evidence. Nevertheless, it is on the basis of this speculation that regulation of wildlife markets is mentioned as the solution. For Tamara Giles-Vernick, regulation based on speculation is a failed regulation. Funding and disciplinary tools to collect data are necessary for consolidating the hypotheses<sup>104</sup>. Such multidisciplinary tools include relying on the participation of the local population and indigenous communities (through observation, interviews, informal discussions and participatory activities, or through the use of GPS). The goal is to look at all the specific interactions between humans and animals (hunting, slaughtering, butchering, preparing, and marketing)<sup>105</sup>.

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**Note 103** Interview with Wanda Markotter.

**Note 104** Interview with Sylvie Briand.

**Note 105** In particular, Tamara Giles-Vernick sees surveillance of small monkeys and dogs as a

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**Note 102** Interview with Dennis Carroll.

Tamara Giles-Vernick also insists on looking at the *reasons* for these interactions between humans and animals. Her work reveals that interaction patterns are localized and that the anthropological reasons for human-animals interactions vary from one community to the other. Thus, unless data collection norms are adapted to these specific patterns, rules will be ineffective.

John E. Scanlon, speaking about the field of wildlife conservation, takes a similar view. He says that “local communities are your eyes and ears on the ground”. The involvement of local communities and the use of traditional knowledge are supported by many treaties like the CITES and the CBD.

Francesco Branca highlights that we cannot start regulating before we have a better description and mapping of human pressure on the environment and animals (through deforestation, mining, human movement, and urbanization). Theresa Mundita Lim strongly recommends that, while they are still intact and since they may be hosting reservoirs of zoonotic risk, we should map protected areas as critical ecosystem. This would

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priority. Dogs are used for hunting, they bring down the animal and as the animal is being butchered, people are throwing bits to them. Thus, they are an intermediary between humans and more wild species.

both protect these ecosystems and reduce the risk of spillover at source.

While there is a consensus between experts that more and better data must be collected, in practice generating data is largely a scientific and anthropological activity. In fact, scientists are already developing efforts to generate data<sup>106</sup>. A separate question is, therefore, whether this should be included in binding instruments, non-binding instruments or left to the scientific community.

On the one hand, some experts support including data collection in a binding normative instrument. Wanda Markotter is of the view that generating, aggregating, sharing and using data has legal relevance and could be improved through the IHR or under a new international agreement. Another scientist consi-

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**Note 106** Spillover (<https://spillover.global/>) is a place to register viruses being discovered. Viruses are then ranked from their spillover potential, through 31 ranking factors. This ranking indicates whether this virus should be at the top of the watch list or pursued further in a laboratory. Some people use it to think about treatments and get ready for vaccines (interview with Jonna Mazet). PREZODE (Preventing Zoonotic Disease Emergence) (<https://prezode.org/>) is a global surveillance strategy of zoonotic infectious diseases that includes all the One Health aspects (interview with Wanda Markotter). Other initiatives such as ZODIAC (Zoonotic Disease Integrated Action) (<https://www.iaea.org/services/zodiac>) and PREDICT (<https://p2.predict.global/>) also arose from the discussions.



dered that data should be the basis for adopting certain practices in a systematic way, through guidelines on the management of our interactions with the ecosystems. He underlined that a new treaty could provide for incentives and penalties in support of the implementation of such guidelines. He insisted on the need for incentives. In particular, states should be given the capacity to control their *own* environment and to lower their *own* risk (safer local systems and healthier local animals). This requires technical, financial and material assistance. As to the penalties, if a state remains reluctant to implement safety protocols, one could impose sanctions that impede its ability to engage in the trading of animal products<sup>107</sup>.

On the other hand, one interviewee questioned the necessity of a new treaty that would oversee technical guidance. Soft law instruments would be powerful enough, especially when they are supplemented with monitoring mechanisms for their implementation at the national level. These instruments offer great potential for harmonization and can include much more normative content than binding international treaties which require that all parties reach an agreement on matters which are diffi-

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**Note 107** Interview with Dennis Carroll.

cult to agree on<sup>108</sup>. Another expert supported the adoption of action plans to address spillover risks, and the development of wildlife practices. Such practices would not have to be included in legally binding documents, but they could be supplemented with reporting mechanisms<sup>109</sup>.

### Using Data to Empower Local Communities and National Governments

Several interviewees insisted that data should not be used by the global community or for the sake of scientific publication only, but also by governments and local communities, which must be the end users of the data. It is thus important that countries and communities be empowered with the capacity to generate, analyze, and make significant use of the data to mitigate their own health risks<sup>110</sup>. In the developing world, many people live day-to-day and long-term incentives or lofty goals,

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**Note 108** Confidential interview.

**Note 109** Interview with Wanda Markotter.

**Note 110** Interviews with Dennis Carroll, Tamara Giles-Vernick and Sylvie Briand.

such as “creating a better world”, are, simply put, irrelevant<sup>111</sup>. A vivid example is that of the international community’s experience in tackling HIV. The WHO’s Global AIDS programme had come to the conclusion that stopping the spread of AIDS was more important than treating it. But the head of the WHO’s AIDS program eventually realised that “the patients and families... did not want to hear educational messages from outsiders who offered nothing for the sick”<sup>112</sup>.

#### Using Data to Develop Noncoercive Safe Practices at the Local Level

As Wanda Markotter puts it: “to get the data is one thing, what to do with the data is another”.

Since spillover risks are region-specific and flow from practices whose reasons vary from one community to another, they can hardly be tackled through top-down regulations. Forbidding a practice such as rhino-poaching at the international level without

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**Note 111** Interview with Wanda Markotter.

**Note 112** Barton Gellmann, “An Unequal Calculus of Life and Death”, Washington Post, 27 December 2020.

understanding the local reasons underlying this practice might create more issues, such as a black market<sup>113</sup>.

Several interviewees drew our attention to the need to avoid a coercive approach towards populations. For some people, practices that pose a risk for health (eating bushmeat, selling meat from wildlife animals...) are a matter of subsistence and culture. Tackling these practices through law and enforcement would threaten them and affect their basic rights and living conditions, whereas most of the time these people have a virtuous relationship with their environment<sup>114</sup>. It is thus important to work with homegrown conservation organizations which try to ensure that the costs of protection do not weigh heavily on local populations, and seek out ways of promoting certain kinds of locally based development<sup>115</sup>. The local communities must be safeguarded and assured that they will not suffer adverse effects from the sharing of information (e.g. that their livestock be taken away from them).

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**Note 113** Interviews with Wanda Markotter and Thomas C. Mettenleiter and confidential interview.

**Note 114** Interviews with Sylvie Briand and Wanda Markotter.

**Note 115** Interview with Tamara Giles-Vernick.

This raises again the question regarding the need for an international treaty. It seems that there is room for international collaboration and for the development of international standards (for example on safe butchery, safe burials...). However, these standards should be carefully translated at the local level, and people should be given the resources to implement them and to protect themselves<sup>116</sup>.

### Organizing Data Sharing at the International Level

Data sharing among states and other actors is critical for addressing global problems. It is critical for ensuring buy-in and effective participation by all States and diverse international actors. International data sharing also tackles the problem of duplication of efforts by international organisations, national research institutions, and individual researchers, who are unaware of data already collected. Effort and resources saved through data sharing can then be directed towards other activities including data analysis, recommendations, capacity-building, and policy-making. International data sharing is also essential for the de-

velopment of medical products, as exemplified by the quick sharing of the genetic sequences of virus samples during the COVID-19 pandemic.

One expert suggested that an international data sharing regime could specify basic, minimum data fields that are practicably reportable by all States and which would increase compliance with international reporting requirements<sup>117</sup>. This would produce a rich body of basic raw data, as opposed to State reports of varying quality and accuracy. The wider international community could then use this rich body of raw data for analysis, policy recommendations, further inquiry, understanding trends and so forth.

The experts interviewed highlighted some of the main difficulties that need to be tackled in order to improve global data gathering and sharing:

(1) Data gathering capacity: it is necessary to improve in-country capacities to gather and use data is necessary<sup>118</sup>.

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**Note 116** Id.

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**Note 117** Interview with Jonna Mazet.

**Note 118** Interview with Dennis Carroll.

(2) Political and sovereignty concerns: open, transparent data sharing and international cooperation is integral to the culture of the scientific community<sup>119</sup>. In contrast, States have all sorts of reservations about what can be broadly termed 'data sovereignty'. States are reluctant to provide data to a central, supra-national organization<sup>120</sup>. Some want to maintain control over data presentation, which creates the possibility of censorship and politically motivated data reporting<sup>121</sup>. Simply, in the view of our interviewees, data sharing is not a scientific problem, it is a political problem.

(3) Interoperability of systems, disciplines and bureaucracies: common denominators and scientific methods must be agreed on. For example, within India there were huge disparities in COVID-19 related death estimates between different states at the subnational level.

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**Note 119** Interview with Jonna Mazet.

**Note 120** Interview with Wanda Markotter.

**Note 121** Interview with Dennis Carroll.

There are also conflicts between different branches of the bureaucracy with some units gatekeeping 'their' data<sup>122</sup>.

(4) Sharing platforms: there needs to be a sharing system or platform in place that makes sharing across disciplines flexible and easy, and that encourages collaboration. Currently such platforms are largely unavailable. However, one expert referred to GISAID, a tool which was developed independently by the scientific community, and that may serve as a model for future data-sharing platforms<sup>123</sup>.

Building upon the benefits and challenges mentioned above, one option would be negotiating an international data sharing agreement on One Health that would cover all types of data relevant for a One Health approach. An expert suggested having an agreement where the types of data to be shared are included in an Appendix that can be amended by an Executive body<sup>124</sup>.

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**Note 122** Interview with Wanda Markotter.

**Note 123** Interview with Jonna Mazet. See <https://spillover.global/>

**Note 124** Interview with Wanda Markotter.

Further, it is critical that we start consolidating the One Health relevant data that already exists.

An important question is whether an international agreement on data sharing needs to be legally binding or voluntary<sup>125</sup>. On the one hand, a binding treaty could incentivize compliance<sup>126</sup> and ensure states are not “punished” after sharing their data, as was South Africa after it shared information about the Omicron variant of SARS-CoV-2. On the other hand, in practice, the binding nature of an instrument is not enough to ensure compliance. IHR is a binding instrument which requires balancing health considerations with trade and travel and these considerations were ignored by most countries in the heat of the pandemic. More generally, imposing binding obligations would minimize participation and could lead states to put constraints on the data, as was the case, for example, with livestock data and the FAO. Voluntary or soft law frameworks, voluntary re

porting, and the inclusion of non-state actors may be a better option, that would lead to better compliance and outcomes<sup>127</sup>.

There appears to be consensus that data should ideally flow towards a central organization which consolidates, manages, and analyses them. Such an organization needs to act in a facilitating capacity, rather than in the role of a regulator/enforcement body. It could identify interfaces where people are exposed, prepare communication messages and FAQs, talk with communities and issue recommendations<sup>128</sup>. The IPCC is an example of an institution which provides assessments and options based on scientific information and data, which governments can use to develop policies. Accountability or enforcement mechanisms should be limited to extreme cases and would ideally be done by peer pressure<sup>129</sup>. The [WHO BioHub System](#), announced in November 2020, is an example of a recent vo-

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**Note 125** Interview with Jonna Mazet.

**Note 126** Id.

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**Note 127** Interview with Wanda Markotter and Jonna Mazet.

**Note 128** Interview with Jonna Mazet.

**Note 129** Id.

luntary initiative which an expert is cautiously optimistic about<sup>130</sup>. Its strategy relies on creating incentive rather than enforcing compliance. The incentive proposals include financial and capacity building support (payment for shipments, training for packaging). Further, recipients of the data will be obliged to recognize whom they received data from. If the data are shared with commercial entities, there are proposals to require the provision of “benefits” – such as the provision of 10% of all derived products in cases of public health emergencies. This is like the benefit structure of the [Pandemic Influenza Preparedness \(PIP\) Framework](#). Another initiative is the [WHO Hub for Pandemic and Epidemic Intelligence in Berlin](#) (Berlin Intelligence Hub), which is also one of the candidates for where some of the data might go<sup>131</sup>.

A related question is where such a sharing platform should be housed and whether it should be housed within a UN organization. Given that many countries look to the FAO or WHO

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**Note 130** Interview with Sylvie Briand.

**Note 131** Interview with Wanda Markotter.

for standards and guidelines, it is important that the data organization, if it is not part of the UN system, establish data sampling and sharing standards that are consistent with those of the UN system. Further, it is important that the UN system remains involved and engaged and that it does not become a limiter or obstructor. In sum, a new entity “needs to fit within the [existing] global architecture, but not be constrained by existing entities”<sup>132</sup>.

Interviewees highlighted several core aspects of any future instrument in international data sharing:

(1) Such an instrument should be explicit about the benefits of data sharing<sup>133</sup>, as illustrated by Indonesia’s reluctance to share the avian flu virus samples in 2007 because it did not have access to the benefits flowing from this sharing.

(2) This instrument should also be clear on the prohibitions following data sharing<sup>134</sup>, as recalled by South Africa being “sanc-

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**Note 132** Interview with Dennis Carroll.

**Note 133** Interviews with Wanda Markotter and Jonna Mazet.

**Note 134** Id.

tioned” by travel bans after it openly and timely shared the discovery of the Omicron variant within its borders.

(3) Any instrument on data sharing should avoid unintended consequences that hinder and slow down the sharing of data<sup>135</sup>. Scientists had long been sharing data and putting them in the public domain, but the CBD and the Nagoya Protocol sometimes hinder scientific cooperation because scientists need to ask for governmental authorizations<sup>136</sup>. There is hesitancy to include genetic sequences into the Nagoya Protocol out of concern that it will complicate the ability of scientists to share sequences. Yet COVID-19 exemplified how important real time access to samples/sequences is. Having a legal framework that obstructs the speed of scientific discovery is not only undesirable, but deadly in a situation of global health emergency<sup>137</sup>.

(4) The intellectual property governing the data is an issue that needs to be dealt with. One of the central questions is whether

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**Note 135** Interview with Jonna Mazet.

**Note 136** As was the case with the PREDICT project in Latin America (interview with Jonna Mazet).

**Note 137** Interview with Dennis Carroll.

the data should be shared through open access platforms between different sectors and disciplines. There could be some differentiation between data, with some open to the public, and other parts confidential<sup>138</sup>. An expert also emphasized that scientists, if encouraged or requested to share data, should not be prevented from publishing their research in scientific journals with the argument that the data is already in the public domain<sup>139</sup>.

## B. Deep Prevention and Trade

### A One Health Approach to Markets and Trade in Animals

As early as 2004, the IUCN World Congress warned that “the health threat posed by the movement of millions of live animals and animal parts through markets annually within the global wildlife trade has not yet been recognized, and that efforts to

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**Note 138** Interview with Wanda Markotter.

**Note 139** Interview with Jonna Mazet.

regulate this trade fall far short of the imperative for action”<sup>140</sup>. Several interviewees mentioned exploitation and trade in wildlife as a major driver for zoonotic spillovers<sup>141</sup>. While a general ban of trade in wildlife does not appear realistic as it could provoke undesirable consequences and impoverish local communities, some of these experts agreed that sectoral bans on some specific species (like the horseshoe bat, an important reservoir of coronaviruses) could be justified. Also, the legal framework around international trade of wild animals could be reinforced. Two experts insisted that a distinction should be made between long-distance trade, and local consumption for subsistence needs<sup>142</sup>.

Several interviewees expressed concerns regarding places such as animal markets or large livestock or wildlife farms without proper biosecurity, where animals under stress, coming from different regions and with different hygiene status, are mixed

with other species as well as humans and bring different sets of pathogens together, resulting in pathogen evolution that can lead to zoonotic spillovers. Safety of traditional markets and farm animals could be enhanced by hygiene standards such as running water and sewage facilities, and having separate zones for the wet part, the slaughtering, and so forth<sup>143</sup>.

One interviewee also highlighted states and livestock industries’ reluctance to share sanitary information that could threaten their ability to trade. This interviewee therefore advocates for deconflicting these two aspects<sup>144</sup>. This implies avoiding “sanctioning” the state from a trade perspective while finding ways to encourage the state and industries to promote health for its own sake, not as a condition for trade.

Regarding the international legal framework, John E. Scanlon presented two major proposals promoted by the Global Initiative to End Wildlife Crime:

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**Note 140** Resolution 3.011.

**Note 141** Interviews with Thomas C. Mettenleiter, Wanda Markotter, John E. Scanlon and Tamara Giles-Vernick.

**Note 142** Interviews with Tamara Giles-Vernick and John E. Scanlon.

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**Note 143** Interviews with Thomas C. Mettenleiter, Wanda Markotter and Francesco Branca.

**Note 144** Interview with Dennis Carroll.



(1) The first proposal is to promote a One Health approach to wildlife capture, trade and markets. This could be done either by amending CITES or by inserting specific provisions in the future instrument being negotiated at the WHO:

- **Amending CITES:** the impact of wildlife capture and trade on human health could become a criterion for listing the species. The authorities responsible for issuing permits would be obliged not just to look at the impacts from a conservation perspective, but also to consider the public health impact of the trade. The Global Initiative also suggests extending the reach of the Convention to include markets where the species are sent after the transportation. According to John E. Scanlon, amending CITES would be the most effective and efficient way forward, because it would build on an existing instrument with its well-established permit process, its existing authorities, and its existing governance, to make it more contemporary and more relevant to address an issue of global concern.
- Due to some resistance within the CITES community, the Global Initiative to End Wildlife Crime **has explored another pathway**, which is the negotiation of a new

instrument at the WHO. This future instrument could look beyond conservation aspects of trade and ask States to forbid or strictly regulate trade in wild animals, and related markets, that could pose a risk to human health<sup>145</sup>.

(2) The second proposal is to adopt **an agreement on illicit trafficking in wild fauna and flora**, through a Protocol under the UN Convention against transnational organized crime (UNTOC)<sup>146</sup>. This agreement would not tackle local capture for subsistence needs, but transnational illicit trafficking of wildlife which is valued at \$200bn a year, with an estimated impact of \$1-2 trillion a year (taking into account the impact on ecosystems, and their ability to sequester carbon, produce fresh soils and fresh water, etc.). Its aim would be to lower the demand. States would agree that importing an animal or plant illegally taken in the source country would become a criminal offence.

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**Note 145** <https://www.scientificamerican.com/article/a-crucial-step-toward-preventing-wildlife-related-pandemics/>

**Note 146** There are three protocols already: human trafficking, migrant smuggling, and fire-arms trafficking.

## Mainstreaming One Health into Trade Law

Thanks to the binding and enforceable nature of the [General Agreement on Tariffs and Trade \(GATT\)](#) and the [Agreement on the Application of Sanitary and Phytosanitary \(SPS\) Measures](#), integrating a One Health approach in these agreements or through their interpretation would arguably encourage a more widespread One Health mindset. On their face, in their current form, GATT and the SPS Agreement do not include a One Health Approach. Thus, experts such as Francesco Branca say that going forward, we should think of a way to allow for changes that would enable import policies to use a One Health approach. In practice, however, as another expert warned, “the most complicated issue relating to harmonization is trade law, specifically sanitary and phytosanitary measures. Alignment with international standards is difficult”<sup>147</sup>.

Article XX(b) of the General Agreement on Tariffs and Trade (GATT) allows Member States to adopt measures “necessary to protect human, animal or plant life or health”. To incentivize harmonization of sanitary and phytosanitary (SPS) measures,

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**Note 147** Confidential interview.

Article 3 of the SPS Agreement provides that “[m]embers shall base their sanitary or phytosanitary measures on international standards, guidelines or recommendations, where they exist”<sup>148</sup>. Those measures “which conform to international standards, guidelines or recommendations shall be deemed to be necessary to protect human, animal or plant life or health, and presumed to be consistent with” the SPS agreement and GATT<sup>149</sup>. Article XX(b) of the GATT and Article 3 of the SPS Agreement thus mirror the traditional approach to health, whereby human health is separated from animal and plant health. The sectoral approach is also at the core of Annex A of the SPS Agreement, whose paragraph 3 defines what is due to be understood by “international standards, guidelines or recommendations” referred to by Article 3:

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**Note 148** SPS Agreement, Article 3, para. 1.

**Note 149** Id, Article 3, para. 2.

### 3. International standards, guidelines and recommendations

(a) for *food safety*, the standards, guidelines and recommendations established by the Codex Alimentarius Commission relating to food additives, veterinary drug and pesticide residues, contaminants, methods of analysis and sampling, and codes and guidelines of hygienic practice;

(b) for *animal health and zoonoses*, the standards, guidelines and recommendations developed under the auspices of the International Office of Epizootics;

(c) for *plant health*, the international standards, guidelines and recommendations developed under the auspices of the Secretariat of the International Plant Protection Convention in cooperation with regional organizations operating within the framework of the International Plant Protection Convention; and

(d) for matters not covered by the above organizations, appropriate standards, guidelines and recommendations promulgated by other relevant international organizations open for membership to all Members, as identified by the Committee.

Despite references to the Joint FAO-WHO Codex Alimentarius Commission and to zoonoses (animal diseases transmissible to humans), the overall approach adopted by Annex A, para. 3, is thus a sectoral approach, separating human health from animal health and from plant health, UNEP being absent from the list of organizations mentioned in this article. Moreover, the instruments relating to AMR goes far beyond the standards enumerated by the SPS Agreement (for example, the [Code of Conduct and the FAO/WHO Guidelines on Pesticide Advertising](#) (2010), or the [FAO/WHO Guidelines on Pesticide Legislation](#)).

The GATT and the SPS Agreement raise several questions. First, what room is there within these agreements for a One Health approach? Could they cover not only short-term concerns (for example, an avian flu outbreak) but also long-term and upstream prevention (e.g. AMR, deforestation)? Could states refuse to import animals or food products that are produced inconsistently with the One Health perspective? Do we need to revise the WTO Agreements to adapt them to the One Health approach?

One solution could be to interpret “human health” in an integrated way, including long term causal links of diseases, since human health is eventually threatened. The WTO case-law supports such an interpretation. The Appellate Body recognized the existence of “certain complex public health or environmen-

tal problems” that “may be tackled only with a comprehensive policy comprising a multiplicity of interacting measures”, including import bans or other trade-restrictive measures. It also recognized that “the results obtained from certain actions – for instance, measures adopted in order to attenuate global warming and climate change, or certain preventive actions to reduce the incidence of diseases that may manifest themselves only after a certain period of time – can only be evaluated with the benefit of time”. These actions can nonetheless be justified under Article XX(b) as soon as they bring about “a material contribution to the achievement of [their] objective”<sup>150</sup>. The Appellate Body thus paved the way for interpreting Article XX(b) as a legal basis for trade restrictions based on One Health concerns such as AMR and long-term risk of zoonotic spillovers due to land use and deforestation.

Second, what is the status under the SPS Agreement of One Health norms adopted by FAO, OIE/WOAH, WHO and UNEP collectively, such as the [OIE/WOAH-WHO-UNEP interim guidance on traditional food markets](#) adopted during the COVID-19 pandemic? These guidelines do not relate to human health, to food

safety or to animal health individually, but serve them altogether, from a One Health perspective. As Annex A, para. 3, (d) is ill-suited to provide a straightforward solution<sup>151</sup>, one possibility could be to amend Annex A to refer to collective standards addressing One Health concerns. Otherwise, these standards could be attached to sub-paragraph (a), (b) and (c) altogether. A further possibility is to adapt the mandate of the Codex Alimentarius Commission to better reflect One Health concerns. Currently, the Codex Alimentarius includes provisions in respect of food hygiene, food additives, residues of pesticides and veterinary drugs, contaminants, labelling and presentation, methods of analysis and sampling, and import and export inspection and certification. These standards focus on protecting consumers’ health from immediate threats. There might be some areas where these standards could reflect a broader One Health perspective. Since the Codex standards are referred to in the WTO SPS Agreement, WTO Members are encouraged to comply with these standards.

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**Note 150** See [Brazil – Retreated Tyres, report of the Appellate Body \(2007\)](#) at para. 151.

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**Note 151** One Health encompasses matters that are covered by FAO, WHO and OIE, which are these very organizations which promulgate norms on One Health.

To conclude, mainstreaming One Health into trade law would thus be a strong incentive for a widespread One Health mindset.

### C. Reconsidering Food Systems

Two experts insisted on the need to reconsider our food system<sup>152</sup>. The food system has largely been shaped by commercial interests, without considering health aspects. Yet, deforestation linked with protein demand, overuse of antibiotics and Western diets have a considerable impact on human health. Therefore, Francesco Branca calls for a comprehensive description of the health consequences of these practices, and for an alignment of regulatory policies along the whole supply chain (production, distribution, demand). These regulatory policies should put a limit to the expansion of certain production, through taxation policies, price policies, information to consumers, policies on marketing food to children, nutrition labelling, trade policies, bans, and public investment in sustainable food production.

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**Note 152** Interviews with Maria Neira and Francesco Branca. See also the white paper Food and Agriculture prepared in the same context of the 150<sup>th</sup> anniversary of the ILA.

### D. Protecting the Environment and Biodiversity

Protecting the environment has been flagged as a primary public health prevention tool. Experts pointed to the need to address climate change, described as the greatest health challenge of the 21<sup>st</sup> century and a key driver of zoonotic risks<sup>153</sup>. Combatting climate change can lead to enormous health benefits<sup>154</sup>. In this context, the climate change treaties have been described as “a fantastic opportunity for public health”, and potentially “one of the best public health treaties ever, provided they are implemented”<sup>155</sup>.

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**Note 153** Interviews with Wanda Markotter and Maria Neira.

**Note 154** Reducing emissions brings immediate benefit in reducing air pollution and in reducing vulnerabilities to developing underlying diseases and infectious respiratory agents.

**Note 155** Interview with Maria Neira.

Other suggestions include:

- Ending deforestation in the sense of aggressive agricultural practices and extensive use of pesticides and fertilisers<sup>156</sup>.
- Identifying and protecting protected areas<sup>157</sup> thereby containing the possibility of zoonotic spillovers and addressing pandemics at source<sup>158</sup>.
- Advocating and adopting integrated approaches that can address multiple problems and emphasizing the multiple benefits of nature-based solutions. For example, protecting biodiversity can address both climate change and health issues<sup>159</sup>.

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**Note 156** Id, referring to the non-legally binding “Glasgow Leaders’ Declaration on Forests and Land Use” signed by 126 countries at COP26.

**Note 157** Referring to critical ecosystems, high biodiversity ecosystems most of which are habitats of wildlife that are considered potential reservoirs of zoonotic risks.

**Note 158** Interview with Theresa Mundita Lim.

**Note 159** Id.

Against this background and initiatives outlined above, several questions arise:

- Is there effective implementation of existing climate change and environmental law obligations and political pledges given their generally softer compliance and enforcement mechanism? Would it be more impactful to address the obstacles to implementation in different countries rather than attempting to create new norms?
- How can health perspectives be better integrated or mainstreamed in the policy formulation, negotiation processes, provisions and implementation of climate change and environmental treaties and *vice versa*? Do health and environment officials operate in an integrated manner across different international platforms and national systems?
- Specifically in relation to the Paris Agreement, how can health considerations be more integrated into climate mitigation actions? Can this extend to:
  - more large-scale incorporation of health considerations in states’ Nationally Determined Contributions (NDCs) such that health becomes a motivation for climate mitigation action?

- inclusion of health-related climate change actions in the transparency reporting and monitoring mechanisms<sup>160</sup>?
  - inclusion of global progress on health and climate change as a source of input to the Global Stock Take in 2023?
  - close participation of health policy makers in climate negotiations, and in the formulation and implementation of climate policies?
- How can states and international institutions adopt more integrated approaches e.g. utilising nature-based solutions, across different environment agreements that can provide multiple co-benefits extending to health?
  - Can and to what extent should the principles or duty of due diligence in international environmental law encompass considerations of One Health in its application?
  - To bridge the divide between environmental considerations and health issues, could the obligation to undertake an

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**Note 160** Adaptation reporting mechanisms often rely on approaches and strategies such as monitoring and surveillance, similar to those found in traditional health initiatives and thus can potentially contribute to further the One Health agenda.

environmental impact assessment<sup>161</sup> be extended to a One Health impact assessment? This proposal is supported by the first report of OHHLEP, mentioning the “[o]pportunities to strengthen One Health considerations in environmental impact assessment methodology and practice”<sup>162</sup> and by [CBD COP Decision XIII/6](#) which calls for considering “health-biodiversity linkages in environmental impact assessments, risk assessments and strategic environmental assessments”<sup>163</sup>. One interviewee supported such an approach as well: “we must do health impact assessments instead of, or in addition to, environmental impact assessments”<sup>164</sup>. She considers that the health argument is likely to foster actions where the environmental argument has

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**Note 161** [Pulp Mills on the River Uruguay \(Argentina v. Uruguay\), Judgment, I.C.J. Reports 2010](#), p. 78, par. 193. The International Court of Justice (ICJ) recognized “a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource” (p. 83, para. 204).

**Note 162** [First virtual meeting of the One Health High-Level Expert Panel, 17-18 May 2021, Note for the Record](#), p. 5.

**Note 163** Para. 4 (d).

**Note 164** Interview with Maria Neira.

proven its limits. Another interviewee raises the interesting question of the legal meaning of “precaution” in One Health, and its potential differences with precaution in international environmental law and international trade law<sup>165</sup>.

## 2. Tackling AMR through Better Regulation and Stronger Implementation

In 2020 the AMR Tripartite (WHO, OIE/WOAH and FAO) performed a study of existing international instruments on the use of antimicrobials<sup>166</sup>. The study found there is a stronger legal framework for animal use and food safety than for human health. Marteen Van Der Heijden praised the [2021 update of the Codex Alimentarius Code of Practice to Minimize and Contain Foodborne Antimicrobial Resistance](#) and the [OIE Codes on Terrestrial and Aquatic Animal Health](#), which are reference

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**Note 165** Interview with Marteen Van Der Heijden.

**Note 166** FAO, OIE, WHO, [International instruments on the use of antimicrobials across the human, animal and plant sectors](#), 2020.

documents for the binding WTO SPS Agreement and have a big impact at the country level. He argues something similar could exist for human health and AMR, with regular updates and a legal secretariat in charge of the implementation of international standards. He notices limited substantive interest in creating new global binding standards in human health. He explains: “policy harmonization is mainly done through guidelines and non-binding standards, and stronger legal mechanisms are not desired currently”. There seems to be various reasons for this:

- Diversity of healthcare systems and of regulations in the healthcare systems, and little academic comparative research in administrative health law to define common standards (e.g. on prescriptions by doctors, on sales, on accreditation and licencing of hospitals...).
- Different levels of country capacity to mitigate AMR. For example, it is difficult to mandate every country to have the same standard of surveillance of antimicrobial use or to immediately phase out over-the-counter sales of all antibiotics. International standards will have to be variable according to countries’ capacity and best efforts and go together with a transition period and technical and financial support for implementation, perhaps through a Paris Agreement type of approach.



- Different legal cultures and traditions (doctors and pharmacists have responsibilities that require independent clinical judgement and are often traditionally self-regulated).

There are voices urging inclusion of AMR in the WHO pandemic treaty. According to Marteen Van Der Heijden, if there were to be a new treaty covering AMR, countries should implement a coherent One Health surveillance and monitoring system, to understand what is happening in terms of AMR and access to or use of antimicrobials. This could be done through the [WHO Global Antimicrobial Resistance and Use Surveillance System \(GLASS\)](#) and activities on integrated surveillance. There are strong examples of harmonization for AMR and antimicrobial use on the regional level in the European Union. Other regions and new regional entities like the African Medicines Agency could play an important role for AMR regulatory harmonization in the future.

While AMR-relevant instruments exist, it appeared from the interviews that national AMR activities for implementation are underfunded<sup>167</sup>, that instruments relevant for AMR are frag-

mented and that their legal strength and implementation should improve to reflect the magnitude and complexity of the health crisis and the commitment and coordination it requires.

The AMR Quadripartite (WHO, FAO, WOAHO/OIE and UNEP) is increasingly engaging on the legal aspects of AMR, organizing a global regulatory summit in 2023 to bring regulators together to discuss how to best phase out over-the-counter sales of antibiotics globally in the human and animal health sectors. The Quadripartite is also developing a common tool for the assessment of AMR-relevant legislation that will be published in 2023.

As explained in part. II, the Commission on Phytosanitary Measures that governs the International Plant Protection Convention (IPPC) [made an important statement on the role of pesticides and plant protection regulation in the development of AMR](#), but this has not yet been followed by the adoption of specific standards or guidance on this issue. One of the difficulties in linking pesticides and AMR come from the fact that pesticides are “chemicals” and are not immediately identifiable as antimicrobials. Yet, many pesticides have antimicrobial properties.

Antimicrobials are not explicitly covered in the treaties dealing with the environment, and not all interpretations of the treaties cover them (though some definitions may cover antimicrobials).

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**Note 167** For instance, the implementation of the national plans created on the basis of the WHO [Global Action Plan on AMR](#) is not granted because of underfunding (interview with Marteen Van Der Heijden).

Expanding these treaties to include antimicrobials might be an option. Another option that some European countries have investigated would be to regulate factories releasing antimicrobials in the environment extraterritorially by making this part of the national medicine procurement process<sup>168</sup>. For instance, in 2020 the WHO adopted a standard for limiting antimicrobial pollution in the manufacturing process<sup>169</sup>.

### 3. One Health through Development

Several experts insisted that mitigating the risks of zoonotic diseases goes hand in hand with ensuring food security and access to basic public services such as the local provision of water, sanitation, and electricity<sup>170</sup>. As Maria Neira puts it: “preparing sophisticated hubs and epidemic preparedness, but not

stopping these gaps in health facilities, is irritating”. These gaps are “factors for amplification”<sup>171</sup> of disease. Rather than suppressing certain ways of life, the experts insist that we should focus on limiting these amplification factors through development of local public services and public health capacities<sup>172</sup>.

Thus, comprehensive capacity-building is essential. Having more regulations does not mean much if national institutions are incapable of implementing them<sup>173</sup>. To this end, funding will be a decisive factor for success.

Moreover, as mentioned above, in the development of a One Health approach it is key to avoid the potential side-effects of a “blind” approach, which does not take into account the effectiveness of the approach or its impact on the practices, cultures and needs of local populations.

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**Note 168** Id.

**Note 169** Series, No. 1025, 2020.

**Note 170** Interviews with Tamara Giles-Vernick, Maria Neira and Sylvie Briand.

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**Note 171** Interview with Sylvie Briand.

**Note 172** Id.

**Note 173** Id.

## 4. A Change of Mindset: Overcoming Silo-Thinking

A common thread along the topic of One Health is the problem of siloed thinking. From a disciplinary, scientific, organizational, and normative perspective, human health, animal health, and the environment are treated separately. But as one expert said, it is only by seeing the big picture – by looking at the forest and not just its trees – that the needed changes will be made<sup>174</sup>.

Thus, most experts stressed that the lack of collaboration due to such siloed thinking must be overcome. Such collaboration is needed not only at the international level but also at the national level<sup>175</sup>. While much has been written in this White Paper about collaboration between international institutions, collaboration is also needed between different national

ministries and agencies – from health, agriculture and the environment. In most countries, these ministries rarely collaborate<sup>176</sup>.

Deploying a multidisciplinary One Health approach also requires a change in mindset across existing professions, through what is known as the ‘theory of change’<sup>177</sup>. This will require developing true interdisciplinary settings where experts from one discipline – including international lawyers – are more willing to engage professionally with those working in other fields of knowledge<sup>178</sup>.

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**Note 174** Interview with Wanda Markotter.

**Note 175** Interviews with Maria Neira and Sylvie Briand.

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**Note 176** Interview with Francesco Branca.

**Note 177** Interview with Thomas C. Mettenleiter.

**Note 178** Id.



annex

persons interviewed

- [Jonna Mazet](#), Chancellor's Leadership Distinguished Professor of Epidemiology and Disease Ecology, founder of the One Health Institute in the UC Davis School of Veterinary Medicine (8 July 2021)
- [Dennis Carroll](#), Chair of the Global Virome Project Leadership Board, former Director of the U.S. Agency for International Development's (USAID's) Pandemic Influenza and other Emerging Threats Unit (9 July 2021)
- [Sylvie Briand](#), Director of the Epidemic and Pandemic Preparedness and Prevention department at the WHO (12 July 2021)
- [Francesco Branca](#), Director of the Department of Nutrition for Health and Development at the WHO (15 July 2021)
- [Tamara Giles-Vernick](#), Head of the Anthropology and Ecology of Disease Emergence Unit of the Pasteur Institute in Paris (26 July 2021)
- [Maarten van der Heijden](#), Technical Officer at the WHO (30 September 2021)
- [Thomas C. Mettenleiter](#), President of the Friedrich-Loeffler-Institut (Federal Research Institute for Animal Health, Germany), Co-Chair of the One Health High-Level Expert Panel (20 October 2021)
- [X](#), agent of an intergovernmental organization (28 October 2021)
- [Maria Neira](#), Director of the Department of Public Health and Environment at the WHO (3 November 2021)
- [Wanda Markotter](#), Director of the Centre for Viral Zoonoses in the Department of Medical Virology at the University of Pretoria's Faculty of Health Sciences, co-chair of the One Health High-Level Expert Panel (7 February 2022)
- [John E. Scanlon AO](#), Chair of the Global Initiative to End Wildlife Crime, former Secretary-General of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (4 March 2022)
- [Theresa Mundita Lim](#), Executive Director at the ASEAN Center for Biodiversity (7 April 2022)

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