Universiteit Leiden
The Netherlands

The deep prevention of future pandemics through a One Health approach: what role for a pandemic instrument?

Le Moli, G.; Viñuales, J.E.; Burci, G.L.; Strobeyko, A.; Moon, S.

Citation
Le Moli, G., Viñuales, J. E., Burci, G. L., Strobeyko, A., & Moon, S. (2022). The deep prevention of future pandemics through a One Health approach: what role for a pandemic instrument? *Global Health Centre Policy Brief*. Retrieved from https://hdl.handle.net/1887/3561531

Version:	Publisher's Version
License:	Leiden University Non-exclusive license
Downloaded from:	https://hdl.handle.net/1887/3561531

Note: To cite this publication please use the final published version (if applicable).

GLOBAL HEALTH CENTRE POLICY BRIEF | 2022

THE DEEP PREVENTION OF FUTURE PANDEMICS THROUGH A ONE HEALTH APPROACH: WHAT ROLE FOR A PANDEMIC INSTRUMENT?

Ginevra Le Moli, Jorge E. Viñuales, Gian Luca Burci, Adam Strobeyko, Suerie Moon[1]

GENEVA GRADUATE INSTITUTE
GLOBAL HEALTH CENTRE

CEENRG
Cambridge Centre for Environment, Energy and Natural Resource Governance

1 We are grateful for inputs and comments received from Daniela Morich and Faye Ioannou on an earlier draft of this paper.

Global Health Centre
Graduate Institute of International and Development Studies
Chemin Eugène-Rigot 2 | Case Postale 1672
1211 Geneva 21 | Switzerland

Tel +41 22 908 4558
Fax +41 22 908 4594
Email globalhealth@graduateinstitute.ch

graduateinstitute.ch/globalhealth

TABLE OF CONTENTS

EXECUTIVE SUMMARY 4
ACRONYMS 6

INTRODUCTION 7

WHY ONE HEALTH? 7
WHAT IS ONE HEALTH? 8
SCOPE, PURPOSE AND STRUCTURE OF THIS POLICY BRIEF 8

BACKGROUND: ORIGINS AND EVOLUTION OF INTERNATIONAL ONE HEALTH GOVERNANCE 9

ORIGINS OF THE ONE HEALTH APPROACH 9
EVOLUTION OF INTERNATIONAL ONE HEALTH GOVERNANCE 9
ONE HEALTH AT THE 2021 WHA SPECIAL SESSION 10
PANDEMIC PREVENTION AT THE 2022 UN ENVIRONMENT ASSEMBLY 11

IDENTIFYING GAPS IN EXISTING INTERNATIONAL RULES 12

WHAT DOES PREVENTION MEAN? 12
APPLICABLE INTERNATIONAL RULES 13
A REGULATORY GAP FOR THE PANDEMIC INSTRUMENT? 15

ADDRESSING GAPS IN INTERNATIONAL RULES THROUGH A PANDEMIC INSTRUMENT 16

SPECIFIC SUBSTANTIVE MEASURES 16
I. INTEGRATED SURVEILLANCE, DATA COLLECTION AND SHARING ACROSS ANIMAL, ENVIRONMENT AND HEALTH SECTORS 16
II. REGULATORY OBLIGATIONS FOR PARTIES TO TAKE MEASURES TO REDUCE ZOONOTIC RISKS 17
III. A SCIENCE POLICY INTERFACE FOR KNOWLEDGE CURATION AND SETTING NORMS AND STANDARD 17
IV. INTEGRATING ACROSS ACTORS RESPONSIBLE FOR HUMAN-ANIMAL-ENVIRONMENTAL HEALTH, NATIONALLY AND INTERNATIONALLY 19

GOVERNANCE MEASURES CUTTING ACROSS THE PANDEMIC INSTRUMENT 20
I. PRINCIPLES 20
II. TECHNICAL COOPERATION, SUPPORT AND TECHNOLOGY TRANSFER 20
III. FINANCING 21
IV. MONITORING AND ACCOUNTABILITY FOR COMPLIANCE 22

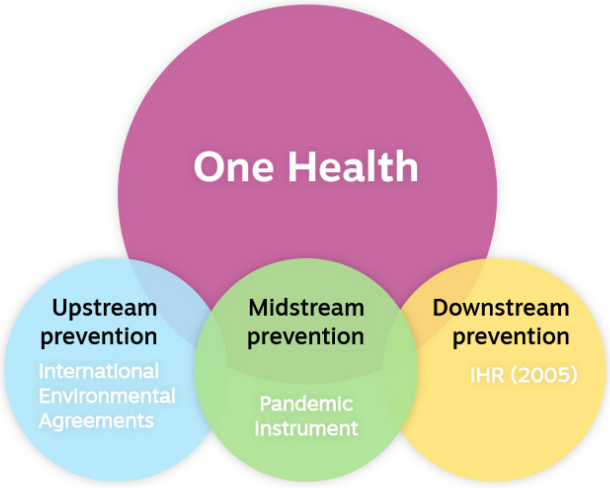
CONCLUSIONS 23

EXECUTIVE SUMMARY

More than half of all known human pathogens have animal origin and a key question that has arisen in the wake of the COVID-19 crisis is: how can the risk of future pandemics emerging from the animal-human-ecosystems interface be reduced? One answer to this question is to focus on "One Health". One Health has been defined as 'an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.'[1] While many WHO Member States and other stakeholders agree on the importance of including One Health in a Pandemic Instrument, One Health is an expansive concept and approach and not all One Health issues may be suitable for treatment through such an instrument. Thus, the issue of how to address One Health in such an instrument is not yet clear. This policy brief seeks to advance thinking and debate on this question by offering analysis on how a Pandemic Instrument could incorporate the One Health approaches to strengthen pandemic prevention, preparedness and response (PPR).

One Health has been progressively recognized as an important element of PPR, and efforts to strengthen One Health implementation have grown considerably at national and international levels. It is critical to identify gaps in existing international rules to pinpoint where a Pandemic Instrument could add value, to avoid overlap, maximise synergies and, more generally, map the main relations between rules and organizations active in this space. This requires first assessing what already exists. Notably, there has been increased collaboration across communities of practice and intergovernmental organizations through the Quadripartite. In addition, various aspects of One Health are at least partly regulated by existing international instruments. Many upstream drivers of zoonoses already fall within the remit of pre-existing multilateral environmental agreements, for example, on climate change, wildlife trade and land-use change. In addition, after a pathogen spills over from animals to humans and begins to cause a disease outbreak – what we call the "downstream" stage – the detection and response is governed by the IHR (2005). This leaves an important gap in international rules to address midstream 'deep prevention,' as illustrated in the figure below.

We use the term 'deep prevention' to refer to addressing both upstream drivers, such as climate change, and midstream events such as spillover. We do so to distinguish the concept of prevention from the way the term is often used in public health, which is to prevent a small and localized outbreak from spreading and becoming an epidemic or pandemic – but not to prevent the spillover from happening in the first place. A new Pandemic Instrument could therefore fill a gap of particular importance for the implementation of One Health by focusing on reducing the likelihood of harmful events. Such events include the spillover of pathogens from animals to humans, or the development of pathogens resistant to existing antimicrobials.



1 The OHHLEP was established by the WHO, the Food and Agriculture Organization (FAO), the World Organization for Animal Health (OIE) and the United Nations Environment Programme (UNEP). The definition was articulated in: Joint Tripartite (FAO, OIE, WHO) and UNEP Statement, Tripartite and UNEP support OHHLEP's definition of 'One Health', FAO, OIE, WHO and UNEP, 2021, at https://wedocs.unep.org/bitstream/handle/20.500.11822/37600/JTFOWU.pdf [last access 28/03/22].

For this purpose, we have identified four types of substantive obligations that a Pandemic Instrument could include on One Health:

1. Integrated surveillance, data collection and sharing across the animal, environment, and human health sectors;
2. Regulatory obligations for parties to take measures to reduce zoonotic risks (e.g. regulating activities, such as wildlife consumption, or places, such as farms, markets and other spillover "hotspots");
3. A science-policy interface for knowledge curation and setting norms and standards; and
4. Integration across actors responsible for human-animal-environmental health nationally and internationally

One Health also requires governance measures that would apply across the Pandemic Instrument as a whole, and for the sake of simplicity can be considered separately from the substantive issues above specific to One Health. These include:

1. Principles;
2. Technical cooperation, support and technology transfer;
3. Financing; and
4. Monitoring and accountability for compliance.

The paper outlines a number of options available for states to consider. We have also provided concrete examples from the environmental sector, which has used the instrument of international law far more extensively than the health sector. Our hope is that clarifying the One Health elements that could be included in a Pandemic Instrument will help to advance thinking and debate on this crucial but complex issue.

Acronyms	
AMR	Antimicrobial Resistance
BRS	Basel, Rotterdam and Stockholm conventions
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COP	Conference of Parties
FAO	Food and Agriculture Organization
GATT	General Agreement on Tariffs and Trade
IHR	International Health Regulations
IMCAPI	International Ministerial Conferences on Avian and Pandemic Influenza
INB	Intergovernmental Negotiating Body
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem
JEE	Joint External Evaluation
OHHLEP	One Health High Level Expert Panel
OIE/WOAH	World Organisation for Animal Health
PPR	Pandemic Preparedness and Response
PVS	Performance of Veterinary Services
SAGE	Strategic Advisory Group of Experts
SPS	World Trade Organization Agreement on Sanitary and Phytosanitary Measures
TBT	World Trade Organization Agreement on Technical Barriers to Trade
TRIPS	World Trade Organization Agreement on Trade-Related Aspects of Intellectual Property Rights
UNCCD	United Nations Convention to Combat Desertification
UNEA	UN Environment Assembly
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNSIC	UN Systems Coordinator for Avian and Animal Influenza
WHA	World Health Assembly
WHO	World Health Organization
WTO	World Trade Organization

INTRODUCTION

a. Why One Health?

A key question that has arisen in the wake of the COVID-19 crisis is how to reduce the risks of future pandemics emerging from the animal-human-environment interface. More than half of all known human pathogens have animal origin,[2] including COVID-19, according to the available evidence.[3] The threat of zoonoses (infectious diseases naturally transmissible from vertebrate animals to humans)[4] is increasingly recognized.

The processes of emergence or re-emergence of an infectious disease are complex and diverse.[5] They may include, for example,[6] cases of new (or newly detected) pathogens, leading to infectious diseases such as Lassa fever, SARS, and Heartland virus disease; the migration of known pathogens to different locations, such as the shift of the West Nile virus to the United States and Ebola virus to West Africa; cases of pathogen spillover into new hosts, like that of the H5N1 avian influenza virus' to humans or that of the Nipah virus from bats to pigs to humans. Also, the concept of emergence and re-emergence further expands to the micro level, such as the genomic mutations resulting in enhanced antimicrobial drug resistance.[7] Thus, the drivers of emergence can happen at different levels in the environment, even causing changes in pathogenesis that can create a new disease.[8]

Such wide scope makes identifying and detecting newly emerging zoonoses difficult. Moreover, in addition to biological factors, the ecology, sociology, as well as humans' and animals' behaviour greatly impact the transmission interface and allow the spillover of a new pathogen from an animal reservoir host into the first human case – which enables subsequent dissemination through the human population.[9] If all known pathogens are only a small part of the total potential pathogens existing in nature,[10] it is predominantly the risk posed by yet-to-emerge pathogens that demands a reinvigorated approach to preventing future potential pandemics.[11]

---

2 Daszak P, Cunningham AA, Hyatt AD, 'Emerging infectious diseases of wildlife—threats to biodiversity and human health', (2000) *Science* 287:443–49; Woolhouse MEJ, Gowtage-Sequeria S, 'Host range and emerging and reemerging pathogens', (2005) *Emerg. Infect. Dis.* 11, 1842–1847; Jones KE, et al., Global trends in emerging infectious diseases, (2008) *Nature* 451:990–93; World Bank, *People, Pathogens, and Our Planet*, *Vol. 1: Towards a One Health Approach for Controlling Zoonotic Diseases*, (2010) Washington, DC: World Bank.

3 Holmes EC et al., 'The origins of SARS-CoV-2: A critical review', (2021) *Cell* 184, 4848–4856 (2021).

4 WHO, 'Zoonoses', 2020, at https://www.who.int/news-room/fact-sheets/detail/zoonoses [last access 28/03/22].

5 Engering A, Hogerwerf L, Slingenbergh J, 'Pathogen-host-environment interplay and disease emergence', (2013) *Emerg Microbes Infect.* 2:e5.

6 Bird BH and Mazet JAK, 'Detection of Emerging Zoonotic Pathogens: An Integrated One Health Approach', (2018) *Annu. Rev. Anim. Biosci,* 6:121–39, 122.

7 Hu Y, Gao GF, Zhu B, 'The antibiotic resistome: gene flow in environments, animals and human beings', (2017) *Front. Med.* 11:161–68.

8 Diack AB et al., 'Variant CJD. 18 years of research and surveillance', (2014) *Prion* 8:286–95.

9 Woolhouse M, Gaunt E., 'Ecological origins of novel human pathogens', (2007) *Crit. Rev. Microbiol.* 33:231– 42; Wolfe ND, Dunavan CP, Diamond J, 'Origins of major human infectious diseases', (2007) *Nature* 447:279– 83; Lloyd-Smith JO et al., 'Epidemic dynamics at the human-animal interface', (2009) *Science* 326:1362–67; Morse SS et al., 'Prediction and prevention of the next pandemic zoonosis', (2012) *Lancet* 380:1956–65; Hassell JM et al., 'Socio-ecological drivers of vertebrate biodiversity and human-animal interfaces across an urban landscape', (2021) *Glob Change Biol* 27:781–792.

10 Anthony SJ et al., 'A strategy to estimate unknown viral diversity in mammals', (2013) *mBio* 4:e00598-13; Bebber DP, Marriott FH, Gaston KJ, Harris SA, Scotland RW, 'Predicting unknown species numbers using discovery curves', (2007) *Proc. Biol. Sci.* 274:1651–58.

11 Bernstein AS et al., 'The costs and benefits of primary prevention of zoonotic pandemics', (2022) *Sci. Adv.* 8, eabl4183, 1-13.

b. What is One Health?

The One Health High Level Expert Panel (OHHLEP) defined One Health as 'an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems.'[12] In a One Health approach, 'multiple sectors work together to achieve better public health outcomes,'[13] recognizing that 'animal health, human health, and environmental health are intrinsically intertwined and interdependent'.[14] Yet the scope of One Health extends far beyond pandemics, it '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.'[15]

c. Scope, purpose and structure of this policy brief

In light of the broad scope of One Health, this policy brief focuses only on the specific question: how might a Pandemic Instrument incorporate the One Health approaches to strengthen the prevention, detection and response to potential pandemics? The answer is by focusing on what we call 'midstream deep prevention' by means of a range of regulatory techniques in use in other fields of global governance.

In order to flesh out the terms and implications of this answer, we proceed as follows. In the next section, the paper provides an overview of how the One Health approach emerged and the evolution of international One Health governance efforts, including at the 2021 WHA Special Session. We then offer an analytical framework that shows which areas are covered by existing international instruments and where gaps remain. The paper then briefly lays out options for how such gaps could be addressed in a Pandemic Instrument, addressing both issues specific to One Health and those cutting across the entire Pandemic Instrument.

12 The OHHLEP was established by the WHO, the Food and Agriculture Organization (FAO), the World Organization for Animal Health (OIE) and the United Nations Environment Programme (UNEP). The definition was articulated in: Joint Tripartite (FAO, OIE, WHO) and UNEP Statement, Tripartite and UNEP support OHHLEP's definition of 'One Health', FAO, OIE, WHO and UNEP, 2021, at https://wedocs.unep.org/bitstream/handle/20.500.11822/37600/JTFOWU.pdf [last access 28/03/22].

13 WHO, 'One Health', 2017, at https://www.who.int/news-room/questions-and-answers/item/one-health [last access 28/03/22].

14 OIE, 'One Health', 2022, at https://www.oie.int/en/what-we-do/global-initiatives/one-health/ [last access 28/03/22].

15 Joint Tripartite (FAO, OIE, WHO) and UNEP Statement, Tripartite and UNEP support OHHLEP's definition of 'One Health', FAO, OIE, WHO and UNEP, 2021, at https://wedocs.unep.org/bitstream/handle/20.500.11822/37600/JTFOWU.pdf [last access 28/03/22].

BACKGROUND:
ORIGINS AND EVOLUTION OF INTERNATIONAL ONE HEALTH GOVERNANCE

a. Origins of the One Health approach

The significance of zoonoses in the emergence of infectious diseases has been recognized for decades, for example in the US Institute of Medicine's (IOM) reports on 'Emerging Infections' (1992) and on 'Microbial Threats to Health' (2003).[16] These and a number of subsequent meetings and reports have been central in further developing the One Health approach.[17] The term 'One Health' entered policy discourse in 2003–2004 in connection with the emergence of SARS in early 2003 and with the spread of the avian influenza H5N1. The One Health approach was also referred to by the 'Manhattan Principles' developed during a 'One World, One Health' 2004 meeting of the Wildlife Conservation Society, which clarified the nexus between human and animal health.[18] Subsequently, it was also used in the 'Berlin Principles', which offered recommendations for ten actions at the national and supranational levels of decision-making that would strengthen One Health implementation.[19]

b. Evolution of international One Health governance

International cooperation on One Health has evolved considerably. Due to the spread of H5N1 influenza, the UN Secretary General appointed a UN Systems Coordinator for Avian and Animal Influenza (UNSIC). A collaboration between international organisations, including the WHO, FAO, OIE, UNICEF, and the World Bank, and national heath ministries led to the establishment of the International Ministerial Conferences on Avian and Pandemic Influenza (IMCAPI). IMCAPI's activity has been important in the development of a framework based on the One Health approach and focused on minimizing the threats deriving from emerging infectious diseases.[20] Since then, organisations such as the WHO, FAO, CDC, OIE and the World Bank have been sharing information and working together in an effort that has helped to mainstream the One Health approach. In parallel, a One Health approach has also found support at the national[21] and regional levels.[22]

---

16 IOM, *Emerging infections. Microbial threats to health in the United States,* (1992) The National Academy Press, Washington DC; IOM, *Microbial threats to health. Emergence, detection, and response,* (2003) The National Academy Press, Washington DC.

17 For an overview, see Ruckert A, Gonçalo das Neves C, Amuasi J, Hindmarch S, Brux C, AS Winkler AS, Carabin H, 'One Health as a Pillar for a transformative pandemic treaty', (2021) Global Health Centre, 7-12; Mackenzie JS, McKinnon M, Jeggo M, 'One Health: From Concept to Practice', in Yamad A et al., *Confronting Emerging Zoonoses*, (Springer, 2014), 163–189, table 8.1. at 166-167.

18 The Manhattan Principles, 2004, at https://oneworldonehealth.wcs.org/About-Us/Mission/The-Manhattan-Principles.aspx [last access 28/03/2022].

19 The Berlin Principles on One Health, 2019, at https://oneworldonehealth.wcs.org/About-Us/Mission/The-2019-Berlin-Principles-on-One-Health.aspx [last access 28/03/2022]. See also Gruetzmacher K, Karesh WB, Amuasi JH, Arshad A, Farlow A, Gabrysch S, et al., 'The Berlin principles on one health - Bridging global health and conservation' (2021) *Sci Total Environ* 764, 142919.

20 IMCAPI, *Contributing to One World, One Health: A Strategic Framework for Risks of Infectious Diseases at the Animal-Human-Ecosystems Interface*, at https://www.fao.org/3/aj137e/aj137e00.pdf [last access 28/03/22].

21 See, by way of example, Bhutan: Bhutan One Health Strategic Plan 2018 – 2023, (2018); Burkina Faso: Burkina Faso National One Health Platform, (2019); Ethiopia: Ethiopia National One Health Strategic Plan 2018 – 2022, (2018); Germany: Initiative area One Health in development cooperation, (2021); Kenya: National Strategic Plan for Implementation of One Health One Health in Kenya (2012-2017), (2012); Nigeria: Nigeria One Health Strategic Plan 2019-2023, (2019); Namibia: Namibia National Action Plan for Health Security (2021-2025), (2021); South Sudan: South Sudan National Action Plan for Health Security (NAPHS) 2020-2024, (2020); Thailand: Thailand National Strategic Plan for EIDs 2017-2021, (2017); Uganda, Uganda One Health Strategic Plan (2018-2022), (2018).

22 By way of example see *African Union*: see Africa CDC, 'One Health Framework for One Health Practice in National Public Health Institutes', (2020); *Eastern Mediterranean Region of WHO*, 'One Health operational framework for action for the Eastern Mediterranean Region, focusing on zoonotic diseases', (2020). *Economic Community of West Africa States (ECOWAS)*: 'Operationalizing the ECOWAS regional one health coordination mechanism (2016–2019): Scoping review on progress, challenges and way forward', (2021); ECOWAS, 'Prioritizing zoonotic diseases using a multisectoral, One Health approach for The Economic Community of West African States (ECOWAS)', (2021); ECOWAS, 'Report

Of particular note is the FAO/OIE/WHO collaboration, initiated in 2010 and aimed at undertaking 'complementary work to develop normative standards and field programs to achieve One Health goals'.[23] Between 2010 and 2020, this collaboration led to several reports discussing the health risks at the human-animal-ecosystems interfaces,[24] including an operational guide to countries for the implementation of a One Health approach to address zoonotic diseases.[25] The problem of antimicrobial resistance (AMR) has also spurred collaboration across these organizations, the development of the 2015 Global Action Plan on Antimicrobial Resistance.[26] The collaborative framework, called the 'Tripartite Plus' – or the 'Quadripartite', involved also UNEP to coordinate efforts, and the programme was formally added to the partnership in 2022.[27] These four organizations created the One Health High Level Expert Panel (OHHLEP) in 2020 to advise and support their efforts.

The One Health approach is centered around responses and actions at the animal–human–ecosystems interfaces, and it is predominantly related to emerging and endemic zoonoses, antimicrobial resistance (AMR)[28] and food safety.[29] The scope of One Health as defined by international organizations (WHO, FAO, OIE as well as UNEP),[30] the World Bank[31] and regional organisations[32] has also been further expanded to include other areas, such as environmental and ecosystem health, social sciences, ecology, wildlife, land use, and biodiversity.

c. One Health at the 2021 WHA Special Session

During the 2021 WHA Special Session, the Group of Friends of a Pandemic Treaty, New Zealand and the EU advanced proposals defining three One Health priorities for a new international legal instrument:[33] first, the adoption of a cross-sectoral approach, nationally and internationally, accounting for the animal-human-environment interface; second, the importance of adopting upstream preventive measures to strengthen

on One Health Technical and Ministerial Meeting to Address Zoonotic Diseases and Related Public Health Threats', (2016); ECOWAS, 'Communiqué: One Health Ministerial Meeting To Address Zoonotic Diseases and Other Related Public Health Threats', Dakar, Senegal, 11 November 2016. *Horn of Africa*: One Health Units for Humans, Environment, Animals and Livelihoods (HEAL) Project, 'One Health Policy Context of Ethiopia, Somalia, and Kenya', (2019). *Europe*: EFSA, ECDC, 'The European Union One Health 2020 Zoonoses report', (2021) EFSA Journal 19(12), 6971.

23 FAO, OIE, WHO, *The FAO-OIE-WHO Collaboration - Sharing Responsibilities and Coordinating Global Activities to Address Health Risks at the Animal-Human- Ecosystems Interfaces - A Tripartite Concept Note,* 2010.

24 FAO, OIE, WHO, *High-Level Technical Meeting to Address Health Risks at the Human-Animal- Ecosystems Interfaces,* 2011; WHO, OIE, *WHO–OIE Operational Framework for good governance at the human-animal interface: bridging WHO and OIE tools for the assessment of national capacities,* (2014) WHO-OIE; FAO, OIE WHO, *The Tripartite's Commitment. Providing multi-sectoral, collaborative leadership in addressing health challenges,* 2017; FAO, OIE, WHO, 2020 Joint Risk Assessment Operational Tool (JRA OT), 2020.

25 FAO, OIE WHO, *Taking a multisectoral, one health approach: a tripartite guide to addressing zoonotic diseases in countries,* 2019.

26 https://www.who.int/publications/i/item/9789241509763

27 See 'UN Environment Programme joins alliance to implement One Health approach', 18 March 2022, at https://www.who.int/news/item/18-03-2022-un-environment-programme-joins-alliance-to-implement-one-health-approach [last access 28/03/22].

28 WHO-FAO-OIE, Global Action Plan on antimicrobial resistance, 68th World Health Assembly, 2015; WHO-FAO-OIE, *Monitoring and evaluation of the global action plan on antimicrobial resistance: framework and recommended indicators,* 2019; ASEAN Strategic Framework to Combat Antimicrobial Resistance through One Health Approach [2019-2030], 2019; ASEAN, ASEAN Leaders' Declaration on Antimicrobial Resistance (AMR), *Combating AMR through One Health Approach,* 2017; European Commission, *A European One Health Action Plan against Antimicrobial Resistance (AMR)*, 2017.

29 Garcia, SN, Osburn, BI, Cullor JS, 'A one health perspective on dairy production and dairy food safety', (2019) *One Health*, 7, 100086.

30 In 2020, these four organizations created the One Health High-Level Expert Council, see Presentation of the work of the Alliance for Multilateralism, *The One Health High-Level Expert Council and the Fight against Infodemics*, Paris Peace Forum, 12 November 2020. For reports discussing One Health published by each organization, see bibliography at the end of this policy paper.

31 World Bank, *World Bank Operational framework for strengthening human, animal and environmental public health systems at their interface,* 2018; World Bank, *People, Pathogens, and Our Planet, Vol. 1: Towards a One Health Approach for Controlling Zoonotic Diseases,* (2010), Washington, DC: World Bank; World Bank, *People, Pathogens and Our Planet: The Economics of One Health,* (2012) Washington, DC: World Bank; World Bank, *People, Pathogens and Our Planet, Vol. 2: The Economics of One Health,* (2012) Washington DC: World Bank.

32 EFSA, ECDC, 'The European Union One Health 2018 Zoonoses report', (2019) *EFSA Journal* 17 (12) (2019) e05926; EFSA, ECDC, 'The European Union One Health 2019 Zoonoses Report', (2021) *EFSA Journal* 19(2): 6406; EFSA, ECDC, 'The European Union One Health 2020 Zoonoses report', (2021) *EFSA Journal* 19(12), 6971. See also EFSA, ECDC, 'The European Union Summary Report on antimicrobial resistance in zoonotic and indicator bacteria from humans, animals and food in 2017', (2019) *EFSA Journal* 17 (2) e05598; EFSA, ECDC, 'The European Union Summary Report on Antimicrobial Resistance in zoonotic and indicator bacteria from humans, animals and food in 2017/2018', (2020) *EFSA Journal* 18(3):6007.

33 See Balcazar Moreno AB, Burci GL, Strobeyko AP, 'Taxonomy of Substantive Proposals for a New Instrument on Pandemic Prevention, Preparedness and Response', (2022) Global Health Centre, 16-17.

the surveillance system, improving the flow of information, data and regulating domestic animal markets as well as illicit wildlife traffic and wet markets; third, the need for coordination and partnerships between international organizations. During the WHA special session, various Member States supported proposals to include in the new instrument provisions on: the One Health approach and animal-human-environment interface;[34] solid preventive measures, prompt detection and notification of risks;[35] and cross-sectoral approaches to the work of authorities in health-related areas.[36] Member States and other stakeholders have continued to emphasize the importance of One Health in subsequent meetings and public consultation processes of the Intergovernmental Negotiating Body (INB) established to negotiate the Pandemic Instrument. While many agree on the importance of including One Health in a new international instrument, the question of *how* to do so is not yet clear.[37]

d. Pandemic prevention at the 2022 UN Environment Assembly

One Health has also received high-level attention in the environment sector. In February 2022, the fifth UN Environment Assembly (UNEA-5.2) in Nairobi discussed the close connections between ecosystem and human health. The concluding Ministerial Declaration recognized the risk of future pandemics if current patterns in human-environment interactions are not addressed. Two resolutions are of particular relevance: first, a resolution on animal welfare, which recognized that 'animal welfare can contribute to addressing environmental challenges, promoting the "One Health" approach and achieving the Sustainable Development Goals';[38] and, secondly, a resolution on biodiversity and health, which invited Member States to 'strengthen links between the conservation and sustainable use of biodiversity and public health in sectoral policies and in accordance with the One Health approach in order to prevent, detect, better prepare for and respond to health risks'.[39] The resolution also called on Member States to 'reduce health risks associated with trade in live wildlife[…], through regulation of their commerce and ensuring the sustainable and safe consumption of wild meat, including adequate sanitary controls in food markets where live wild animals are sold'.[40]

Also the Conference of the Parties of the Convention on Biological Diversity (CBD) has recognized as well the value of the One Health approach to address the crosscutting issue of biodiversity and human health. Since 2014, a series of decisions on biodiversity and human health adopted by this body invite Parties and other Governments 'to consider integrating One Health policies […] in their national biodiversity strategies and action plans.'[41]

From this brief overview of the evolution of international governance of One Health, we can draw three conclusions: it has been rising on the global agenda; efforts to address One Health are taking place simultaneously in different multilateral forums; and there appears to be increasing appetite for stronger regulation in response to the devastation of the COVID-19 crisis and the risk of future pandemics.

---

34 Namely, WPRO members, Belgium, India, Lebanon, Mexico, Morocco, Spain, EU, see *ibid*., 16.

35 Namely, Belgium, Botswana, Fiji, India, Kenya, Spain, and Suriname, see *ibid*.

36 Namely, WPRO members, Guatemala, and Mexico, see *ibid*., 17.

37 For suggestions on possible measures to operationalize a One Health approach in a global pandemic treaty, see Ruckert A, Gonçalo das Neves C, Amuasi J, Hindmarch S, Brux C, AS Winkler AS, Carabin H, 'One Health as a Pillar for a transformative pandemic treaty', (2021) Global Health Centre, 12-18.

38 Draft resolution on the animal welfare–environment– sustainable development nexus, UNEP/EA.5/L.10/Rev.1, 26 February 2022, Preamble, draft at https://wedocs.unep.org/bitstream/handle/20.500.11822/38632/L.10.REV.1%20-%20Draft%20resolution%20on%20the%20animal%20welfare–environment–%20sustainable%20development%20nexus%20-%20English.pdf?sequence=1&isAllowed=y [last access 28/03/22].

39 Biodiversity and Health, Resolution adopted by the United Nations Environment Assembly on 2 March 2022, UNEP/EA.5/Res.6, 7 March 2022, at: https://wedocs.unep.org/bitstream/handle/20.500.11822/39840/BIODIVERSITY%20AND%20HEALTH%20%20-%20English.pdf?sequence=1&isAllowed=y

40 *Ibid*, 1(d)(10).

41 The following decisions mentioning One Health have been adopted by the COP of the Convention on Biological Diversity: Decision XII/21. Biodiversity and human health, UNEP/CBD/COP/DEC/XII/21 17 October 2014; Decision XIII/6. Biodiversity and human health, CBD/COP/DEC/XIII/6 14 December 2016; Decision 14/4. Health and biodiversity, CBD/COP/DEC/14/4, 30 November 2018.

IDENTIFYING GAPS IN EXISTING INTERNATIONAL RULES

It is important to recognize that various aspects of One Health are at least partly regulated by existing international instruments and, as described above, are the object of increasingly active governance efforts and inter-agency cooperation. It is critical to identify gaps in existing international rules to pinpoint where a Pandemic Instrument could add value, to avoid overlap, maximise synergies and, more generally, map the main relations between rules and organizations that would be required to implement a One Health approach. Doing so is complex. It requires looking both at the relationship between a Pandemic Instrument and a range of multilateral – mostly environmental - agreements, on the one hand, and between these agreements and the 2005 International Health Regulations (IHRs) on the other.

The analytical framework below could help to reduce the complexity of this issue. The framework is designed to map the interconnections between health and environmental instruments and to address a regulatory space in between that could be the priority aim of a Pandemic Instrument.

What does prevention mean?

First, it is important to distinguish how the public health and environmental communities have used the term 'prevention' differently. In public health, 'prevention' is often used to describe measures that prevent the *spread* of disease once an outbreak in humans has occurred. It has been argued that the best ways to address future pandemic catastrophes should consist of '*detecting* and *containing* emerging zoonotic threats.'[42] This implies that action would be taken only after the spillover event from animals to humans has occurred. Yet, that leaves the prevention of spillover events themselves and of disease outbreaks unaddressed.

In environmental policy, 'prevention' refers to preventing the harmful event from occurring in the first place. Transposed to the public health context, we call this 'deep prevention.'[43] It can be achieved upstream by addressing the drivers of a problem, or midstream by reducing the likelihood of a harmful event. In contrast, from an environmental policy perspective, containing the consequences of a harmful event (e.g. an oil spill or a nuclear accident and, by analogy, disease outbreaks) is seen as a *downstream* intervention responding to a harmful event which the regulatory framework has failed to prevent.

42 Elias C, Nkengasong JN, Qadri F, 'Emerging infectious diseases — Learning from the past and looking to the future', (2021) *N. Engl. J. Med.* 384, 1181–1184. Prevention of the spill-over is not mentioned, for instance, in two recent prominent reports, WHO and World Bank, *A world in disorder: Global Preparedness Monitoring Board Annual report 2020, (2020); G20, Progress Note of the G20 High-Level Independent Panel on Financing the Global Commons for Pandemic Preparedness and Response,* (G20, April 2021) and G20, A Global Deal For Our Pandemic Age, Report of the G20 High Level Independent Panel on Financing the Global Commons for Pandemic Preparedness and Response, (G20, June 2021).

43 Viñuales, J., Le Moli, G., Moon, S., Burci, G.-L., 'A global pandemic treaty should aim for deep prevention' (2021) 397 *The Lancet* 1791.

Applicable international rules

The objective of deep prevention is neither included in the IHR (2005), which focuses essentially on the *downstream* detection and containment of disease spread, nor in existing environmental agreements, whose aim has been environmental goals not human health. That said, a number of environmental agreements seek to address the *upstream drivers* of zoonotic diseases, the most relevant being:

- CITES: United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973, 184 parties);
- UNFCCC: United Nations Framework Convention on Climate Change (1992, 197 parties), the 1997 Kyoto Protocol (1997, 192 parties) and the 2015 Paris Agreement (2015, 193 parties);
- CBD: Convention on Biological Diversity (1992, 196 parties), and the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity (2010, 137 parties);
- UNCCD: United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (1994, 197 parties)
- PWH: The UNECE/WHO-Europe Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1999, 27 parties)

From a *downstream* perspective, the most important legal instrument is the IHR (2005), which aims to detect and control an occurring outbreak of a (zoonotic) disease that has already spilled over into humans and presents at least a risk of international spread. It is important to note that, although animal diseases or the animal-human interface are not explicitly regulated by the IHR (2005), they have been introduced into the monitoring and assessment tools developed by the WHO Secretariat to assist States Parties in assessing their own core capacities. These include notably the State Party Self-Assessment Annual Reporting Tool and Joint External Evaluations.

Other relevant legal instruments in the downstream stage include Art. 8 of the PWH, Art. XX of the General Agreement on Tariffs and Trade (GATT, General Exceptions), the WTO Agreement on Sanitary and Phytosanitary Measures (SPS) and a range of similar policy reservation clauses in free trade agreements (FTAs). These provisions reserve and regulate the power of States to restrict trade flows for sanitary reasons. In particular, Annex A of the SPS defines legitimate grounds for limiting international trade as including measures 'to protect human life or health within the territory of the Member from risks arising from diseases carried by animals, plants or products thereof, or from the entry, establishment or spread of pests'. Measures based on international standards on contamination of animals or foodstuffs, or on a national risk assessment, can be lawfully enforced under the SPS Agreement by refusing imports. This may induce the exporting state to improve its sanitary measures and can reduce the risk of international spread, but the regulatory effect is indirect.

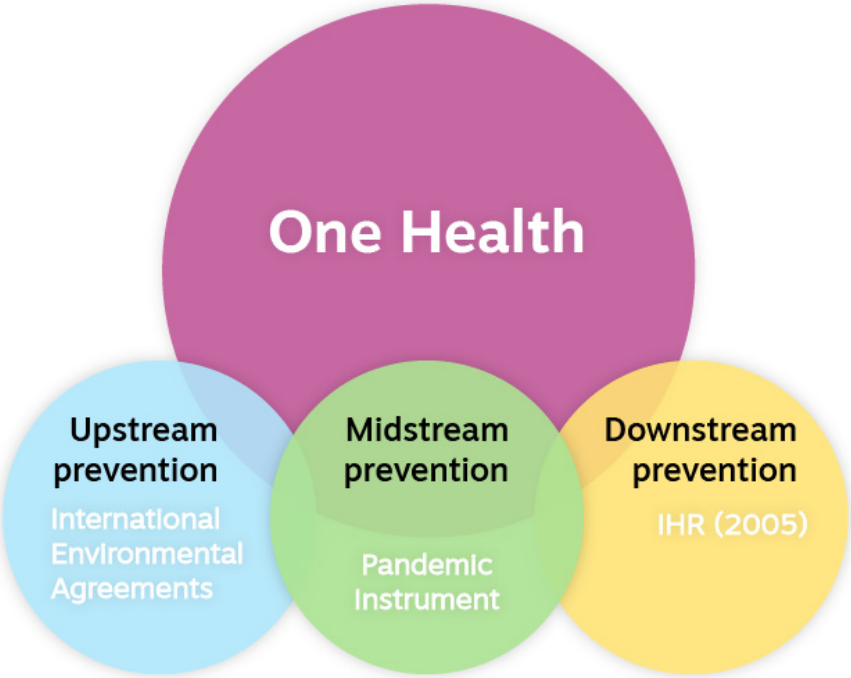
The Analytical Framework below summarizes existing international instruments, and highlights the gap in governing the midstream risk of harmful events.

Analytical Framework

Overall goal	**Reduce risk of infectious disease (re)emergence and spread in humans and animals**			
Context	Environmental governance		Public health governance	
Approach	Deep prevention		Containment	
Stage of intervention	Upstream	Midstream	Downstream	
Focus	Preventing drivers	Preventing events	Detecting, reporting and containing events	
Regulatory target	Drivers of (re)emergence, outbreak and spread	(Re)emergence (incl. pathogen spillover)	Human disease outbreak	Human disease spread
Examples	Macro-drivers (climate change-driven vector redistribution, land-use change, wildlife trade, international traffic, population movements, etc.)	Integrating surveillance of human, animal, environmental pathogens Regulating activities (e.g. host species management, wildlife trade, farming and feeding techniques, genetic modification and release, research, wildlife consumption) and places (e.g. water bodies and installations, farms, wet markets, research facilities (e.g. laboratories), etc.)	Detect spillover into humans, share information, contain outbreak. Strengthen capacities to do the above.	
Instruments	International agreements, e.g. on wildlife trade (CITES), climate change (UNFCCC/PA), biological diversity (CBD, Biosafety Protocol), land-use change (CBD,UNCCD), international traffic, population movements, etc	Pandemic Instrument (TBD)	IHR (2005 or 2024), including self-assessment and Joint External Evaluation (JEE) PWH, WTO General Exceptions, SPS, FTAs	

A regulatory gap for the Pandemic Instrument?

Between the upstream regulation of macro and micro-drivers and the downstream detection and reporting of disease outbreaks and containment of their spread, there is a wide midstream regulatory space (highlighted in green in the Analytical Framework above). It remains insufficiently addressed by international instruments and represents the physical and environmental spaces where humans and animals come into repeated contact and the risk of zoonotic spillovers is arguably most acute. The goal of this regulatory space is to regulate specific activities and spaces in order to prevent certain 'events' – that is, preventing disease (re)emergence in humans through pathogen spillover and/or mutation of pathogens into antimicrobial-resistant strains and disease outbreaks. A simplified depiction of this space is in Figure 1 below:



ADDRESSING GAPS IN INTERNATIONAL RULES THROUGH A PANDEMIC INSTRUMENT

This section identifies areas where a new Pandemic Instrument could contribute to addressing the midstream deep prevention gaps in the global health architecture. It draws on proposals made by WHO Member States and other stakeholders, notably the Quadripartite and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). We divide the section between a) Substantive measures that directly address the risk of harmful events and; b) Governance measures that will be important for the effectiveness and credibility of the substantive measures, but inevitably cut across the whole instrument. The aim is to provide options for states and generate discussion about their relevance and how they could be implemented. It does not intend to prejudge a final outcome of the INB's work, and takes into account the possibility that a Pandemic Instrument may include both 'hard' and 'soft' normative provisions, or be part of a broader package including related but separate instruments.

a. Specific substantive measures

i. Integrated surveillance, data collection and sharing across animal, environment and health sectors

Effective collection, exchange of information and integration across animal, human and environmental health surveillance systems could be considered an essential foundation of deep prevention. Analysts have argued for a more open approach towards sharing and management of information.[44] Integrated One Health surveillance systems could contain data outlining risk factors for disease emergence in wildlife, livestock, companion animals, the environment (soil and water), and humans.[45] Furthermore, data sharing agreements between governments and other relevant actors or the establishment or designation of dedicated hubs could ensure access to data. A recently created example of a collective and collaborative intelligence gathering and sharing initiative is the WHO Hub for Pandemic and Epidemic Intelligence.[46] Obligations to map zoonotic hotspots across the whole spectrum of animal populations within a Party's jurisdiction - wildlife, livestock and companion animals – could also be considered, relying on standards, methodologies, criteria and targets issued by an authoritative body. Surveillance data could, in turn, feed into a science-policy mechanism (described below) that could support a Pandemic Instrument.

In this context, several existing initiatives could be integrated into a future Pandemic Instrument or serve as a model for a similar approach. For example, the 2017 WHO-OIE Handbook for the Assessment of IHR Capacities at the Human-Animal Interface highlights synergies between Joint External Evaluations (JEE) and the OIE's Performance of Veterinary Services (PVS) Pathway and it includes specific information on how to use the data

44 *Ibid*; Toscano-Rivalta M, 'Disaster Risk Reduction in Light of the COVID-19 Crisis: Policy and Legal Considerations', (2020) *QIL, Zoom-Out* 70: 37–57; Samuel KLH and Cornforth RJ, 'Disaster Risk Reduction, Early Warning Systems, and Global Health: Critiquing the Current System- Based Approach' in *The Cambridge Handbook of Disaster Risk Reduction and International Law*, (2019) ed. Samuel KLH, Aronsson-Storrier M, and Bookmiller KN, Cambridge: Cambridge University Press.

45 Ruckert A, Gonçalo das Neves C, Amuasi J, Hindmarch S, Brux C, AS Winkler AS, Carabin H, 'One Health as a Pillar for a transformative pandemic treaty', (2021) Global Health Centre.

46 *Ibid*.

contained in a PVS Evaluation report to assist in the implementation of JEEs.[47] This document complements the IHR Monitoring and Evaluation Framework in pursuit of an integrated One Health Approach. Tools such as the Handbook are designed to be taken up by countries in their health security plans in order to facilitate the implementation of IHR core capacities and to strengthen in particular the capacity to prevent zoonotic spillover events.

In summary, a Pandemic Instrument could create a clear obligation on its parties to develop integrated surveillance systems, comparable and consistent metrics as well as criteria for international data sharing and reporting requirements.

ii. Regulatory obligations for parties to take measures to reduce zoonotic risks

The risks of zoonotic spillover identified through mapping and surveillance could be addressed through concrete measures that states agree upon through a Pandemic Instrument. As noted above, the instrument could target both 'activities' and 'places' that increase the risk of zoonotic spillover:

a. Activities driving pathogen spillover and pathogen mutation: e.g. host species management, wildlife consumption and trade, farming and feeding techniques, etc.
b. Places: e.g. farms, wildlife markets, research facilities (e.g. laboratories)

These obligations could be differentiated by the diverse risk profiles of different countries and regions (e.g. wildlife consumption in some countries, 'wet markets' in others, excessive use of antimicrobials in livestock in some countries, undergoverned use of antimicrobials in humans in others). They could also be made sensitive to the needs and concerns of local and indigenous communities. Given the potentially significant impacts on livelihoods and behaviors, special attention should be given to ensuring that any such regulatory action is equitable. This part of the regulatory framework could combine both bottom-up and top-down approaches to reconcile respect for local circumstances with clear legal obligations and targets. The 'top-down' aspects could include specific obligations on wildlife consumption and trade, restrictions on certain activities in wet markets, or limits on use of antimicrobials in livestock raising. The bottom-up approach could grant considerable flexibility and discretion to individual parties but require that they include local and indigenous communities in policy development and implementation. Agreement may be needed on mutual assessment and accountability, performance indicators, technical and financial support, knowledge and technology transfer, and other incentives.

iii. A science-policy interface for knowledge curation and setting norms and standard

One Health is a complex field characterized by many scientific uncertainties. A flexible approach that allows for adaptation to evolving scientific understandings of human-animal-environmental health seems important. Several analysts, such as Ruckert et al. (2021), have called for a Pandemic Instrument to include a continuously operating science-policy interface (SPI).[48] An SPI could perform two functions, curating knowledge and establishing norms and standards, as follows:

47 WHO, *Handbook for the Assessment of Capacities at the Human-Animal Interface*, 2nd ed. (Geneva: World Health Organization, 2017), available at: https://www.who.int/publications/i/item/handbook-for-the-assessment-of-capacities-at-the-human-animal-interface-2nd-ed [Last access 21/06/2022].

48 Ruckert A, Gonçalo das Neves C, Amuasi J, Hindmarch S, Brux C, AS Winkler AS, Carabin H, 'One Health as a Pillar for a transformative pandemic treaty', (2021) Global Health Centre, 18, 13.

a. Curate scientific knowledge: Scientific research relevant to One Health will continuously produce new knowledge, but making such knowledge known, understood and relevant to the policy community requires concerted action – or "curation." Relevant SPI arrangements in the environmental context include the Intergovernmental Panel on Climate Change (IPCC) and IPBES. Based on those and other precedents, an SPI for a Pandemic Instrument could review scientific literature for the purpose of summarizing periodically the level of scientific knowledge and its evolution (rather than engage in primary research). It could also translate this knowledge base into policy-relevant and actionable conclusions, including to contribute to negotiations of pandemic instrument protocols.

b. Establish technical norms and standards: Further translating this knowledge into technical norms and standards could guide national policies, and enable monitoring and assessment. The SPI could also go further, not only developing norms and standards but also supporting their implementation. For example, it could further develop a One Health capacity assessment methodology and oversee external evaluation. [49]WHO offers an immediate example of an institution that integrates SPI and standard-setting both by the Secretariat (acting on delegated authority by the Health Assembly and with the close involvement of outside experts and partners) as well as by the Health Assembly. Examples include:

- The recommendations submitted by the Director-General, on the advice of the Expert Committee on Drug Dependence, to the UN Commission on Narcotic Drugs;
- The Monographs published by the International Agency on Research on Cancer (IARC) on environmental factors that can increase the risk of human cancer
- The recommendations on vaccines and immunization based on the advice of the Strategic Advisory Group of Experts (SAGE)
- Guidelines on NCD risk factors, such as the 2015 guidelines on sugar intakes for adults and children.

Another familiar example of an independent standard-setting body is the intergovernmental Codex Alimentarius Commission, whereby the scientific analysis is provided by WHO and FAO as a form of risk assessment and the Commission operates as a risk management body. Codex standards, guidelines and recommendations are not legally binding, but acquire a 'harder' legal status when referred to by the legally-binding WTO SPS and TBT agreements.[50] Another relevant example is the proposal to create an Independent Panel on Evidence for Action Against Antimicrobial Resistance, which is envisioned to serve similar curation and norm-setting functions.[51]

Having described the potential *functions* of an SPI, we now turn to the *form* it could take. Ensuring a well-functioning SPI for One Health could take many organizational forms. It could rely on existing arrangements, such as the Quadripartite and/or its OHHLEP. It could also be a newly-created entity separate from the Pandemic Instrument, but informing its parties, just as the IPCC remains formally external to the UNFCCC. That function could also be performed by the secretariat of the Pandemic Instrument or other technical institutions, thus emphasizing the technical aspects of knowledge curation and norms/standard-setting. Finally, it could be conducted by an intergovernmental body, such as the Conference of the Parties to the Pandemic Instrument, emphasizing more the political nature of norm-setting and potentially increasing the political buy-in of the parties. Each of these options has its strengths and weaknesses in terms of fragmentation, technical independence, and political buy-in.

49 *Ibid*.

50 Outside the health field, a prominent standard-setting function is played by the International Atomic Energy Agency, e.g. through the development and adoption of Safety Standard Series by a standing body of senior government officials. They are also not legally binding, but constitute the reference global standard and are incorporated into agreements between states or between the IAEA and a state.

51 Draft terms of reference for the Independent Panel: https://www.who.int/publications/m/item/public-discussion-draft-terms-of-reference-independent-panel-on-evidence-amr

iv. Integrating across actors responsible for human-animal-environmental health, nationally and internationally

One of the main challenges of adopting a One Health approach is overcoming silos that often characterize the human, animal and environmental sectors, which are usually structured in separate ministries and organizations – both at national and international levels. This section identifies several options for how a Pandemic Instrument could contribute to increasing cross-sectoral integration.

a. National level: At the national level, a Pandemic Instrument could mandate the adoption, implementation and periodical update of comprehensive multisectoral national One Health strategies, plans and programmes. This would be placed under the responsibility of a national coordinating mechanism on One Health comprising all relevant public agencies and ideally also sub-national agencies responsible for surveillance and control at the local level. This is the approach adopted, for example, in Article 5 of the WHO Framework Convention for Tobacco Control. A similar integration requirement is provided for by the PWH. The mechanism in question, or a lead agency within its framework, could be designated as a focal point under the Pandemic Instrument to ensure prompt communication with other parties as well as with the secretariat for purposes of notification and accountability. The IHR use a similar approach with regard to the designation in Article 4 of National Focal Points. The establishment of national coordination mechanisms could also be the object of technical and capacity-building support from the secretariat of the Pandemic Instrument or other international partners.

b. International level: At international level, there is a spectrum of options to overcome fragmentation across different instruments and treaty regimes:

i. Integrated surveillance and information sharing, (see section IV.a.i. above).
ii. The establishment of coordination bodies and focal points (e.g. Quadripartite)
iii. The merger of the governance of different treaty regimes or international organizations.

Environmental law provides us with some examples. In 2005 the conference of the parties (COP) of the Basel, Rotterdam and Stockholm conventions (BRS conventions) established an Ad Hoc Joint Working Group in order to analyze potential synergies across their respective governance.[52] The recommendations of the Working Group were adopted by the COPs of the three conventions in 2008. This was followed by nomination of a common Executive Secretariat and organization of simultaneous meetings of the COPs of three conventions, where they decided, inter alia, on matters pertaining to technical cooperation, joint activities, audits and services, as well as management and review arrangements and synchronization of budget cycles.[53] A different but related precedent concerns the secretariat of the PWH, which is jointly provided by WHO's Regional Office for Europe and the UN Economic Commission for Europe.[54] Yet another precedent is the establishment by FAO and WHO in the early 1960s of the Codex Alimentarius as a joint programme administered by a Commission open to the member states of both organizations and with its own functionally independent secretariat.

These precedents could serve as a possible blueprint for considering forms of coordination and rationalization of the support that different organizations active on One Health could provide to the Pandemic Instrument. The Codex Alimentarius Commission was also mentioned by some Member States as a possible model for developing integrated normative standards to guide parties in national implementation measures.

52 For the history of the synergy process, see: BRS conventions, 'History of the Synergies Process', available at: http://www.brsmeas.org/Decisionmaking/Overview/SynergiesProcess/tabid/2615/language/en-US/Default.aspx [Last access 21/06/2022]

53 For the documents from the first such meeting, see: BRS conventions, 'Working Documents', available at: http://www.brsmeas.org/Implementation/ExCOPs/2010ExCOPs/tabid/3159/language/en-GB/Default.aspx [Last access 21/06/2022]

54 UNECE, 'About the Protocol on Water and Health', available at: https://unece.org/environment-policy/water/protocol-on-water-and-health/about-the-protocol/introduction [Last access 21/06/2022]

b. Governance measures cutting across the Pandemic Instrument

Having addressed substantive measures specific to One Health above, this section focuses on questions that have often arisen in relation to One Health but are relevant for the Pandemic Instrument as a whole, namely: principles; technical cooperation, support, and technology transfer; financing, and monitoring and accountability for compliance.

i. Principles

International instruments often state general principles that should guide the understanding and implementation of the instrument. A Pandemic Instrument could include in its general principles those that integrate a One Health perspective into the overall instrument. It is worth recalling here that at the special session of the WHA, numerous delegations raised the principle of equity as one of the guiding considerations for the new Pandemic Instrument.[55] Other principles that could be considered include the importance of taking into account not only human, but also animal and environmental health; of taking an integrated approach across sectors; of respect for livelihoods and the rights of communities; among many others. A useful example of a statement of principles can be found in Article 5 of the PWH.[56]

ii. Technical cooperation, support and technology transfer

Technical cooperation, support and technology transfer can be included in international instruments to help countries implement their relevant obligations. It can entail sharing knowledge, providing advice, transferring technology, and providing funding (addressed separately in the next section), among other activities. Concrete activities could include training and upkeep of trained personnel, provision of multisectoral forecasting technology, strengthening lab capacity and improving communications systems.[57] It can be provided from one party to another, by the secretariat, or by third parties including international organizations.

Principles pertaining to technical cooperation can be found in the Sendai Framework for Disaster Risk Reduction 2015–2030 (hereinafter the Sendai Framework). Several academic commentators have suggested that the approach embodied by the Sendai Framework could be built upon in order to integrate pandemic prevention - including notably One Health – within a broader framework of risk reduction.[58] The Sendai Framework, although not legally binding, includes a widely acknowledged set of principles pertaining to technical cooperation in the context of risk reduction, which highlights the challenges and needs of developing countries as well as vulnerable categories of states such as disaster-prone states, land-locked and small-island developing countries. Technical cooperation can be tailored towards local needs and capacities and can involve the participation of local non-governmental organizations, manufacturers and communities.

Another relevant approach is the technical assistance plan developed under the BRS conventions along the general framework of 4-year plans. Needs assessments and technical assistance are both targeting specific

55 AFRO members, Argentina, Azerbaijan, Belgium, Botswana, Chile, Cuba, El Salvador, EMRO members, EU, GoF, Haiti, India, Kenya, Lebanon, Madagascar, Malaysia, Maldives, Mali, Mexico, New Zealand, SEARO members, Slovakia, Southern African countries, Suriname, United States of America, Venezuela, WPRO members. See: Balcazar Moreno AB, Burci GL, Strobeyko AP, 'Taxonomy of Substantive Proposals for a New Instrument on Pandemic Prevention, Preparedness and Response', (2022) Global Health Centre.

56 Protocol on Water and Health to the 1992 Convention on the Protection and Use of Transboundary Watercourses and International Lakes. London, 17 June 1999, Available at: https://treaties.un.org/doc/Treaties/1999/06/19990602%2005-47%20AM/Ch_XXVII_05_ap.pdf [Last access 21/06/2022]

57 Sendai Framework, para. 33(b).

58 Bartolini G, 'The Failure of 'Core Capacities' under the WHO International Health Regulations', (2021) *ICLQ* 70, 249; Strobeyko A, 'Disaster Preparedness and Response in International Law: Implications for a Prospective Pandemic Treaty', (2021) Global Health Centre.

activities under each convention as well as cross-cutting issues such as capacity building for internal coordination and cooperation. The BRS synergy process (discussed in section IV.a.iv above) was also specifically designed to merge the national contact points, in order to have a single contact point to coordinate technical support for all of the treaties.

Technology transfer, and the related issue of intellectual property rights, is often discussed in relation to vaccines, drugs and other countermeasures for human use, but may also be relevant for One Health. For example, increasing surveillance capacity by expanding access to genomic sequencing tools could entail technology transfer. Increasing domestic capacity to produce vaccines for livestock could entail licensing of IP and technology transfer. These issues are among the most contentious and complex in global health, and an in-depth discussion is beyond the scope of this paper. Rather, here we merely wish to flag that these questions are relevant for One Health, and to mention precedents from the environmental sector that may be of interest. For example, the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer includes an obligation to transfer technology and a related financing mechanism to help countries transition quickly away from ozone-depleting chemicals to alternative technologies, which legal analyst Garrison has characterized as "remarkably successful in delivering high impact technology transfer."[59] More recently, the 2010 COP of the UNFCCC created a 'Technology Mechanism' consisting of a 'Technology Executive Committee' which provides guidance on technology transfer policies and a 'Climate Technology Centre and Network' which oversees implementation. On intellectual property, there is a wide range of policy options, from voluntary to compulsory, focused at national or international levels, and with an emphasis on innovation and/or production. Depending on the approach, there may be implications for national IP laws, regional trade agreements, and/or global agreements such as the WTO TRIPS.

iii. Financing

Dedicated, additional financing is often required to implement obligations in an international instrument, and this would apply to many potential obligations in a Pandemic Instrument, including One Health. Much of this financing is usually mobilized at national level. But there is a strong rationale for international financing to support countries without the means to implement and/or for global public goods (e.g. when all countries may benefit, but the costs of providing that good may be disproportionately borne by one or a few countries). For example, for AMR a Multi-Partner Trust Fund was established at UNDP.[60] The financial mechanism of the climate change regime rests on a number of funds established under the UNFCCC and Kyoto Protocol, including the Special Climate Change Fund, Green Climate Fund, Adaptation Fund, and Least Developed Countries Fund[61] but also the Global Environmental Facility, a non-issue specific environmental fund. As of this writing, decisions are expected soon to create a Financial Intermediary Fund for pandemic preparedness and response, housed at the World Bank. In principle, some of these funds could support implementation of a Pandemic Instrument.

Another key issue relating to financing is tracking investments. Given the multi-sectoral and complex nature of One Health actions, it may be particularly challenging to track how much countries are investing across the human, animal and environmental sectors, whether it is sufficient, and whether it is increasing or decreasing over time. Metrics to track One Health investments and impact could be considered as part of a Pandemic Instrument's monitoring arrangements.

---

59 Garrison C, 'Lessons for a pandemic preparedness treaty from previous successes and failures with treaty-based technology transfer' (2021) *Medicine Law and Policy.* Available at: https://medicineslawandpolicy.org/2021/10/lessons-for-a-pandemic-preparedness-treaty-from-previous-successes-and-failures-with-treaty-based-technology-transfer/ [Last access 21/06/2022].

60 https://mptf.undp.org/factsheet/fund/AMR00

61 UNFCC, 'Climate Finance', available at: https://unfccc.int/topics/climate-finance/the-big-picture/climate-finance-in-the-negotiations/climate-finance#:~:text=The%20Financial%20Mechanism%20is%20accountable,and%20eligibility%20criteria%20for%20funding.&text=The%20Kyoto%20Protocol%20also%20recognizes,activities%20by%20developing%20country%20Parties [Last access 21/06/2022].

iv. Monitoring and accountability for compliance

Monitoring and ensuring accountability for compliance with international obligations is a central concern of most international instruments, in particular when they establish regulatory regimes where obligations are due to all the parties rather than bilaterally between them. International treaty practice shows many features and models that could be explored with regard to the Pandemic Instrument in its entirety, and to a One Health component in particular in view of the complexity and multi-layered nature of that topic.

Some of the tools commonly used in international legal regimes such as human rights, arms control and the environment include:

1. Periodic reporting obligations
2. Peer or expert review of the reports through constructive dialogue and the formulation of recommendations;
3. Field verification or support through the deployment of teams of experts
4. Establishment of dedicated compliance bodies to consider allegations of non-compliance as well as systemic problems concerning multiple parties.
5. Provision of advice, guidance, financial resources as well as technical cooperation and support as tools to improve the level of compliance.

The tools and mechanisms in question may be more or less prescriptive and can range from 'soft' processes to more stringent ones, opening the door to possible sanctions for non-compliance as well as from narrow and specific to broader ones.

With regard to One Health and the management of zoonotic risks, states may consider establishing new mechanisms but also rely on existing ones and either integrate them into the Pandemic Instrument insofar as legally and practically possible, or draw on their rationale and approach to design bespoke mechanisms for the new Instrument. From the latter perspective, the IHR (2005) offer a familiar example to WHO member states. The Regulations have been criticized for the lack of independent compliance assessment mechanisms and for being largely based on self-assessment.[62] However, the WHO Secretariat has developed in the course of time a range of guidance tools to help States Parties assess their own capacities and compliance, identify acute problems and priorities, and report in a more structured manner to WHO. Those tools address the capacity of States Parties to identify, prevent and control risks of zoonotic spillover, and States Parties have become familiar with their use. The tools in question include WHO Benchmarks for International Health Regulations capacities (WHO Benchmarks),[63] JEE and the State Party Self-Assessment Annual Reporting Tool (SPAR).[64, 65]

---

62 Burci GL and Eccleston-Turner M, 'Preparing for the Next Pandemic: the International Health Regulations and World Health Organization during COVID-19', (2019) *Yearbook of International Disaster Law* 2, 259-282; Bartolini G, 'The Failure of 'Core Capacities' under the WHO International Health Regulations', (2021) ICLQ 70, 233–250.

63 For WHO Benchmarks, see: WHO, 'WHO Benchmarks for International Health Regulations (IHR) Capacities' (2019). Available at: https://apps.who.int/iris/handle/10665/311158 [Last access 21/06/2022].
WHO Benchmarks feature a section on monitoring of capacities in relation to zoonotic diseases. Such monitoring and evaluation should be based on '(1) Agreement by the animal health and public health sectors on a common list of zoonotic diseases/pathogens of greatest national public health concern' and '(2) Existence of functional capacities in the animal health and public health sectors and of collaboration, coordination and communication between them for preparedness, detection, assessment and response to zoonotic diseases'

64 WHO, 'Protocol for Assessing National Surveillance and Response Capacities for the International Health Regulations in accordance with Annex 1 of the IHR. A Guide for Assessment Teams', 2010. For development of capacities through JEE, see: Bell E et al., 'Joint External Evaluation— Development and Scale-Up of Global Multisectoral Health Capacity Evaluation Process', (2017) *Emerging Infectious Diseases* 23, 33–39; Bartolini G, 'The Failure of 'Core Capacities' under the WHO International Health Regulations', (2021) ICLQ 70.

65 WHO, 'WHO Benchmarks for International Health Regulations (IHR) Capacities' (2019), p. 36.

CONCLUSIONS

One Health has been recognized for decades as an important element of pandemic preparedness and response, and efforts to strengthen One Health implementation have grown considerably. There has been increased collaboration across international organizations through the Quadripartite, but there still remains a gap in international rules for One Health. Many upstream drivers of zoonoses already fall within the remit of pre-existing environmental agreements, and the downstream preparedness and response to outbreaks falls under the IHR (2005) and to a certain extent under international trade rules. This leaves an important gap in the midstream deep prevention of spillover of pathogens from animals/environment to humans and the risk of pathogen mutation.

In light of the complexity of the issues, this paper has sought to provide a simple structure to clarify the options for how One Health could be addressed through a Pandemic Instrument. We have argued that the focus should be on midstream deep prevention and have identified four types of substantive obligations that a Pandemic Instrument could include on One Health: 1) integrated surveillance across the animal, human and environment sectors; 2) obligations to reduce zoonotic risks; 3) a science-policy interface for knowledge curation and setting norms and standards; and 4) arrangements to integrate at national and international levels the actors responsible for human-animal-environmental health. One Health also raises several cross-cutting issues that will apply across the Pandemic Instrument as a whole: 1) principles; 2) technical cooperation, support and technology transfer; 3) financing; and 4) monitoring and accountability.

We have outlined here a number of options available for states to consider. We have also provided concrete examples from the environmental sector, which has used the instrument of international law far more extensively than the health sector. Our hope is that clarifying the One Health elements that could be included in a Pandemic Instrument will help to advance thinking and debate on this crucial but complex issue.

GENEVA GRADUATE INSTITUTE

INSTITUT DE HAUTES ÉTUDES INTERNATIONALES ET DU DÉVELOPPEMENT

GRADUATE INSTITUTE OF INTERNATIONAL AND DEVELOPMENT STUDIES

CEENRG

Cambridge Centre for Environment, Energy and Natural Resource Governance