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Global governance of health and nature in the wake of COVID-19. Attentive to the role of China and to poverty perspectives



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Abstract

With the coronavirus pandemic the links between biodiversity loss and human well-being have gained increased attention at global health and environmental governance arenas. Our aim in this report is to broadly examine how relationships between i) loss of biodiversity and ecosystem services, ii) zoonotic health aspects, and iii) poverty alleviation is perceived and dealt with in various global debates and forums. We include a case study of relevant emerging legislation and policies in China, as a central actor in global health and biodiversity governance.

Drawing together the policy responses from global health and environment governance, we examine suggestions for regulating natural habitat protection, international trade in wildlife, informal markets, bushmeat, zoonoses, and the 'One Health approach'. A central recommendation is for a stronger role for the Convention on Biological Diversity (CBD), as the conservation and sustainable use of biodiversity are important for reducing the emergence of new zoonoses; they are also crucial for the development of new vaccines and medicines to combat and treat diseases. The CBD and its Nagoya Protocol have a further role to play also in promoting fair and equitable vaccine distribution. Further, the effective institutional design and enforceability of the Convention on International Trade in Endangered Species of wild Fauna and Flora (CITES) makes it well adapted for expanding its original mandate of regulating wildlife trade to include animals carrying serious diseases.

Improved biodiversity policies may contribute positively to reduce poverty in developing countries where populations are most directly vulnerable to loss of biodiversity's ecosystem services. The 'One Health approach' and the 'Build back better approach' pay less attention to poverty issues than to health and environmental aspects. On a similar note, UNEP and the IPBES warn against potentially negative poverty effects of policy measures aimed at fighting epidemics, such as the culling of livestock, the widespread use of insecticides, and travel restrictions.

China's recently introduced policies and regulations on wildlife management and consumption have the potential to stem the illegal trade in wild animals and recent regulations reflect the country's growing commitment to protecting wildlife. However, there is a need for better enforcement and greater public awareness to reduce the demand for wildlife products.

Finally, the report points to the untapped potential in academic empirical research on global health governance and implementation of related policies. The role of the social sciences in understanding the policy processes involved in achieving health objectives, in contributing to improved global health governance, and to effective and equitable implementation is largely overlooked.

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1. Introduction and framework of study

The COVID-19 pandemic is affecting a range of global debates in forums that have previously operated more independently from each other. In particular, the links between biodiversity loss and human well-being have gained increased attention in global health and environmental governance arenas (OECD reports; UNEP et al., 2020). ‘Global governance’ refers to the political cooperation among transnational (state and non-state) actors, aimed at negotiating responses to problems that affect more than one state or region. This report examines how the relationships between i) loss of biodiversity and ecosystem services, ii) zoonotic health aspects, and iii) poverty alleviation are perceived and dealt with in global debates and forums. We include a case study of relevant emerging legislation and policies in China. Indeed, China is a key actor here – as the epicentre of the corona pandemic, as a central actor in the World Health Organization (WHO) and as host to the next meeting (COP15) of the Convention on Biological Diversity (CBD).

The rapidly increasing loss of biodiversity is negatively affecting all human well-being – most directly the survival and welfare of the poor (MEA, 2005; IPBES, 2019; Dasgupta Review, 2020; GBO, 2020; UNEP et al., 2020). As the various forums focus on different interests, that affects the types of policies recommended, including how poverty aspects are integrated in emerging policies and institutional designs. Most directly vulnerable to loss of biodiversity and ecosystem services are the Least Developed Countries (LDCs); they are also directly affected by any remedial activities and policy instruments.¹ Biodiversity involves many direct and indirect links to human health. As a piece in the larger puzzle of the interconnectedness between the environment and human health, it shows how nature can both be a resource (e.g. as a source of

medicines) and a threat (zoonoses), depending on how the interface is governed. Drawing together the policy responses from global health and environment governance, we examine proposals for regulating natural habitat protection, international trade in wildlife, informal markets, bushmeat, zoonoses, and the ‘One Health approach’, and discuss the potential implications for poverty alleviation. Will stricter regulations lead to win-win situations for health, environment, and poverty alleviation? In this report we aim to identify potential diverging effects and indicate options for balancing the various objectives.

With this point of departure, we investigate how health and nature issues are understood and conceptualized in the most relevant forums, mapping the dominant actors framing the debates, the major knowledge producers and how such knowledge is integrated. Finally, we examine the main policies and policy recommendations emerging from the debates. China is already enacting domestic legislation on health and nature-related issues (on wildlife export and prohibiting wildlife in local fresh markets), making it highly relevant for this study.

This report is based on desk studies. We structure the collection of data material by examining the debates for key concepts: i) One health; ii) wildlife trade, wet/informal/traditional markets, iii) zoonoses/zoonotic, iv) traditional medicine, v) habitat/ecosystem + loss/destruction/degradation; vi) biodiversity; and vii) developing countries/poverty. This offers the opportunity to discuss the potential gaps, controversies, and implications inherent in policies and policy recommendations. In selecting which reports, texts and articles to include, we have focused on those responding to COVID-19 and the pandemic, i.e. after March 2020. We include reports by the key international actors / UN bodies engaged

¹ The LDCs are defined as the poorest countries in the world with national income per capita below USD 1026. Just over 700

million people live in such countries, and 25 of the 31 LDCs are located in sub-Saharan Africa.

in global health governance and One Health: the WHO, UNEP, the CBD and related institutions in the biodiversity and conservation cluster, as well as central international economic actors that have responded to the COVID-19 situation. However, selection necessarily means that other items, perhaps potentially relevant work, get left out, and that may affect our understanding of how potential zoonotic pandemics issues were dealt with prior to the corona situation. A quick check indicates that earlier international reports tended to operate with a broader understanding of zoonotic diseases, including the increasing threat of antimicrobial resistance (AMR).

Starting with the One Health approach and zoonoses debates, we examine the major relevant global governance debates and regulations emerging from, *i.a.*, the CBD, the Convention on International Trade in Endangered Species (CITES), and the WHO, and then look into changes in relevant domestic legislation and policies in China.

The UN Sustainable Development Goals (SDGs) are central to our discussion aims in this report. Core elements are SDG 2 (zero hunger) and 3 (ensure healthy lives and promote well-being), as well as the education and empowerment of youth and women, which aligns with the gist of SDG 4 and 5. Equally central is the contribution to the conservation and sustainable use of biodiversity and genetic diversity on land and in water (SDGs 14 and 15). Further, our emphasis on global governance, regulations and institutions resonates with SDG 17 (strengthen the means of implementation and revitalize global partnerships for sustainable development).

2. Examining the One Health approach and zoonoses

In this section we clarify the concept ‘One Health’, where the interlinkages between human, animal and environmental health are central. We explore how the global debates on emerging zoonoses integrate and relate to the loss of biodiversity and ecosystem services.

‘One Health’ is an umbrella concept that acknowledges the interlinkages between human, animal, and environmental health. It has been broadly defined by the World Health Organization as ‘an approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes.’^{2 3} The FAO, WHO and the World Organization for Animal Health (OIE) have entered into a tripartite collaboration on the One Health approach. However, this collaboration has been criticized for not including other environmental organizations like UNEP. Furthermore, although it has provided a basis for research programmes on emerging viruses, One Health has been faulted for being more of a principle than an action programme (Morand et al., 2020). Therefore, we examine how various stakeholders have been engaging with the concept. What does it mean, for instance, that the Convention on Biodiversity (CBD) has developed Biodiversity-inclusive One Health Guidance (SBSTTA, 2017)?

The combined realization of its loss and value put the issue of biodiversity square on the global political agenda, paving the way for the Convention on Biodiversity (CBD). Thirty years after the CBD was concluded (1992) and entered into force (1994), the loss of biodiversity continues unabated along with the loss of medicinal and chemical traits of genetic

material (IPBES, 2019; GBO, 2020; Dasgupta Review, 2020). The 2019 report by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services revealed that some one million plant and animal species are at risk of extinction. According to the WWF’s Living Planet Index, vertebrate populations monitored between 1970 and 2017 have declined by an average of 68% (WWF, 2020). In the Royal Botanic Gardens’ report on plants and fungi, 210 scientists from 42 countries conclude that some 40% are threatened with extinction: among these are 723 medicinal plants (RBG, 2020). Further, 90% of the fungi species, and their medicinal potentials, remain unknown to science (ibid.). The Global Biodiversity Outlook (GBO, 2020) report confirms that forests are still being destroyed by agriculture, tree-felling and urban growth. Such fragmentation will further harm biodiversity and increase carbon emissions. None of the 2010 Aichi Targets have been achieved; the demands for food and agricultural production remain the main drivers of biodiversity loss through land-use change (GBO, 2020).

Biodiversity loss causing dwindling reservoir of medicines and vaccines

Much of the world’s rapidly dwindling biodiversity and its genetic material remains to be examined scientifically for medicinal traits: Less than 1% of all flowering plants, insects, microorganisms, and marine organisms have been studied. This activity is known as ‘bioprospecting’: the systematic search for biochemical and genetic information in nature, in order to develop commercially valuable products. The World Health Organization also draws attention to the implications of biodiversity loss to health and medicine: ‘Significant medical and pharmacological

interdisciplinary approach for combating threats to the health of life on Earth.

www.cdc.gov/onehealth/pdfs/manhattan/twelve_manhattan_principles.pdf

² www.who.int/features/qa/one-health/en/

³ At the international level, the concept can be traced back to the One World, One Health symposium in 2004, which culminated in the Manhattan Principles on One World, One Health, describing priorities for an international,

discoveries are made through a greater understanding of the earth's biodiversity. Loss in biodiversity may limit discovery of potential treatments for many diseases and health problems. Biodiversity loss also means that we are losing, before discovery, many of nature's chemicals and genes, of the kind that have already provided humankind with enormous health benefits.⁴

In their concerted key messages in the report *Connecting global priorities – biodiversity and human health* WHO and CBD (2015) point out: 'Globally, an estimated 60,000 species are used for their medicinal, nutritional, and aromatic properties, with more than 500,000 tons of material from such species traded every year. Estimates suggest that the global trade in plants for medicinal purposes reaches a value of over USD2.5 billion.' The report concludes: 'Public health policies must ensure that the impacts of ecosystem alteration are assessed and reflected in strategies by meaningfully engaging with different sectors, disciplines and local communities.'⁵

A topical example, illustrating the strong links between species loss and medicinal benefit for vaccine development, is the Atlantic horseshoe crab (*Limulus polyphemus*). The horseshoe crab is the oldest species known to mankind: it has been around for some 450 million years now, and is thus referred to as a 'living fossil'. Its central role in vaccine development stems from its blood being particularly sensitive to toxins from bacteria. The Atlantic horseshoe crab is the only known source of limulus amoebocyte lysate, a substance that detects a contaminant called endotoxin. Endotoxin is widely used to test for contamination of vaccines, currently also for COVID-19 (Krisfalusi-Gannon et al., 2018).⁶ As a result, the pharmaceutical hunt for horseshoe crabs has already greatly diminished the remaining populations, which are spread along the Atlantic coast of the USA and the Mexican Gulf (ibid.). The hunt for synthetic production of limulus amoebocyte lysate has recently been successful and the

production has been approved for use in Europe from 2021.⁷ The case of the horseshoe crab still spurs the debate over whether species should be protected for their intrinsic value or 'only' be valued for their utility to humans.

Biodiversity loss and shrinking habitats increasing our closeness to zoonoses

A second major health implication of biodiversity loss concerns how diminishing natural systems could directly affect human health. New diseases are emerging at an increasing pace; some 60% of human infections are known as zoonoses, as they originate from wild and domesticated animals, often via the food system. Around 75% of recently emerging infectious diseases are zoonotic (UNEP, 2020). The rapid increase in the incidence of zoonoses is linked to human activities. The most important driver is land-use change, followed by the increased use and exploitation of wildlife and unsustainable use of natural resources resulting from increasing human demands for animal protein (Jones et al., 2008, 2013; also referred to in UNEP, 2020, and Dasgupta Review, 2020).

Aside from COVID-19, recent examples of direct zoonoses include avian flu, MERS, and SARS. Examples of indirect zoonoses are the Zika virus, West Nile fever, and yellow fever. Some of these diseases have known been for some time now, such as malaria, rabies, sleeping sickness and anthrax; many of them are spread by domestic animals but often with a wildlife interface. Some are classified as Neglected Tropical Diseases, due to their continued low priority on international public health agendas (WHO, 2015). Historically, the domestication of animals led to livestock pathogens infecting humans, as in the case of influenza, measles, and smallpox. The 'big three' diseases – malaria, HIV/AIDS, and tuberculosis – are all zoonotic in origin; two of these viruses (HIV, tuberculosis) have since adapted to and evolved along with humans. Historic outbreaks due to zoonoses include the

⁴ www.who.int/globalchange/ecosystems/biodiversity/en/ accessed 31 August 2020. Biodiversity and Health (who.int)

⁵ www.who.int/globalchange/publications/Fconnecting-key-message.pdf?ua=1 Accessed 31 August 2020.

⁶ www.nationalgeographic.com/animals/2020/07/covid-vaccine-needs-horseshoe-crab-blood/ Accessed 3 September 2020.

⁷ www.cleanroomtechnology.com/news/article_page/Recombinant_Factor_C_assay_to_aid_demand_for_LAL_endotoxin_testing/163099

bubonic plague (Black Death) that caused the death of one third of the European population, and the 1918 influenza that caused 40 million deaths (UNEP et al., 2020: 13–14).

Emerging zoonoses and One Health linked to agricultural systems

The central role of land-use change in the increased likelihood of emerging zoonoses is tied to the explosion of human and livestock populations, which involves more contacts among people, livestock and wildlife, as wildlife habitats are diminished. The massive decrease in natural environments (habitat destruction, deforestation, fragmentation) may lead directly to the increased emergence of zoonoses. One possible policy option involves implementing the One Health approach, strengthening the regulation and sanitary standards for wild and domestic animals, and meat sold in markets (UNEP et al., 2020). Morand et al. (2020) direct attention to the urgent need for better governance of the agri-food-business sector.

Global and local trade (and market) aspects of emerging zoonoses

Informal (live animal or ‘wet’) markets in poor countries around the world are vital to local livelihoods but may also involve illegal and uncontrolled export of wildlife. Moreover, the COVID-19 pandemic has showed that intensive, high-tech food systems may spark the spread of the disease equally much as informal, small-scale markets. Industrialized, large-scale slaughterhouses have on several occasions been a major source of infection (UNEP et al., 2020).

Both SARS and COVID-19 have been associated with a lack of adequate biosafety measures in traditional, informal markets or fresh produce markets (wet markets).⁸ Strict regulation of these markets also involves risks – partly because the activity may move underground, but also because of the great import-

ance of these markets to poor people: this includes low prices, easy access, traditional foods, earning opportunities for women, and tourist attraction. In many African and Asian countries, more meat may come from wild animals than that supplied by domesticated animals (UNEP et al., 2020: 31). Of concern is that responses may be more costly than the diseases themselves, and that the costs may be borne disproportionately by the world’s poorest people (UNEP et al., 2020: 42). At the same time, the burden of neglected zoonoses tends to fall heaviest on poor, vulnerable and marginalized people. Any intervention must weigh the possible benefits against negative trade-offs.

For poor people, some of the responses aimed at controlling disease outbreaks may carry the extra burden of reducing access to animal sources of food, for instance through large-scale culling of domestic animals. Avian flu originated in Guangdong 1996 and re-emerged in Hong Kong in 2002; more than 100 million domesticated chicken and ducks died of the disease or were culled to stop the Asian outbreak (UNEP et al., 2020: 23). Avian flu has recently reappeared in Europe, causing another wave of culling of domestic birds (200,000 ducks in the Netherlands).⁹ COVID-19 has also already caused significant culling of farmed animals. The Danish government ordered a countrywide cull of all farmed mink (up to 17 million caged animals) due to mutation in the SARS-CoV-2 corona virus among the stocks; it was feared that the mutation could spread to humans and jeopardize future vaccines. Culling has also been instigated in mink farms in Spain and Netherlands and has been considered in Sweden, Italy and the USA.¹⁰

Important for global trade are the sanitary and phytosanitary (SPS) measures of the World Trade Organization. WTO members have submitted 256 notifications related to COVID-19, the majority of which are related to the SPS or to the Technical Barriers to Trade (TBT) Agreements.¹¹ Most SPS

⁸ The track-record of global collaboration on emerging zoonoses also include success stories, of which the rapid containment of SARS is considered the greatest (UNEP et al., 2020:41).

⁹ www.ecdc.europa.eu/en/news-events/avian-influenza-eu-alert-new-outbreaks <https://www.bbc.com/news/world-europe-54825971> accessed 17 November 2020.

¹⁰ www.sciencemag.org/news/2020/11/mutant-coronaviruses-found-mink-spark-massive-culls-and-doom-danish-group-s-research

¹¹ The Technical Barriers to Trade (TBT) Agreement aims to ensure that technical regulations, standards, and conformity

notifications concern imposing restrictions on the import of wildlife from countries with outbreaks, China in particular, but then there are also notifications lifting the ban. The TBT notifications typically concern specifications and lifting restrictions on imports or introducing export prohibitions, to ensure the supply of COVID-19-related medicinal devices and pharmaceutical equipment.¹²

WTO regulations are also central as regards access to COVID-19 vaccines. Already in June 2020, notifications began concerning TRIPS and compulsory licencing to allow for the production of patented medicinal products due to the health crisis. This is in line with the 2001 WTO Doha Declaration on compulsory licencing of patented medicines to ensure access in LDCs. It is also reflected in the WHO 18th May 2020 draft resolution, which backs the rights of Low- and Medium-Income Countries to challenge patents on COVID-19 vaccines. The WHO resolution was strongly opposed by the USA (and Norway) and supported by the EU and China, among others (A73/CONF/ 1Rev1, 18 May 2020).

Further, the World Bank has issued guidelines for operationalizing One Health in its client countries (World Bank, 2018). Pre-dating the COVID-19 pandemic, the World Bank applies a wider understanding of zoonotic diseases. Antimicrobial resistance (AMR) is included as a significant threat, along with neglected zoonotic diseases, which represent a particularly serious health burden because of livestock-transmitted diseases among the rural poor.

Assessing the major risks of emerging zoonoses

Kock (2014) points out that wildlife as a direct driver of emerging pathogens is poorly examined and researched in academic literature. His study reveals that most reports refer to one central literature survey – Jones et al. 2008 – to support their findings here. In effect, Kock argues, the direct impact of wildlife in contributing to pathogens and health risks is overstated compared to the statistics on the

Global Burden of Disease, available from the WHO, OIE and FAO. Kock concludes: ‘The idea that biodiversity is the origin of many infectious agents is stating the obvious: where else would new infectious agents come from? It is not that the ‘pathways’ for emergence are in any way unnatural; rather, it is the opportunities for emergence that are changing and probably on the increase.’ Examining a broad range of emerging diseases, Kock (2014) argues that direct zoonotic transmission is uncommon and often involves a domestic animal bridge, such as various types of livestock, pigs, ducks, and horses.

Similarly, Patz et al. (2000) link emerging zoonoses to habitat loss due to agriculture: ‘The replacement of forests with crop farming, ranching, and raising small animals can create supportive habitats for parasites and their host vectors.’ The Dasgupta Report (Dasgupta Review, 2020) and Johnson et al., (2020) also indicate that anthropogenic activities that have caused losses in wildlife habitat quality, have increased opportunities for animal–human interactions and facilitated zoonotic disease transmission.

Examination of the literature shows that, since 1940, agricultural drivers have been associated with more than 25% of all, and more than 50% of zoonotic, infectious diseases that emerged in humans (Rohr et al., 2019). The Rohr (2019) synthesis article concludes with policy recommendations aimed at tackling the increasing problems of infection caused by expanding and intensified agriculture, including concerns for developing countries.

This insight was also prevalent in the pre-corona phase. Similarly, the CBD Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) on integrating biodiversity in the One Health approach (2017) concludes: ‘It has been found that species with the longest history of domestication not only carry more zoonotic pathogens than wildlife, but they also potentially transmit pathogens to a greater diversity of other host

assessment procedures are non-discriminatory and do not create unnecessary obstacles to trade.

¹² Altogether 76 countries have submitted one or more notification(s), with Brazil (30), Kuwait (16), the USA (14), the

EU (12) and Colombia (12) topping the list.

www.wto.org/english/tratop_e/covid19_e/notifications_e.htm Accessed 20 October 2020.

species (Smith & Guégan, 2010). In addition, in many cases throughout history, the proximate source of pathogens spill over in humans is more likely to have originated in contact with domesticated rather than a wildlife species given generally closer human contact with domesticated species (Smith et al., 2009). Moreover, most emerging infectious diseases – whether in wildlife, domestic animals, plants or people – are driven by human activities such as agricultural intensification and human induced landscape changes, interacting in a co-evolutionary process’ (SBSTTA, 2017, 3).

The report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) from a workshop on biodiversity and pandemics (2020, p. 5) concludes, ‘the underlying causes of pandemics are the same global environmental changes that drive biodiversity loss and climate change’. The most important drivers are land-use change, agricultural expansion, and intensification, and the rise in wildlife trade and consumption, all of which bring wildlife, livestock, and people into closer contact. Among the strong policy recommendations from the IPBES Workshop is to ‘incorporate pandemic and emerging disease risk health impact assessments in major development and land-use projects, while reforming financial aid for land-use so that benefits and risks to biodiversity and health are recognized’ (IPBES, 2020, pp. 53–54). This concerns both bilateral (national government) and multilateral (GEF, AIIB, World Bank etc) aid. Equally important is factoring in the economic cost of pandemics into consumption, production, and government policies and budgets, and enhancing law enforcement as regards all aspects of the illegal trade in wildlife. The IPBES recommendations also consider the potential negative impacts from policy responses for wildlife and poor communities and countries. Thus, they warn that pandemic control programmes may have significant negative effects on biodiversity, through the culling of wildlife reservoirs and the release of insecticides, as with wetland drainage and DDT, previously used to control malaria, but with major detrimental effects on human and animal health and welfare. Moreover, travel restrictions to curb the spread of COVID-19 may affect ecotourism, reducing incomes for people living in poverty and Indigenous Peoples (IPBES, 2020). A concrete IPBES (2020) recommen-

ation is to strengthen the already functional and widely adopted CITES system for controlling trade in threatened wildlife by adding a mechanism for health testing – perhaps that already developed by the OIE.

The 2020 OECD report (*Building back better: Policy responses to Coronavirus, COVID-19*) emphasizes the need for recovery packages aimed at reducing biodiversity loss, in addition to climate adaptation and mitigation. Investments must better assess and value biodiversity and ecosystem services, integrating these values into policymaking: ‘Natural ecosystems are also essential pillars of resilience. Yet most of this natural capital is undervalued in the economy or valued only as a harvestable commodity and not for the vital ecosystem services provided. The unpriced natural capital consumed by primary production (agriculture, forestry, fisheries and mining) and some primary processing sectors (including cement, steel, pulp and paper) was valued at USD 7.3 trillion in 2013 (Natural Capital Coalition, 2016[18]). However, despite the introduction of some policies to value biodiversity, in particular through payments for ecosystem services, most existing approaches to measure and value natural capital loss remain limited (OECD, 2019[19])’ (cited from p. 5).

3. International biodiversity regimes and COVID 19

The COVID-19 pandemic has highlighted the urgency of addressing the biodiversity crisis alongside the climate crisis. In this section, we examine the extent to which zoonotic pandemics have been addressed by two multilateral environmental agreements dealing with biodiversity and wildlife, CBD and CITES, and discuss their future roles in this regard.

UNEP, which acts as the UN host of the multilateral environmental agreements, and IPBES, the nature-equivalent forum to the IPCC, have both addressed nature-based solutions to the COVID-19 pandemic and made recommendations on involving the CBD and CITES in preventing and combatting zoonotic diseases.

It should be noted that formal decisions on the COVID-19 pandemic have not been taken under these two agreements, as meetings of their governing bodies have not taken place after the pandemic outbreak, either because they were not scheduled or have been postponed due to the pandemic. However, the interrelationship between biodiversity and human health had to some extent been addressed by the forums prior to COVID-19 in connection with the outbreak of previous zoonotic diseases like Avian Flu and Ebola. Moreover, the CBD has reacted in informal, innovative ways to the COVID-19 pandemic through online workshops, webinars, reports for policymakers, statements etc. on the interrelationships with nature and the future prevention of zoonoses from a nature perspective. CITES has reacted through a statement issued by its Secretariat.

Convention on Biological Diversity (CBD)

The Convention on Biological Diversity (CBD) is a broad framework convention with three overall objectives, all of them relevant to measures needed to combat zoonotic diseases as discussed in Section 2.

1. *Conservation of biological diversity.* Central to achieving this objective is the prevention of habitat loss and fragmentation, such as forest destruction and degradation, by establishing protected areas. Such separation of humans from wild animals is also an important tool for preventing the spread of zoonoses through contact between wild animals, livestock, and humans, as noted above.
2. *Sustainable use of its components.* This objective is relevant in preventing unsustainable use of wild animals as ‘bushmeat’ to avoid dangerous contacts between humans and the diseases these animals may carry. This objective is also relevant for industrial farming of domestic animals, as important agricultural drivers of zoonoses.
3. *The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.* The utilization of genetic resources includes bioprospecting for the development of vaccines and drugs to cure and treat zoonotic diseases. The loss of biodiversity impedes this important type of bioprospecting.

In 2010, the CBD adopted the ‘Aichi Targets’: 20 global targets for biodiversity to be achieved by 2020. Target 14 focuses explicitly on ecosystem services that contribute to health, livelihoods, and well-being.¹³

¹³ CBD (2010) COP 10 Decision X/2. Strategic Plan for Biodiversity 2011-2020. www.cbd.int/decision/cop/?id=12268

Zoonotic diseases have been addressed by the CBD mainly as a sub-topic under the broader topic of Health and Biodiversity. In 2015 the CBD Secretariat, in collaboration with the WHO, issued the report *Connecting Global Priorities: Biodiversity and Human Health, a State of Knowledge Review* (WHO & CBD 2015). In addition to describing how biodiversity supports human and societal needs, thereby underpinning good health, the report mentions the emerging number of infectious diseases associated with wildlife, with a specific focus on Ebola. A 2016 COP 13 decision on biodiversity and human health notes that consideration of health-biodiversity linkages could contribute to improving many aspects of human health and reinforces the rationale for the conservation and sustainable development of biodiversity.¹⁴ In 2017, the CBD SBSTTA, and later COP14 in 2018, endorsed guidance on integrating biodiversity considerations into One Health approaches (see also Section 2).

Under the heading ‘Sustainable wildlife management’, the CBD has developed voluntary guidelines for a sustainable wild-meat sector, which among other things identify wildlife as a major reservoir of zoonotic pathogens that can present a clear public-health risk of epidemics.¹⁵

A process for a new global post-2020 framework for biodiversity with another round of goals and targets is now underway, to be decided in Kunming, China, at the forthcoming COP 15. This was to be held in October 2020, but has been postponed until 2021 at the earliest, due to the COVID-19 pandemic. Several preparatory meetings to COP 15 have been similarly postponed. Meanwhile, a zero draft for a global biodiversity framework with goals and targets has

been released as the basis for broad discussion among governments, scientists, NGOs and other stakeholders (CBD 2020).

The continued decline in biodiversity despite global targets set by the CBD has been pointed out above. However, the current pandemic may serve to foster greater awareness and a sense of urgency in relation to the biodiversity crisis – thereby providing a ‘Paris Agreement’ opportunity for the CBD, which politically has been overshadowed by its sister convention, the UN Framework Convention on Climate Change (UNFCCC).

This gives rise to the question of whether, how and to what extent the preparatory process towards the postponed COP 15 and the post 2020-biodiversity framework could be reoriented to take into consideration the pandemic, and what nature conservation and sustainable use could provide in terms of preventing the spread of diseases transmitted from wildlife.

The zero draft was submitted before the outbreak of the COVID-19 pandemic and thus does not address this topic explicitly.¹⁶ As yet, the same applies to the many submissions of views on the draft by countries and other stakeholders, although several have argued more broadly for reflecting the interlinkage between biodiversity and human health in the framework.¹⁷

Deliberations on the post-2020 global biodiversity framework have also taken place in the form of online meetings, consultations webinars etc., some of them after the outbreak of the pandemic. These have clearly been influenced by the pandemic. The

¹⁴ CBD/COP/DEC/XIII/6. [Biodiversity and human health \(cbd.int\)](https://www.cbd.int/doc/decisions/cop-13/cop-13-dec-06-en.pdf)

¹⁵ CBD/COP/DEC/14/7. Sustainable wildlife management <https://www.cbd.int/doc/decisions/cop-14/cop-14-dec-07-en.pdf>

¹⁶ The zero draft applies a ‘theory of change’ approach, calling for transformative action to make available tools and solutions for implementation, mainstreaming of biodiversity into productive sectors and, eventually, conservation and sustainable use of biodiversity. The approach assumes that progress is monitored in a transparent and accountable manner with adequate stocktaking exercises. The draft includes five long-term goals for 2050, related to: ecosystem integrity and resilience, species conservation, genetic diversity;

nature’s benefits to human beings (contributing to improved nutrition, access to water, resilience to natural disasters and achieving the targets of the Paris Agreement on climate change), and fair and equitable benefit-sharing from the use of genetic resources and traditional knowledge. Its 2030 Mission involves taking urgent action across society to put biodiversity on a path to recovery for the benefit of the planet and its people. The draft includes 20 action-oriented targets for 2030. (CBD 2020)

¹⁷ CBD website on the preparations of the Post 2020 Biodiversity Framework. www.cbd.int/conferences/post2020/post2020-prep-01/documents

most notable event was the Biodiversity Summit on 30 September 2020 held on the margins of the opening of the 75th session of the UN General Assembly and – for the first time in relation to a UN event on biodiversity – attended by heads of states. At this digital summit, both the UN Secretary-General and several state leaders called for embedding nature-based solutions in pandemic recovery plans. The COVID-19 pandemic was also seen as an opportunity to rethink mankind’s relationship with nature and to align climate and biodiversity global goals.¹⁸

Nature-based solutions were also high on the agenda at the High-Level Political Forum (HLPF) on Sustainable Development, held as a virtual event 7–16 July, and at a digital side event to the Forum arranged by the CBD Secretariat. At this event, CBD Executive Secretary Elizabeth Maruma Mrema stated: ‘Conserving and sustainably using biodiversity must be at the core of our COVID-19 recovery and future sustainable development pathways’; and UNDP Administrator, Achim Steiner, noted, ‘Nature-based solutions are key to choices people, communities and economies face in COVID-19 recovery and will affect the trajectory of the coming decade.’¹⁹

The most recent CBD initiative in this field was a special virtual session for SBSTTA and the Subsidiary Body on Implementation (SBI) held on 15–16 December 2020 on the theme of ‘Biodiversity, One Health and the response to COVID-19’.²⁰

However, these statements at high political and UN official level and informal virtual events do not automatically place the COVID-19-biodiversity link on the official CBD agenda to prepare formal decisions at COP 15 including the post-2020 biodiversity framework. Traditionally, the CBD and the topic of biodiversity has operated under the high political radar, left to environment ministers who typically rank low in government hierarchies and have little influence across governments and eco-

omic sectors. Even though the CBD is a broad framework convention whose implementation is dependent on decisions that go far beyond nature conservation, attempts to adopt decisions with implications for ‘heavyweight’ policy areas and sectors such as agriculture, fishery, forestry and trade have often been rejected through targeted interventions from these sectors.

High-level political initiatives are therefore needed to influence the CBD process, if COVID-19 and zoonotic diseases are to gain a significant role at COP 15. As the country of origin of the COVID-19 virus, and host and president of the COP15, China would be an obvious candidate for exercising leadership in this regard. In addition to providing a good example through domestic policy and legislation, China could propose new global goals and targets to cover the prevention of animal-transmitted diseases and insist on the important role of the CBD and the other biodiversity-related conventions in the One Health collaboration across UN institutions. The high-level September 2020 UN Biodiversity Summit offered a golden opportunity for China to lead in this regard, but that opportunity was not used, as discussed below.

Convention on International trade in Endangered Species (CITES)

Trade in wild animals is generally recognized as an important source of zoonotic diseases. That in turn draws attention to the main global instrument dealing with wildlife trade, the UN Convention on International Trade of Endangered Species (CITES). Aimed at ensuring international trade in specimens of wild animals and plants does not threaten their survival, CITES accords varying degrees of protection to more than 37,000 species of animals and plants.²¹ It is known as one of few international environmental treaties with ‘teeth’, including the power to ban trade when needed. The pangolin, a species suspected of transmitting corona virus to humans, enjoys the highest level of protection

¹⁸ Earth Negotiation Bulletin: Summary of the UN Summit on Biodiversity: 30 September 2020.

<https://enb.iisd.org/download/pdf/enb09752e.pdf>

¹⁹ High-Level Political Forum (HLPF) on Sustainable Development, held virtually from 7 July to 16 July. CBD website: www.cbd.int/article/2020-High-Level-Political-Forum

²⁰ www.cbd.int/conferences/sbstta24-sbi3-prep-02

²¹ The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). <https://cites.org/eng/disc/what.php>

under CITES: a total ban of commercial trade. The pangolin is also considered the most illegally trafficked mammal in the world (Vyawahare 2020). Thus, if the virus jumps on humans from pangolins, ineffective implementation of CITES obligations by states may have contributed to the emergence of the COVID-19 pandemic.

Whereas various conservation forums have leapt at the opportunity to highlight the relationship between zoonotic diseases and wildlife exploitation, the CITES Secretariat appears to have taken a different stance. In a remarkable statement on the CITES website, the Secretariat makes it clear that ‘matters regarding zoonotic diseases are outside of CITES’s mandate,’ and that ‘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.’²²

This statement, posted at a time when there was already discussion on the role and mandate of CITES in relation COVID-19, has sparked further discussion. It may seem odd that a treaty secretariat, whose main function is to serve the country parties to the treaty, should take the liberty of providing its own individual statement on an issue that is so delicate, legally and politically. Under other treaties – including the CBD – such an action would be taken quite badly by the parties. However, CITES provides a fairly broad mandate to its secretariat compared to more recent environmental agreements, and its Secretariat has traditionally acted in a more proactive and independent manner than other treaty secretariats (Stroud 2006).

From a legal perspective, it has been argued that the interpretation by the Secretariat’s interpretation of the CITES mandate is overly narrow. The preamble to CITES refers to the need to be ‘conscious of the ever-growing value of wild fauna and flora from aesthetic, scientific, cultural, recreational and economic points of view’. It is suggested that there is immense scientific value in identifying the wild fauna that are known to pose a public-health risk to

humans and that the CITES mandate should be wide enough to cover this (Firmansyah 2020).

However, it is beyond legal doubt that the strongest tool in the CITES toolbox – prohibition of trade – applies only to those species that are threatened with extinction and are thus listed in CITES Annex 1. The pangolin belongs to that category, but possible virus transmitters also include non-threatened species like horseshoe bats. Thus, it has been suggested that CITES be reformed to expand its focus to support the regulation of trade in wild animals that affect human health (Scanlon, 2020)

To return to the CITES Secretariat statement: it has also been argued that the statement seems to forget that CITES is not only a trade agreement but is also part of international environmental law. Any environmental treaty should be a living instrument capable of adapting and responding to new environmental threats – and that speaks in favour of expanding the legal scope of CITES (Earth.Org, 2020).

Further, getting CITES expanded and strengthened, instead of establishing a new legal framework to regulate trade in infectious wild animals, is justified because CITES as one of few global environmental agreements with real binding effect. It has an open and transparent process for taking decisions, by two-thirds majority vote if needed, besides having a well-tested compliance mechanism to deal with cases of non-compliance. CITES has a global mandate, with 183 signatory governments, 45 years of experience regulating international wildlife trade, and a global system for monitoring and recording trade. Moreover, CITES already has cooperative agreements in place with the World Animal Health Organization (OIE), the World Trade Organization (WTO) and FAO (Scanlon, 2020).

Undoubtedly, there is also much to be said for establishing a new comprehensive international regime that could bring together expertise from all relevant One Health actors, human health, wildlife health, wildlife conservation and trade. However, achieving such a regime ‘could take years to sort

²² CITES website.
https://cites.org/eng/CITES_Secretariat_statement_in_relation_to_COVID19

through uncertainties of commitment, bureaucratic confusion, infighting associated with institution-building, and other challenges before we see results' (Ashe and Scanlon, 2020). By contrast, CITES could be adapted relatively easily to satisfy a broader health mandate. The same applies to its procedures for listing new species on health grounds, and governance procedures that could be adapted to include scientific inputs on public and animal health (ibid.). Thus, it would not be necessary to *amend* the original CITES text, which would require a cumbersome negotiation process with the risk of re-opening the Convention text as a whole (Weissgold et al. 2020).

4. The health debates

In academic debates and global governance arenas, there has been growing alignment between the issues of biodiversity and health over the past 10 years. From a health perspective more generally, such interlinkages have long been recognized as fundamental, and have been broad in scope – ranging from ecosystem services such as clean water and nutrition, to green urban spaces, to resources for pharmaceuticals and traditional medicines, as well as the microbial ecology that forms the basis for zoonoses and the emergence of new infectious diseases in human beings (Korn et al., 2019). Why, then, has it taken so long for these connections to be made in policy processes? Here it is important to bear in mind that the global health community consists of multiple sub-groups that have advanced separate agendas and often compete for the same political and financial resources – also the One Health approach may be segregated by methodological and publishing silos (Manlove et al., 2016). The One Health approach linking biodiversity and pandemics is one of several possible interconnections between biodiversity and global health.

To examine these linkages from the global health perspective of, we start with the assumption that there is indeed a ‘global health community’ of policy practitioners and analysts engaging at multiple levels – ranging from the WHO and national ministries of health, to universities, public health institutes and other institutions – working to agendas, develop options and implement practice. The foremost arenas in terms of global policymaking are the World Health Assembly (WHA) and the Executive Board of the WHO. The WHA is indeed an arena for public debate, there are others, such as think-tanks with an academic grounding but often

external (often philanthropic) funding, including non-profit organizations such as the *Eco Health Alliance* or time-restricted activities such as the *Lancet One Health Commission*.²³

Examination of the decisions of the WHO Executive Board (from February 2019) and those of the WHA (from May 2018) for the relevant keywords here indicates that the One Health concept is the most salient in connecting biodiversity and health.

The topic of Chinese traditional medicine came up at the WHO Executive Board meeting held in late 2018 (EB 144, 22) in preparation to the revision of international classification of diseases to be addressed at the following WHA. It was decided to include a supplementary chapter on Traditional Medicine Conditions ‘...that originated in ancient China and are now commonly used in China, Japan, Republic of Korea and other countries.’ The decision does not refer to the issue of wildlife trade or any other aspect of ecosystems or habitats from which ingredients are sourced, but states explicitly that the categories ‘.. do not refer to – nor endorse – any form of treatment’ (WHO, 2018a, p. 7).

We find only one mention of the concept of zoonoses, at the February 2020 Executive Board meeting, following up the first international Food Safety Conference and International Forum on Food Safety and Trade. Foodborne zoonoses are mentioned as an issue also included in the WHO strategic plan. While the scant mention to zoonoses is surprising, the reference was also made in conjunction with the One Health approach to food safety and managing risks along the entire food chain, emphasizing the interconnection between

²³ In global health policy debates, the lines between what constitutes a platform/arena and stakeholder/policy practitioner are often blurred, so keeping track of actor interests is as always important. On connection with a desk-

study like the present one, it should be borne in mind that much information – particularly on debate and disagreements – will be hidden from public view, or even the grey literature.

food safety, and human, animal, plant and environmental health (WHO, 2020b, p. 13).

Biodiversity in relation to human health is more salient in the WHO deliberations. It featured as a separate agenda point at the WHA in 2018 (A71/11) as a report by the Secretary General (WHO, 2018b). This report recounts the partnership between the WHO and the Secretariat of the Convention on Biological Diversity, examining linkages between biodiversity and health broadly defined, but also including microbial diversity, infectious diseases, biomedical discovery and traditional medicine. Further, the report traces the collaboration to 2012, and notes the Memorandum of Understanding in 2015 together with an interagency liaison group. This group met in May 2017 and again in May 2020 (www.who.int/news/item/01-01-2020-biodiversity-and-health-the-who-cbd-joint-work-programme).

The report directs attention to supporting countries in mainstreaming biodiversity and health, and co-convening regional capacity-building workshops. With a view to implementation, it emphasizes actions through risk analyses and vulnerability assessments, and strengthening this capacity in relevant ministries. On the whole, the report targets a broader spectrum of issues that threaten health outcomes, including antimicrobial resistance, vector-borne and waterborne diseases, food security and malnutrition. Further, the WHA resolution on this report makes reference to One Health twice: as part of national plans for health emergency preparedness, and as example of existing multisectoral processes to build on (WHO, 2018c, pp. 70–71).

When ‘biodiversity’ appears in subsequent WHA resolutions/decisions (72 and 73), it is both with reference to climate change, where habitat loss is recognized as exacerbating this threat to human health, and in relation to the mechanisms and capacity for early identification of a response to possible emerging threats to health, where ‘protection of biodiversity and ecosystem services’ is noted as an example of cross-sectoral solutions linking surveillance of pathogens in wildlife and human beings (ibid. p. 73).

The concept of One Health appears with the highest frequency of the surveyed terms, but with reference to a range of health topics. At the Executive Board meeting 144 (late 2018), the One Health approach is mentioned in connection with the need to address antimicrobial resistance through a coordinated, multisectoral approach. Here reference is made to the tripartite collaboration with the FAO and the OIE, linking with FAO Resolution 4/2015 and UNEP Resolution UNEP// EA.3/Res4 (2018) on the environment and health, with reference to a new tripartite agreement (the WHO, FAO and OIE, plus UNEP) on antimicrobial resistance, in order to ‘...establish clear coordination for its implementation and to align reporting to their governing bodies on progress under the joint workplan’, also calling for national action plans (WHO, 2019, p. 24). At the February 2020 meeting of the Executive Board (EB146.R10), One Health was noted in relation to strengthening preparedness for health emergencies through the implementation of the International Health Regulations, stressing the links between human, animal and environmental health and the ‘...need to adopt a ‘One Health’ approach.’ (WHO, 2020a; WHO, 2020b, p. 19)

In decisions of the World Health Assembly, the One Health concept features in relation to national plans for health emergency preparedness, as example of existing multisectoral processes to build on (WHO, 2018c, pp. 70–71), and in relation to antimicrobial resistance. It also appears in ‘WHO global strategy on health, environment and climate change (WHO, 2019b)’, where adoption of a One Health approach ‘is to be sought where appropriate’. Climate and ecosystem change in connection with eight intervention topics, which include air pollution, vector control, built environments, chemical safety, radiation and noise, occupational risks, and water/sanitation/waste/hygiene.

Ecosystem/habitat/biodiversity is not part of this goal structure, however. This wide use of the One Health concepts reflects the interconnectedness between the topics themselves, but also the timing and salience of topic on political agendas, together with the One Health approach as a central reference for mainstreaming environmental issues in the health sector.

Not mentioned as part of a One Health approach, but as a separate issue, are the public-health implications of implementation of the Nagoya Protocol (WHO, 2020c). This point came up when the Executive Board was invited to prepare a report on ‘...current pathogen-sharing practices and arrangements, the implementation of access and benefit-sharing measures and the potential public health outcomes and other implications’ and proposed next steps for implementation (ibid., p. 4).

The decisions of the WHO Executive Board and World Health Assembly can say something about how issues linked to biodiversity are framed in a formal global health context. The public debates about these various other channels may of course differ considerably and not necessarily be in harmony with the above account. For example, with reference to Chinese Traditional Medicine within the global health community, the ensuing debate on the health arena seemed less concerned with the effects on wildlife trade and ecosystems, and more with WHO legitimizing ‘.. an unfounded underlying philosophy and some unscientific practice.’ Critics also argue that this reference may fuel sales of unproven treatments (Nn, 2019).

In scoping other global health sources for the same terms, their occurrence mirrors that of the WHO arenas, where One Health and biodiversity feature most frequently, with increased references to zoonoses after the COVID pandemic outbreak. The One Health approach also echoes the WHO documents as typically part of a normative argument concerning why a cross-sectoral approach is needed – often mentioned by younger-generation analysts/scholars/activists who tend to take a broader view of the interconnections between the environment and health, through the related concept of Planetary Health (Morand et al., 2020). The interconnections between the One Health approach and bio-surveillance came to the forefront with the COVID-19 outbreak. The pandemic made it easier to argue for robust bio-surveillance networks, combining veterinary and human health, noting people and wildlife driven together (human activity;

economic development) as a key factor driving emerging infectious disease (e.g. Ebola, SARS, MERS, COVID-19). It also made a difference that several bio-surveillance initiatives had been or were in danger of being de-funded, and the pandemic represented an opportunity to get the issue back on the agenda.

Since around 2010, interest in identifying unknown viruses in wildlife has grown, initially spearheaded by the US Agency for International Development, with an early cross-sectoral effort to link bio-surveillance and pandemic preparedness. The Global Virome Project (GVP), launched 2018, work to discover and provide risk characterizations of potentially zoonotic viruses, aiming to ‘...identify and characterize the majority of currently unknown viruses in key wildlife groups’ (Carroll et al., 2018). Further, there have been calls to establish a global genomic-based bio-surveillance platform, as a collaboration between the research programmes BIOSCAN, the Earth BioGenome Project (EBP) and the GVP (Kress et al., 2020). The aim is to create a ‘pandemic interception system’ to identify potential pathogens and to improve our understanding of host/pathogen interactions. Technology is making this possible through DNA sequencing platforms. This calls for an alliance across biodiversity/environment and health sectors (Ibid.). However, the utility of such endeavours is debated in the health community – specifically the cost-benefit issue in relation to other measures (Jonas & Seifman, 2019).

The promotion of the human–veterinary health aspects of biosecurity as the core of the One Health approach, especially in times of crisis, has been criticized for ignoring broader environmental issues as well as concerns of traditional rural societies (Morand et al., 2020). On the one hand, there are other concepts or approaches, notably Ecohealth, that operate within a broader frame, and consider the interlinkages between ecosystem-changes and human health, including biodiversity.²⁴ Also the One Health approach is evolving, as with the work of the Lancet One Health Commission that builds on the

²⁴ See for instance the EcoHealth Alliance project on forest management in Liberia, <http://www.ecohealthalliance.org/program/forest-health-futures>

experiences of addressing the zoonoses of Neglected Tropical Diseases, and proposes three pathways for engagement: a) the concept of shared environments between livestock, wildlife and humans in rural and urban settings; b) food safety and food systems (including anti-microbial resistance and agricultural practices); and c) a more integrated approach to veterinary and human medicine (Amuasi et al., 2020).

The challenge is how to operationalize and implement a One Health approach. From a Global Health perspective, the case for cross-sectoral coherence inherent in the approach would seem to indicate that it is in the domain of health governance (or health policies), that these issues should be taken up, prioritized and funded. Kress et al. (2020), for instance, point out how the health sector is where the information is to be acted upon. Cunningham et al. (2017) note that parts of the medical profession are underrepresented in the debate, particularly those involved in implementation. This kind of mainstreaming challenge is familiar from other-issue areas, where no-one objects to the cross-sectoral aspiration, but where competition over limited resources and internal priority-setting in each sector raises the bar for realization (Faid, 2012). The question becomes: What kind of institutional changes are required at the global level – and, from a health -perspective, what trade-offs will have to be made at the level of national health policy, where various sectors of the health system are already scrambling for scarce resources?

The question of how to implement the One Health approach has implications for low-resource settings. Cunningham et al. (2017) note that there are few examples in Africa where the One Health approach has been put into practice. This is due partly to the challenges of ‘...complex interactions between ecosystem, disease and poverty dynamics’ (p. 1). Also involved are uncertainties as to what kind of organizational and policy arrangements that can help to make the One Health approach work in resource-limited regions. Thus ‘ ... a One Health perspective is not just about the technical aspects of human, animal and ecosystem health, but underlying social relations and political processes’ (pp. 3-4). Bardosh et al. (2017) find that responsibility for One Health policy and implementation and what it

means in practical terms are unclear; they hold that these problems should be taken up by the donor and NGO institutions who tend to create gaps in local and national governance. One Health has not changed these aspects for the better, they argue: this is not a classic research translation problem, finding ways to translate research into policy. It is more a matter of identifying policy gaps and engaging in research to create better-integrated national systems as a basis for driving change.

5. The case of China

The relationship between trade and consumption of wild animals and health has been rapidly propelled onto the political agenda in China due to the spread of the COVID-19 pandemic. China is the most central actor in international trade in wildlife for food and medicines, and plays a dominant role in Asia and increasingly also in Africa, where this trade is the most widespread. China, home to about 11% of the world's total wildlife species (Gong et al. 2020), is also a key country in the CBD process, due largely to its having been chosen to host the CBDs COP 15, now postponed to late 2021. In this part of the report, we focus on the pandemic and how it has affected Chinese domestic legislation concerning biodiversity/ health interaction, specifically recent restrictions on international trade in wildlife for food purposes. Further, Chinese imports of wild animals from African countries have received considerable attention. Has the pandemic affected these trade relations?

COVID-19 outbreak

We take a step back and look at accounts of how the outbreak in China began, and especially of how local authorities ignored the initial signs (Huang, 2020; Swaine, 2020). On the one hand, important progress has been made in the post-SARS era, in strengthening China's disease surveillance and response capacities with regard to the COVID-19 outbreak – but there is also a pattern of cover-up and inaction similar to that which occurred during the SARS outbreak (Huang, 2020). According to another author:

the Chinese authorities generally followed, ultimately to good effect, established crisis management processes and procedures as well as post-SARS regulations for dealing with a health emergency. A major exception to this record occurred with regard to the initial reporting on the virus by both local and central authorities, where the pre-existing network reporting system was not utilized early enough and both local and initial central expert teams sent to

Wuhan failed to detect the seriousness of the outbreak (Swaine 2020b).

To understand China's handling of the COVID-19 situation, and the wildlife management and biodiversity issue, it is essential to know how the country is organized and governed (see box). One main characteristic is the large number of ministries and administrations with responsibilities relevant to the COVID-19-pandemic – such as nature and wildlife management, environmental and ecological conservation, agriculture and health issues. Close coordination is vital in connection with outbreaks like that of COVID-19 – but such coordination among China's various administrations, ministries and provinces is often challenging.

Markets, policy, and the public

In the following we look at policy effects and responses from China after COVID-19 and begin with the markets that received much attention during the outbreak. We also present new policies in the wake of COVID-19, and importantly, the changing mindsets of the public on the trade and consumption of wild animals in China.

Markets

The COVID-19 crisis has shed light on wildlife management challenges in China. Markets around the country sell live animals; media coverage of the crisis gives the impression that wild animals are popular among ordinary people, but that is not necessarily the case everywhere. For one thing, in cities like Beijing, people are less inclined to eat wild animals (Daly 2020). It is believed that the outbreak of COVID-19 originated in the market in Wuhan. More specifically, pangolins sold there have been indicated as a possible host of the virus before it crossed over to humans (CNN 2020). In fact, the crisis has resulted in a more open space to discuss the wildlife trade and markets in China.

Governance & who is in charge

China, a single-party state, has been governed by the Communist Party of China (CPC) since 1949. The CPC maintains a monopoly of power, and its Standing Committee makes strategically important decisions for the country in all areas, including the environment, often with the involvement of high-level leadership small groups. The National People's Congress (NPC) is the legislative body, and formally the highest organ of power (Hart 2019). It meets annually and approves legislation and policy documents such as the five-year plans. The executive organ the State Council, chaired by the Premier, comprises the line ministries, and supervises the subordinate provincial governments. The State Council issues policies and regulations. In 2018, at the annual NPC, the Ministry of Ecology and Environment (MEE) was strengthened and given portfolios from other ministries and commissions – regarded as a signal of growing attention paid to the environment by the Chinese leadership (Rosendal et al. 2020). MEE is in charge of environmental policymaking, implementation and enforcement of policies; it is responsible for biodiversity, climate change and organizing the CBD COP 15 to be held in Kunming in 2021. The Ministry of Science and Technology is an important funder of large national research programmes. The National Forestry and Grassland Administration (NFGA) is responsible for supervision and management of terrestrial wildlife, and 'implementation of international conventions on wetlands, desertification combating and endangered wildlife'. The Ministry of Agriculture is responsible for classification of animals for livestock or consumption. In addition, the provinces are important stakeholders with their own interests and agendas. Responsibility for handling an emergency like the COVID-19 crisis lies with the State Council, including the National Health Commission (NHC) in charge of health issues. The Chinese Centre for Disease Control and prevention (CDC) a 'governmental and national-level technical organization specialized on disease control and prevention and public health', has an important role to play in the COVID-19 crisis (CDC 2020).²⁵

Decisionmaking often appears highly centralized, yet scholars conclude that the policy process in China has evolved to become one of bargaining in order to obtain consensus between the interests of provinces and the central government, between the interests of different industries and ministries, and most likely also of individuals (Lieberthal & Oksenberg 1988; Li 2017). However, in the Xi Jinping era it appears that the CPC has strengthened its authority and taken over responsibilities previously delegated to the State Council and its ministries (Mitchell 2016).

Common reactions to COVID-19 have been to end trade and consumption of wildlife. Much focus has been on the 'wet markets': ordinary markets 'where butchers and grocers sell fresh produce straight from the farm' (CNN 2020). Some markets also sell exotic wildlife. The wildlife breeding industry as a whole is reportedly worth RMB 520 billion a year (nearly €70 billion, IDDRI 2020). A government-sponsored report in 2017 by the Chinese Academy of Engineering estimated that the industry employs more than one million people (CNN 2020). Hence it is very difficult to enforce a ban unless there are

alternative opportunities for livelihoods (IDDRI 2020). Banning the trade in wild animals will have socio-economic impacts that might affect poverty alleviation efforts in rural areas in China.

Policy and legal response in China

For several years now, the Chinese government has introduced policies and campaigns on the need to conserve nature and animals. One example is *Ecological civilization* endorsed by the Communist Party and included in its Party Constitution at the 18th Party Congress (Deng 2018); this is a policy frame-

²⁵ CDC www.chinacdc.cn/en/

work for a shift towards more environmental protection in domestic policies. Campaigns to raise awareness have been launched, such as the ‘Wildlife Conservation Month’ and ‘Bird Loving Week’, resulting in dramatic changes in public and governmental attitudes towards wildlife conservation and utilization (Zhen et al. 2020).

COVID-19 has pushed legal responses onto the agenda. For instance, the National People’s Congress (NPC) – the country’s highest legislative body – has forbidden the breeding and trade of most terrestrial wildlife species for food consumption. A temporary ban came, and with it a policy response (Xinhua 2020b). On 4 February 2020, the 16th meeting of the Standing Committee of the 13th National People’s Congress issued the law on ‘Comprehensively Prohibiting the Illegal Trade of Wild Animals, Eliminating the Bad Habits of Wild Animal Consumption, and Protecting the Health and Safety of the People’ (Xinhua 2020b), banning all trade and consumption of non-aquatic wild animals.

There have been earlier attempts to ban the use of wildlife in Traditional Chinese Medicine (TCM). In 2017, a proposal for a ban on the use of pangolin scales in traditional Chinese medicine was submitted to the NPC. But wildlife use in TCM is difficult to change, as people’s beliefs and mindsets are hard to change. Pangolins have been banned for consumption for some time, but not for use in TCM. A shift in policy came when the National Forestry and Grassland Administration (NFGA) announced in June 2020 that pangolins would be shifted from Class II state protection to Class I under the Wildlife Protection Law (IFAW 2020). Importantly, in the same month, China also officially removed pangolin scales from the 2020 edition of the Traditional Chinese Medicine Pharmacopoeia (ibid). Pangolin, classified as a Class 1 animal, may not be traded on the market, only by authorized hospitals and medical firms. But the use of TCM has been promoted by Xi Jinping in building a ‘healthy China’, and was to be promoted internationally (*China Daily* 2019). The industry is estimated to be worth USD 130 billion (CNN 2020).

These recent changes and revision to the wildlife law clearly show that the Chinese authorities are intent on dealing with the challenges of wild

animals, trade and health. Moreover, the public has reacted very negatively to connections between the pandemic and the trade in wild animals, and the authorities have responded to these concerns. A further example of changing perceptions in the public and response measures from government: the April 2020 draft guidelines by the Ministry of Agriculture, re-classifying dogs from ‘livestock’ to ‘companion animals’ and introducing a ban on the consumption of cats and dogs (ALDF 2020). Recent research also reflects changes in people’s mindset regarding animal consumption: wildlife conservation and management is becoming a complex public policy issue. People’s attitudes are changing, and concerns over animal welfare and empathy for animals have grown (Zhen et al. 2020).

The key regulatory framework here is the Wildlife Protection Law (Wildlife Conservation Society 2020), which includes requirements and mechanisms for wildlife breeding and trade. However, it authorizes trade also in protected species for various uses – as for use in traditional medicine within China. The Law contains authorized mechanisms for trade in threatened wildlife, which in effect serve to legitimize the demand for wildlife products (IDDRI 2020). According to Art. 27, trade may be permitted ‘where the sale, purchase or utilization of wildlife under special state protection or the products thereof is necessary for scientific research, captive breeding, public exhibition or performances, heritage conservation or other special purposes.’ In practice, this appears to be interpreted as permitting commercial trade for traditional medicine, and it does not ban trade for fur, medicine or research. ‘This creates a potential loophole for traffickers who may exploit the nonfood exemptions to sell or trade live wildlife’ (WCS 2020).

The Wildlife Protection Law, which entered into effect in 1988 (Wang and Chen 2020) has been amended over the years to reflect growing concerns of wildlife management and conservation. A major challenge to wildlife management is the potential for incomes and livelihoods. The recently revised wildlife law still has some loopholes for trade in wild animals for medicinal uses (Gorman 2020). Implementing policy and law enforcement is indeed challenging, as economic interests are involved.

COVID-19 & Cop 15: any effects?

The pandemic crisis erupted while China was preparing for the largest multilateral summit it had ever hosted on the environment: COP15 of the Convention on Biological Diversity, in Kunming (IDDRI 2020); by some referred to as ‘the debut of China’s environmental diplomacy’ (Li 2020). As noted above, COP15 has been postponed until 2021 due to COVID-19, but we cannot say how COVID will impact Chinese preparations for COP15. Environmental governance and biodiversity have received increasing attention in China, and COVID-19 has brought wildlife trade and management to the fore.

According to DeBoer and Jiang (2020) the environment is still a priority in the post-pandemic period. The impacts of the pandemic, ‘rather than halting the development of environmental rule of law, have triggered a wide-ranging conversation about the relationship between human beings and nature, leading to further progress in the strengthening of environmental governance in China’ (DeBoer and Jiang 2020). This was partly reflected by the CPC Central Committee meeting (October 2020), which emphasized the need to accelerate green development; the meeting communique cited the severe impacts of the pandemic, China’s achievements in fighting the pandemic and also the need to ‘promote the harmonious coexistence of man and nature’ (Xinhua 2020a). Further, it endorsed and discussed a blueprint for China’s development until 2035 and the 14th FYP (2021–2025) – to be endorsed at the 2021 annual session of the National People’s Congress (*The Economist* 2020; Xinhua 2020a).

Some hold that this represents an important opportunity for China in a successful deal for nature at COP15 through leading by example (CCICED 2020). China has several flagship biodiversity policies, including ecological conservation red lines – a land-use planning strategy that protects up to 28% of land for nature – and the concept of ecological civilization, which is embedded in the constitution (Early 2020a). Some have expressed concern over the limited public engagement from Beijing about its goals or strategy for COP 15 and the relatively limited involvement of Chinese researchers in the process thus far (*Nature* 2020). Notably, and contrary to prior rumours, at the digital UN

Biodiversity Summit 30 September 2020, President Xi Jinping did not announce new commitments or positions on biodiversity at the summit (Early 2020b). His speech mostly reiterated content from China’s position statement for COP15, published the week before the summit.

Ecological Conservation Redlining (ECR) — designating areas where human activities are restricted to protect biodiversity — has been put forward as one approach where China’s experience could be relevant. The China Council for International Cooperation on Environment and Development (CCICED) has proposed integrating ECR as one of the ‘nature-based solutions’ (NBS) for synergies between climate change adaptation and biodiversity enhancement (CCICED 2020). There are interlinkages between biodiversity and climate, a point China has increasingly stressed in statements, also concerning NBS in climate change. With the 2060 goal of carbon neutrality, experts increasingly see NBS as a way to address emissions (Reklev 2020).

Changes in trade with African countries following COVID?

Background for trade in wildlife

The 2020 ban on the trade and consumption of wildlife in meat markets in China, and the upgrading of pangolin protection status to Class 1, are positive developments. However, it is still unclear how these decisions may affect the trade in wild animals, many of which come from African countries. TCM has been a major factor behind the increased trade in rare animal parts.

In 2016 *Time* magazine wrote: ‘an estimated 1 million of the creatures [pangolin] have been taken from the wild across Asia and Africa for consumption almost exclusively in China, where many people believe their scales can be used to treat everything from rheumatoid arthritis to inflammation’ (*Time* 2016). According to China’s Ministry of Industry and Information Technology (MIIT), revenues from TCM made up 22.4% of the national pharmaceutical industry in the first half of 2016 (*Time* 2016). TCM received considerable publicity when the chemist Tu Youyou was awarded the 2015 Nobel Prize for wormwood-based malaria treatment, artemisinin

(Time 2016). However, renowned TCM experts/practitioners have explicitly distanced themselves from animal-based remedies, such as animal penises, which, they state, do not help male performance. To counter the trade, the Convention on Illegal Trade in Endangered Species of Wild Fauna and Flora (CITES) conference in South Africa in 2016 banned all trade in all eight species of pangolin (Time 2016).

Chelin and Daghar (2020) note that TCM as practised throughout Asia is one of the drivers of the illegal wildlife trade. Endangered species such as

rhinos and pangolins have been poached in Africa to supply the rising demand of these products in Asia. They refer to a 2019 report by ADM Capital Foundation (ADMCF 2018), stating that ‘the illegal wildlife trade has been dominated by demand from the traditional Chinese medicine industry for the past 10 years’. As yet, there is no clear picture as to the trend in the trade in wild animals – but without strict law enforcement in China, the illegal wildlife trade from Asian and African countries to China is likely to continue.

Examples of illegal trade in wild animals from Africa to China

‘South African traders with [China](#) are illegally selling thousands of wild animals threatened with extinction and endangered, under the guise of legal exports, according to an investigation’ writes Dalton (2020) in *the Independent*.

- The South Africa-based groups Ban Animal Trading (BAT) and the charitable EMS Foundation, which examined wild animal exports from 2016-19, states that illegal trade and legal trade are intertwined (BAT and EMS 2020). Research demonstrates that South Africa’s live wild animal trade with China is riddled with irregularities that are exploited by traffickers. There are gaping loopholes in the global permitting, enforcement and oversight system.’
- Most permits are in breach of regulations, and their verification largely absent, meaning most wild animal exports in 2016-19 were probably illegal, according to the authors of the report, *Breaking Point*.
- The report points out the many loopholes in the existing CITES monitoring systems and opportunities for abuse and corrupt practices. (A previous study with similar criticisms of CITES can be read [here](#)) (Team Africa 2020).

Nigeria trade in pangolins (Uwagbale 2020):

- Nigeria is one of the [largest pangolin trade hubs](#) in Africa. An [investigation](#) into pangolin trafficking found Nigeria was linked to 55% of pangolin scales seized global between 2016 and 2019.
- China is no longer the primary destination for pangolin from Nigeria since May 2018; Vietnam has now taken over.

China and African countries to address trade in wildlife (Traffic 2020)

- Customs officers from China, Cameroon and Republic of the Congo met online during an event ‘International Illegal Wildlife Trade (IWT) and Timber Trade Governance Meeting for China-Congo Basin Countries Customs Authorities.’
- Meetings purpose is to further strengthen trans-boundary law enforcement networking and collaboration and helped establish regular communication between the two sides.

6. Discussion: concepts, global governance, and domestic implementation

First, we examine how the central concepts are applied; second, we look into the global governance aspects of the debates, third, we summarize the main findings from our domestic case on China, and fourth we sum up on poverty aspects. We conclude with some comments on the knowledge gaps in global health governance.

Discussion: Analysing the debates through key concepts

Of the major COVID-19-phase reports examined here, UNEP (2020) and IPBES are most concerned with *One Health*; only UNEP (2020) mentions traditional medicine (only once). UNEP builds on Jones et al. (2008), linking emerging zoonoses directly to loss of habitat. The IPBES report on pandemics (2020) points to *One Health* as a central part of the response to recurring pandemics. It also stresses the combined impact of habitat and biodiversity loss, encroaching land-use change due to agriculture (among other factors), and increased international trade in wildlife as drivers of pandemics. All reports mention zoonoses; whereas most discuss zoonoses in relation to habitat and ecosystem degradation, the UN report on framework responses to COVID-19 (UN 2020) mentions zoonoses solely in relation to wet markets and wildlife trade, and emphasizes the need to integrate nature in policy responses to the pandemic.

The two main messages in the OECD report, *Building Back Better* (2020) concern activities aimed at conserving biodiversity for its medicinal benefits and at reducing environmentally harmful subsidies in the links between biodiversity and agriculture. The OECD report mentions biodiversity 27 times – but makes no mention of *One Health*, traditional medicine, or habitat loss. On the zoonotic aspects it builds on Jones et al. 2013, which links zoonoses primarily to agricultural expansion. Also the OECD report on *Environmental Health and Strengthening Resilience to Pandemics* (2020) does not mention

One Health or traditional medicine: it focuses on biodiversity, discussing zoonoses mainly as a result of habitat loss, again drawing on Johnson et al. (2020).

As regards the poverty aspects, there is significant variation among the reports. The IPBES workshop report (2020) devotes considerable attention to how developing countries are often directly affected by zoonoses, and often negatively affected by the policies and instruments established for resolving disease problems. This includes culling of domesticated animals in local markets and banning bush-meat, both of which directly reduce food security among the poorest countries and populations. Negative impacts are also found in efforts to eradicate malaria by the widespread use of hazardous substances, like DDT. Some of these examples are mentioned in the UNEP (2020) report on zoonoses, but that document devotes significantly less space to developing countries and poverty issues; moreover, these aspects are not covered in the OECD reports.

From a global health governance perspective, linking biodiversity and health through the focus on emerging infectious disease and pandemics is only one of several possible interconnections, but one that has gained intense traction with the COVID-outbreak. In official WHO documents, the *One Health* concept is linked first and foremost to the issue of pandemic preparedness and implementation of the International Health Regulations. It also has wider connotations for cross-sectoral collaboration at the national level. As sporadic initiatives prevail over concerted efforts to integrate interventions at the policy level, the WHO calls appear more aspirational on this point.

In sum, there seems to be international agreement on the importance of including pandemic response and the build-back-better approach in the post-

corona phase to halt the loss of biodiversity and to enhance nature conservation. Proposed efforts aim at increased and improved collaboration between the health and nature sectors, as well as science, policy, and practice.

Institutions involved in global governance, main foci, and directions

The wake-up call on the state of our relationship with nature caused by the COVID-19 pandemic should affect multilateral environmental agreements dealing with biodiversity and wildlife, to focus more on the serious threats to human health posed by zoonoses. These agreements and institutions should expand their field of activity and assume stronger roles, both individually and as One Health partners in preventing future disease outbreaks. The One Health partners should allow them this role. In its recent report (2020) on preventing zoonotic diseases UNEP, the UN host of most these conventions, argues that environmental considerations have been insufficiently incorporated into the One Health approach, mostly involving collaboration between WHO, FAO and OIE. This, according to UNEP, has significantly limited the success of the One Health approach (UNEP et al. 2020). Also, the July 2020 IPBES Workshop on Biodiversity and Pandemics recommends a stronger role for the biodiversity-related conventions in global governance of zoonoses prevention (IPBES, 2020).

The biodiversity-related conventions of greatest relevance in this context are CBD and CITES, but the Ramsar Convention on the Protection of Wetlands Convention and the Conservation of Migratory Species of Wild Animals (CMS) also have roles to play. These conventions can offer support on various measures based on their mandates and experience in protecting nature, while at the same time being important in controlling zoonoses. Also in the context of zoonoses, better coordination is needed between addressing climate change (the Paris Agreement) and protecting biodiversity.

The CBD should address the destruction of natural habitats, not least as regards preventing humans and their livestock from coming into close contact with wild species that may transmit pathogens to humans. The CBD is also the forum in which to

address the unsustainable use of wild animals for bushmeat – not only to improve the conservation status of the animals, but also to avoid transmission of zoonoses. Conservation and the sustainable use of biodiversity are important for reducing the emergence of new zoonoses; they are also crucial for the development of new vaccines and medicines to combat and treat diseases. With its third objective of the fair and equitable sharing of benefits from genetic resources, the CBD and its Nagoya Protocol have a further role to play in promoting fair and equitable vaccine distribution.

CITES should offer its long experience with robust and enforceable regulation of wildlife trade to include animals carrying serious diseases. CITES' effective institutional design and enforceability makes it well adapted for this additional mandate, especially as against the option of bringing in a new trade regulation regime.

Formal decisions will be required by the CITES COP to allow the Convention effectively to address trade in zoonoses carrying animals. Although the CBD mandate is very broad, negotiations and decisions by the COP will here be needed to warrant an expanded role. None of these conventions can be said to be accustomed to receiving high-level political attention: national negotiators are often left with restricted mandates and cautious, legalistic approaches to new initiatives. High-level political pressure is probably necessary to ensure a renewed focus of the part of biodiversity-related conventions. Otherwise, attempts for setting new agendas could well be countered by national negotiators arguing from the narrow perspective that zoonoses are already under the mandate of other legal regimes and therefore should be addressed by them.

A changing China

China's recently introduced policies and regulations on wildlife management and consumption have the potential to stem the illegal trade in wild pangolins. The regulations also reflect the country's growing commitment to protecting wildlife. However, there remains a need for better enforcement and greater public awareness to reduce the demand for such products. Culturally rooted perceptions, and the

centuries-long use of wildlife in TCM, make this task a demanding one that will take time. Nevertheless, there are grounds for optimism: the Chinese public reacted very negatively when linkages were announced between the pandemic and trade in wild animals, and there was a public outcry against the consumption of wild animals. It is encouraging to note that the authorities have rapidly responded to people's concerns. Moreover, CBD COP15 offers a suitable arena for China and other countries to make further commitments to protect wild animals.

The poverty perspective

How could approaches be tailored to better accommodate the needs of poor countries?

Both the 'One Health approach' and the 'Build back better approach' seem less concerned with poverty issues than with environmental aspects. By contrast, the UNEP and the IPBES workshop reports warn against the potentially negative poverty effects of policy measures aimed at fighting epidemics: the culling of livestock, the widespread use of insecticides, and travel restrictions. The Least Developed Countries (LDCs) have been hard hit by the corona crisis due to falling prices in raw materials, reduced tourism, and trade. Improved biodiversity policies may, in contrast, contribute positively to reduce poverty in LDCs, where populations are most directly vulnerable to loss of biodiversity's ecosystem services.

As yet, the African continent – where many LDCs are located – has been relatively less hard hit by the pandemic, but the secondary effects are likely to be very serious for already marginalized populations in African countries. This includes rising inequalities in health, income and employment, access to education and food security (PERC, 2020). Access to health services other than COVID-19 related disease have been diminishing among the marginalized (ibid).

Drawing together the main findings from our report and the UN Sustainable Development Goals (SDGs), we may conclude that the pandemic is still likely to

have serious negative effects on hunger (SDG 2) and health (SDG 3) among poor populations. When designing institutions and global partnerships for sustainable development (SDG 17) to alleviate these immediate threats, it is essential to pay attention to the window that the pandemic has opened for the 'One Health' approach, including conservation and sustainable use of biodiversity and ecosystems in global health governance, as per SDGs 16 and 17.

Gaps – in governance and knowledge

There is an untapped potential in academic empirical research on global health governance and implementation of related policies. The role of the social sciences in understanding the policy processes involved in achieving One Health objectives and contributing to improved global health governance and implementation is largely overlooked.²⁶

Social science can assist in producing knowledge on how natural science can be integrated in the policy processes, on who the key actors are and how various stakeholders are included at local, regional and global levels, including state and non-state actors. To bridge the gaps between the 'silos' on health, environment, agriculture and trade, there is a need for academic empirical research on how these processes and institutions/forums interact.

In a post-corona era, these recommendations are likely to decline in importance on global and national policy agendas. However, improved design of global health governance is essential for enhancing preparedness for the next pandemic – which is only to be expected in our complex and globalized society.

²⁶ Reiterated at the webinar hosted by the *Lancet* One Health Commission : [One Health Policy, Governance and the EID/NTD Interface](#), 3 December 2020. <https://youtu.be/INWONDEUvko>

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