REFRAMING GLOBAL BIODIVERSITY PROTECTION AFTER COVID-19: IS INTERNATIONAL ENVIRONMENTAL LAW UP TO THE TASK?

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INTRODUCTION

In an increasingly interdependent world, the climate and biodiversity crises are, more than ever, inextricably tied to human health and the transmission of infectious diseases. The 2020 Covid-19 pandemic has irrevocably shown us that the exploitation of wild species and deforestation increases and modifies the interface between people and wildlife, leading to a spillover of diseases from wildlife to people.[1] From a legal perspective, the gaps in international environmental law have contributed to the lack of an effective international biodiversity policy. In light of the challenges brought by the pandemic, there is now an opportunity to rethink our existing legal framework: How could international environmental law better protect biodiversity to avert future pandemics?

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) recognized that pandemics' underlying causes are the same global environmental changes that drive biodiversity loss and climate change, including land-use change, agricultural expansion and intensification, and wildlife trade and consumption.[2] These drivers bring wildlife closer to humans, allowing microbes and outbreaks to move into people and lead to infections. The rise in consumption, trade, and demographic pressure has led to many emerging diseases in biodiversity-rich countries. Therefore, pandemics underscore the interconnectedness of the

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1. Raina K. Plowright et al., *Pathways to Zoonotic Spillover*, 15 NATURE REVS. MICROBIOLOGY, 502 (2017); Christina L. Faust et al., *Pathogen Spillover During Land Conversion*, 21 ECOLOGY LETTERS, 471 (2018).

2. P. DASZAK ET AL., IPBES WORKSHOP REPORT ON BIODIVERSITY AND PANDEMICS: EXECUTIVE SUMMARY 5 (IPBES 2020).

world community and the threat posed by global inequality to people's health, well-being, and security.

The article is structured as follows. Section I addresses the international regulation of deforestation and wildlife trade as pathways to reduce biodiversity loss. On the one hand, deforestation and land-use changes reduce animal habitat, pushing wildlife to urban areas. On the other hand, the wildlife trade heightens human–animal contact. Taken together, these activities further risk intensifying zoonotic "spillover." International regulation is essential to providing a global response to the root causes of zoonotic spillover. Section II analyzes the Half-Earth theory as a potential avenue to ensure biodiversity protection and Building Back Better after Covid-19. As one of the emerging legal theories in biodiversity conservation, we question Half-Earth's effectiveness, its potential impact on marginalized groups, and its feasibility in a post-pandemic context. Section III describes the current state of international cooperation on biodiversity protection and whether existing norms could provide a pathway for Building Back Better in a way that protects both nature and marginalized sections of the population. Then the article concludes that international cooperation is key in Building Back Better and understanding the frameworks' current limitations will necessarily facilitate a better response and collaboration.

I. REGULATION OF WILDLIFE TRADE AND DEFORESTATION: A PATHWAY TO REDUCE BIODIVERSITY LOSS?

With the disastrous impact of human activities on the planet, a new era in the Earth's geological history has begun: the Anthropocene.[3] In particular, human-driven biodiversity loss could lead to the sixth mass extinction.[4] The biodiversity crisis is so alarming that scientists from 184 countries alerted in *Warning to Humanity: A Second Notice*[5] about the collision course between humanity and the natural world "as ecosystems are being pushed beyond their

3. Simon L. Lewis & Mark A. Maslin, *Defining the Anthropocene,* 519 NATURE 171, 171 (2015); Jan Zalasiewicz et al., *The Working Group on the Anthropocene: Summary of Evidence and Interim Recommendations*, 19 ANTHROPOCENE 55, 56 (2017).

4. Nicholas De Sadeleer & J. Godfroid, *The Story Behind COVID-19: Animal Diseases at the Crossroads of Wildlife, Livestock and Human Health,* 11 EUR. J. OF REGUL., 212, 212 (2020), https://munin.uit.no/bitstream/handle/10037/20303/article.pdf?sequence=3&isAllowed=y (citing Richard Leakey & R. Lewin, *The Sixth Extinction: Patterns of Life and the Future of Humankind*, ANCHOR (1995)).

5. In 2017, 25 years later, scientists signed *World Scientists Warning to Humanity: A Second Notice*, written by William J. Ripple and seven co-authors. *See* William J. Ripple et al., *World Scientists' Warning to Humanity: A Second Notice*, 67 BIOSCIENCE 12, 1026 (Dec. 2017), https://academic.oup.com/bioscience/article/67/12/1026/4605229.

capacities to support the web of life on this planet."[6] The Covid-19 crisis further highlighted the crucial need to effectively reduce damaging human activities, including wildlife trade and deforestation as drivers of disease transmission and species extinction.[7]

Zoonotic "spillovers" at the wildlife–human interface, a core cause of the Covid-19 pandemic, are neither one-off events nor only found in distant lands.[8] Spillover, also known as "evolutionary jump," refers to the "transmission of a pathogen from a natural animal host to a novel host leading to infection in the new host."[9] It has been recognized that some viruses, such as the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV-1 and the novel SARS-CoV-2) and the Middle East Respiratory Syndrome (MERS-CoV), may have emerged in wildlife and crossed over to humans.[10] The Coronavirus likely originated from bats before transmission to humans due to illegal trapping and sale of live animals in Asia.[11] United Nations Environment Programme (UNEP) recently underlined that the emergence of zoonotic diseases derives from seven major anthropogenic drivers to zoonotic disease, including: (1) the increasing demand for animal protein; (2) unsustainable agricultural intensification; (3) increased use and exploitation of wildlife; (4) unsustainable utilization of natural resources increased by urbanization, land use, and extractive industries; (5) travel and transportation; (6) changes in food supply chains;[12]

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6. De Sadeleer, s*upra* note 4, at 212.

7. *Id.* at 222.

8. Nicholas Robinson and Christian Walzer, *How Do We Prevent the Next Outbreak?*, SCI. AM. (Mar. 25, 2020), https://blogs.scientificamerican.com/observations/how-do-we-prevent-the-next-outbreak/.

9. Najmul Haider et al., *COVID-19—Zoonosis or Emerging Infectious Disease?*, 8 FRONTIERS PUB. HEALTH 596944, 596944 (Nov. 26, 2020), https://www.frontiersin.org/articles/10.3389/fpubh.2020.596944/full; *See also* Kevin J. Olival et al., *Possibility for Reverse Zoonotic Transmission of SARS-CoV-2 to Free-Ranging Wildlife: A Case Study of Bats,* 16 PLOS PATHOGENS 9, 9 (Sept. 3, 2020), https://journals.plos.org/plospathogens/article?id=10.1371/journal.ppat.1008758.

10. Frédéric Baudron & Florian Liégeois, *Fixing Our Global Agricultural System to Prevent the Next COVID-19*, 49(2) OUTLOOK ON AGRIC. 111, 111 (2020).

11. Manfredo A. Turcios-Casco & Roberto Cazzolla Gatti, *Do not Blame Bats and Pangolins! Global Consequences for Wildlife Conservation After the SARS-CoV-2 Pandemic*, 29 BIODIVERSITY & CONSERVATION 3829, 3830 (Sept. 19, 2020), https://doi.org/10.1007/s10531-020-02053-y (citing Andersen et al., *The Proximal Origin of SARS-CoV-2*, 26 NAT'L MED. 450, 452 (2020); Lau et al., *Possible Bat Origin of Severe Acute Respiratory Syndrome Coronavirus*, 2 EMERGING INFECTIOUS DISEASES (2020), https://wwwnc.cdc.gov/eid/article/26/7/20-0092_article).

12. Delia Grace Randolph et al., *Preventing the Next Pandemic: Zoonotic Diseases and how to Break the Chain of Transmission*, UNEP, 7 (July 6, 2020), https://www.unep.org/resources/report/preventing-future-zoonotic-disease-outbreaks-protecting-environment-animals-and; Josef Settle et al., *COVID-19 Stimulus Measures Must Save Lives, Protect*

Environmental degradation is critical in the emergence of zoonosis. Forests specifically contain a vast number of animal species and associated pathogens that could potentially be transferred to humans.[13] Biodiversity loss caused by anthropogenic activities, such as deforestation and the wildlife trade, has allowed the coronavirus to jump from animals to humans by bringing them together in previously inaccessible spaces.[14] This section analyzes how deforestation and the wildlife trade contribute to biodiversity loss, a critical cause of emerging zoonotic diseases, and assesses how to cope with the current and future viruses while ensuring biodiversity protection.

A. Deforestation and Land-Use Changes as Primary Drivers of Biodiversity Loss

The emergence of zoonoses is strongly linked to deforestation and other land-use changes that increase human–wildlife contact, allowing a higher risk of human infection from zoonotic diseases.[15] Approximately 22% of the land area represented by biodiversity hotspots, which overlap with emerging disease hotspots, is currently threatened by agricultural expansion and deforestation.[16] With increased deforestation rates and habitat fragmentation, animal species are drawn to urban areas, underscoring its direct consequences on a healthy environment.[17] The closer proximity of animals and humans deriving from socio-economic processes allows for the invasion of host communities.[18] In November 2019, scientists sounded the alarm on

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Livelihoods, and Safeguard Nature to Reduce the Risk of Future Pandemics, IPS (April 27, 2020), http://www.ipsnews.net/2020/04/covid-19-stimulus-measures-must-save-lives-protect-livelihoods-safeguard-nature-reduce-risk-future-pandemics/.

13. Delia Grace Randolph et al., *supra* note 12, at 14.

14. Josef Settle et al., *supra* note 12.

15. Felicia Keesing et al*., Impacts on Biodiversity on the Emergence and Transmission of Infectious Diseases*, 468 NATURE 647, 647 (Dec. 2, 2010); Philip M. Fearnside, *Will the Next Coronavirus Come from Amazonia? Deforestation and the Risk of Infectious Diseases (Commentary),* MONGABAY (April 8, 2020), https://news.mongabay.com/2020/04/will-the-next-coronavirus-come-from-amazonia-deforestation-and-the-risk-of-infectious-diseases-commentary/.

16. Baurdon & Liégeois, *supra* note 10, at 112–113.

17. For example, it has been reported that the disruption of bat ecosystems and habitats has driven increasing numbers of fruit bats seeking food in suburban and urban areas, increasing human and livestock contact. *See* Gabriele Volpato et al., *Baby Pangolins on My Plate: Possible Lessons to Learn from the COVID-19 Pandemic*, J. ETHNOBIOLOGY & ETHNOMEDICINE, 2020, at 3, 12 (explaining the connection between deforestation and viruses); *See also* Empire Hechime Nyekwere, *The Impacts of the Covid-19 Coronavirus Pandemic on International Environmental Protection*, 101 J. L., POL'Y, & GLOBALIZATION 96, 101 (2020), (discussing habitat fragmentation and its consequences).

18. Rory Gibb et al., *Ecosystem Perspectives are Needed to Manage Zoonotic Risks in a Changing Climate,* BMJ, 2020, at 1, doi: https://doi.org/10.1136/bmj.m3389.

increasing deforestation as a possible catalyst for disease outbreaks.[19] If we disrupt natural habitats, we dislodge pathogens, which, in turn, seek new homes in cities and other populated areas.[20] Similarly, land-use changes from cattle ranching can drive zoonotic diseases, as cattle are intermediary carriers of disease to humans.[21]

The interplay between deforestation, land-use change, and habitat loss is the "perfect storm" for the emergence of infectious diseases.[22] In places like the Amazon region, deforestation alters vital natural cycles that help reduce the effects of global warming and recycling water essential for other non-Amazonian areas.[23] Ecosystems like Amazonia are critical to controlling zoonotic diseases and vector-borne infections.[24] Yet, these ecosystems are increasingly threatened. During the first month of quarantine, the Amazonian Institute for Scientific Research SINCHI (SINCHI) registered widespread forest fires in Colombia: a 276% increase from the previous year.[25] By April 2020, the Colombian Amazon had lost 75,000 hectares (from January to April).[26] Environmental degradation is exacerbated where governmental institutions are almost non-existent and illegal, armed groups are present, which impedes an adequate implementation of environmental policies.[27]

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19. Sarah Gibbens, *Protecting Land and Animals Will Mitigate Future Pandemics*, NAT'L GEOGRAPHIC (Oct. 19, 2020), https://www.nationalgeographic.com/environment/2020/10/protecting-land-animals-will-mitigate-future-pandemics-report-says/?cmpid=org=ngp::mc=crm-email::src=ngp::cmp=editorial::add=SpecialEdition_20201030&rid=BB3192A42DA2949024ADDA6B9261012C.

20. Nicholas A. Robinson, *Global Health as a Foundation for World Peace: Preventing the "Next" Pandemic,* NCP BLOG (Apr. 15, 2020), https://chairpeace.hypotheses.org/1365.

21. *Id*.

22. Joel Henrique Ellwanger et al., *Beyond Diversity Loss and Climate Change: Impacts of Amazon Deforestation on Infectious Diseases and Public Health,* ANAIS DA ACADEMIA BRASILEIRA DE CIÊNCIAS, 2020, at 2.

23. Maria Antonia Tigre, COOPERATION FOR CLIMATE MITIGATION IN AMAZONIA: BRAZIL'S EMERGING ROLE AS A REGIONAL LEADER, 5 TRANSNAT'L ENV'L L. 2, 416, 425 (2016) (explaining the Report of the Intergovernmental Panel on Climate Change findings on the Amazonia); *See generally* MARIA ANTONIA TIGRE, REGIONAL COOPERATION IN AMAZONIA: A COMPARATIVE ENVIRONMENTAL LAW ANALYSIS VOL. 13 66 (2017) (discussing the link between the Amazon and climate change) [hereinafter REGIONAL COOPERATION IN AMAZONIA].

24. Ellwanger et al., *supra* note 22, at 2.

25. *"Están Aprovechando la Cuarentena para Quemar la Selva": Corpoamazonia*, SEMANA (Apr. 1, 2020), https://www.semana.com/impacto/articulo/estan-aprovechando-la-cuarentena-para-quemar-la-selva-corpoamazonia/49489/.

26. Oliver Griffin, *Columbia Lost more than 158,000 Hectares to Deforestation in 2019,* THOMSON REUTERS (July 9, 2020), https://news.trust.org/item/20200709184816-80ir7.

27. James Fair, *COVID-19 Lockdown Precipitates Deforestation Across Asia and South America*, MONGABAY (Jul. 3, 2020), https://news.mongabay.com/2020/07/covid-19-lockdown-precipitates-deforestation-across-asia-and-south-america; *See also*, Amador-Jiménez et al., *The Unintended Impact of Colombia's Covid-19 Lockdown on Forest Fires*, 76 ENV'T RES. ECON., 1081–1105 (2020), https://doi.org/10.1007/s10640-020-00501-5.

In Brazil, Amazonian deforestation is at a nine-year high.[28] During the first and second trimester of 2020, deforestation rates were already 51% higher than the previous year.[29] By April, the total deforested area was the highest of the decade and by the end of August 2020, Brazil had experienced deforestation of approximately 3,070 km2 (from January to July).[30] A recent study found a significant correlation between rising deforestation and the transmission of Covid-19 in Indigenous communities in Brazil, especially as human encroachment in Indigenous lands sparks conflicts that results from deforestation-inducing activities, such as illegal mining, furthering virus transmission in already vulnerable populations.[31] To avoid more zoonotic spillovers, we need to rethink and reshape the human–nature relationship and its consequences on biodiversity loss. The first step is addressing deforestation and land-use changes so that ecosystems like Amazonia do not become the birthplace of the next pandemic.

B. Wildlife Trade and Zoonotic Diseases

Wildlife trade also plays a significant role in the emergence of zoonotic diseases. The U.S. National Academy of Medicine considers international trade one of the six contributing factors to emerging infectious disease risk.[32] Many wild, captive-bred, and farmed animal species are transported and traded together in markets, which facilitates disease transmission.[33] The proximity of humans with different species further enables "animal-to-human spillover" of new viruses that are more likely to amplify the human-to-human transmission.[34]

A recent study shows that the number of bamboo rats infected by coronaviruses increased through the wildlife trade value chain in Vietnam, from 6% in rat farms to 21% in large live animal markets, to 56% in

28. Simone Iglesias, *Brazil to Boost Amazon Forest Oversight as Deforestation Jumps*, YAHOO FIN. (Apr. 14, 2020), https://finance.yahoo.com/news/brazil-boost-amazon-forest-oversight-152259352.html.

29. Patricia Vieira, *Brazilian Amazon at a* Crossroads, REVISTA (July 7, 2020), https://revista.drclas.harvard.edu/brazilian-amazon-at-a-crossroads/.

30. Humberto Laudares & Pedro Gagliardi, *Is Deforestation Spreading COVID-19 to the Indigenous Peoples?*, 2 (IEPS, Working Paper No. 8, 2020).

31. *Id*. at 16, 22.

32. Stefan Borsky et al., *CITES and the Zoonotic Disease Content in International Wildlife Trade,* 76 ENV'T & RES. ECON. 1001, 1002 (2020), https://doi.org/10.1007/s10640-020-00456-7**.**

33. Randolph et al., *supra* note 12, at 33.

34. *Id*.

restaurants before being killed.[35] Recent data also shows that the international legal wildlife trade might have increased by 500% in value since 2005 and by 2000% since the 1980s, partly due to enhanced sustainable captive breeding.[36] Approximately 24% of all wild terrestrial vertebrate species on Earth are traded globally,[37] either legally (estimated to be worth $107 billion in 2019) or illegally (estimated to be worth between $7–23 billion per year).[38]

This unprecedented rise in scale and speed of wildlife trade increases the contact between animals and humans.[39] The wildlife trades include: harvesting of wild animals as a source of protein and money; the recreational hunting and consumption of wildlife as a symbol of status or tradition; the trade of wildlife for recreational use (e.g., pets and zoos); and the use of animal parts for decorative, medicinal, and other commercial products (e.g., furs, as trophies or traditional medicine).[40] Pathogen transmission from wild animals to humans can come from hunters and farmers, ranching, subsistence, and recreational hunting, as well as traders, transporters, middle-marketers, handlers, buyers, and meat-eaters.[41] Researchers have estimated over one billion contacts per year, with an approximate 650,000 to 840,000 existing zoonotic pathogens that could cross over the species barrier.[42]

While wildlife farming led to a decrease in wildlife meat consumption, surveys show that wildlife farms are sometimes stocked with wild-caught animals. The impossibility of distinguishing between both increases the risk of disease transmission.[43] Furthermore, epidemiologists have warned of the

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35. DASZAK ET AL., *supra* note 2, at 32 (citing N. Q. Huong et al., *Coronavirus Testing Indicates Transmission Risk Increases Along Wildlife Supply Chains for Human Consumption in Vietnam 2013–2014*, PLOS ONE, 2020, at 27, doi:10.1371/journal.pone.0237129).

36. *Id.* (citing DILYS ROE, TRADING NATURE: A REPORT, WITH CASE STUDIES, ON THE CONTRIBUTION OF WILDLIFE TRADE MANAGEMENT TO SUSTAINABLE LIVELIHOODS AND THE MILLENNIUM DEVELOPMENT GOALS 24 (2008); *UN Comtrade Database - Merchandise Trade Data Availability*, UNITED NATIONS, https://comtrade.un.org/data/da (last visited Jan. 22, 2022); *See generally* Janine Robinson et al. *Dynamics of the Global Trade in Live Reptiles: Shifting Trends in Production and Consequences for Sustainability,* 184 BIOLOGICAL CONSERVATION 42 (2015) https://doi.org/10.1016/j.biocon.2014.12.019).

37. *Id.* at 28 (citing Brett R. Scheffers et al., *Global Wildlife Trade Across the Tree of Life,* 366 SCIENCE 71 (Oct. 4, 2019), doi:10.1126/science.aav5327).

38. *Id*. at 29 (citing DAAN P. VAN UHM, THE ILLEGAL WILDLIFE TRADE: INSIDE THE WORLD OF POACHERS, SMUGGLERS AND TRADERS 15 (2016)).

39. Borsky et al., *supra* note 32, at 1002.

40. Randolph et al., *supra* note 12, at 15.

41. *Id*. at 32; *See also* Borsky et al., *supra* note 32, at 1003.

42. Borsky et al., *supra* note 32, at 1003.

43. DASZAK ET AL., *supra* note 2, at 30 (citing Laura Tensen, *Under What Circumstances can Wildlife Farming Benefit Species Conservation?*, 6 GLOB. ECOLOGY & CONSERVATION 286–298 (2016)

likelihood that Covid-19 could become endemic if established in a wild animal population.[44] Animal reservoirs provide viruses with new hosts, potentially allowing for viruses to spill back into people after being under control. Yellow fever, Ebola, and Chikungunya have experienced such a spill back.[45] Since Covid-19 is thought to have originated in bats but passed to people through an intermediate host, chances are that it will also become endemic, which is why strategies to reduce the spread and control of the virus are essential to overcoming this pandemic.[46] Wildlife trade regulation is crucial in preventing the further spread of the virus.

C. Possible Responses to Biodiversity Loss: Protected Areas and Wildlife Trade International Regulation

With globalization, the effects of biodiversity loss are no longer confined to physical borders. An increasing number of people travel to and from risk regions, contributing to the dissemination of pathogen agents.[47] Safeguarding biodiversity is essential to preventing future pandemics given the connection between human disease and habitat destruction.[48] International regulation of activities that induce wildlife–human contact could decrease the risk of zoonotic spillover. However, most governmental initiatives reactively respond to diseases ex-post facto, worsening the government's ability to control the threat of future zoonoses. To avoid the next pandemic, international cooperation is essential. One pathway to address the root causes of zoonotic spillover lies in protected areas.

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http://dx.doi.org/10.1016/j.gecco.2016.03.007; E. G. E. Brooks, S.I. Roberton & D.J. Bell, *The Conservation Impact of Commercial Wildlife Farming of Porcupines in Vietnam,* 143 BIOLOGICAL CONSERVATION 2808–2814 (2010) https://doi.org/10.1016/j.biocon.2010.07.030).

44. Nicky Phillips, *The Coronavirus Is Here to Stay—Here's What That Means*, NATURE (Feb. 16,2021), https://www.nature.com/articles/d41586-021-00396-2campaign_id=9&emc=edit_nn_20210223&instance_id=27427&nl=the-morning&regi_id=64750540&segment_id=52225&te=1&user_id=17e04417a4944065756c5772e26dcecd.

45. *Id*.

46. *Id*.

47. Gustavo Ortiz Millán, *Pandemias, Zoonosis y Comercio de Animales Silvestres*, REVISTA DE BIOÉTICA Y DERECHO, Nov. 2020, at 21, https://scielo.isciii.es/scielo.php?script=sci_arttext&pid=S1886-58872020000300003.

48. Baurdon & Liégeois, *supra* note 10, at 112.

1. Protected Areas as a way to Minimize Deforestation and Land-Use Change

Protected areas can support reducing deforestation by confronting biodiversity loss in tandem with other pressing issues such as climate change. Conserving biodiversity through protected areas is fundamental for implementing an effective public health policy to prevent or reduce the transfer of infectious diseases to human populations.[49] Humans and animals can coexist better if biodiversity is protected and conservation efforts are advanced.

For example, the Emerald Network is made up of protected areas or "Areas of Special Conservation Interest," by the Council of Europe after adopting the European Convention on Conservation of European Wildlife and Natural Habitats (also known as the Bern Convention).[50] The Natura 2000 network started as the European Union's (E.U.) contribution to the Emerald Network.[51] As a network of more than 1.15 million km2 of privately-owned protected nature reserves across the E.U. Member States that were established to protect rare and threatened species and rare natural habitat,[52] it provides an example of the selection-process of protected areas, identification of significant threats to habitats, and implementation of conservation measures.[53]

A similar network could be built in other regions in a post-pandemic scenario. To Build Back Better, it is necessary to strengthen biodiversity and forest protection through existing and new legal mechanisms at different levels of governance. It is predictable that once the lockdown measures are lifted, an increase in industrial activity and, particularly, extractivism is expected, especially given the challenging economic conditions that have emerged during the pandemic.[54] Covid-19's more lasting impacts will

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49. Keesing et al., *supra* note 15, at 647–652.

50. Olena Bevz, *Legal Regulation of the Emerald Network: National and Global Aspects,* 5 J. VASYL STEFANYK PRECARPATHIAN NAT'L UNIV. 91, 93 (2018), doi: 10.15330/jpnu.5.2.91-98; *See* Convention on the Conservation of European Wildlife and Natural Habitats, Alb.-Tunis., Sept. 09, 1979, E.T.S. No. 104 (entered into force June 01, 1982).

51. Eur. Consult. Ass., *Revised Criteria for Assessing the National Lists of Proposed Areas of Special Conservation Interest (ASCIs) at Biogeographical Level and Procedure for Examining and Approving Emerald Candidate Sites,* 33rd Standing Comm. Meeting, Doc. 13 T-PVS/PA 6, 2-3 (2013) https://rm.coe.int/1680746a34.

52. *Natura 2000*, EUR. COMM'N, https://ec.europa.eu/environment/nature/natura2000/index_en.htm (last visited Jan. 22, 2022).

53. Thomas Campagnaro et al., *Half Earth or Whole Earth: What Can Natura 2000 Teach Us?,* 69-2 BIOSCIENCE 117, 122 (2019).

54. Turcios-Casco & Cazzolla Gatti, *supra* note 11, at 5.

probably be financial, affecting restoration and reforestation efforts.[55] Reduced government spending, rollback of environmental regulations, forest clearing and hunting, demand for agricultural products, and increased rural poverty and population density all amount to a more complex implementation of environmental protection policies and laws.[56] That is why biodiversity conservation and restoration are more important than ever, both to help cope with the pandemic's consequences and prevent future ones.

2. Wildlife Trade Regulation as a way to Reduce the Spread of Covid-19 and Prevent New Zoonotic Diseases

While animal exploitation from wildlife trade has grown in recent years,[57] international regulation remains scarce. Animals are kept in overcrowded spaces for production and commercialization,[58] increasing the possibility of emerging zoonotic diseases.[59] This has prompted the question: Should the international community prohibit wildlife commerce?

There are a lot of reasons to prohibit the sale of animals in public markets, including the hygiene and sanitary conditions in which animals are kept, the amount of damage and suffering in individual animals and social groups, the imbalance created in ecosystems when animals are removed, and the risk of extinction.[60] However, prohibiting wild animal commerce can be counterproductive. Animal markets are not isolated; instead, they are part of a larger supply chain.[61] Applying a blanket ban to wildlife commerce ignores the underlying drivers of the emergence and spread of zoonoses.[62] It obscures the social context of the extraction, breeding, hoarding, commercialization, and supply, which may risk sending animal trafficking to the illegal world's deep, clandestine spaces, where sanitary measures are even worse.[63]

Most of the dire conditions that favor spillovers could be addressed with stricter regulation and monitoring of market conditions rather than a blanket

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55. Rakan A. Zahawi et al., *Potential Impacts of COVID-19 on Tropical Forest Recovery,* 52 BIOTROPICA 803, 804 (2020).

56. *Id.* at 804, 805.

57. Yadav Uprety et al., *Illegal Wildlife Trade Is Threatening Conservation in the Transboundary Landscape of Western Himalay*a, 59 J. FOR NATURE CONSERVATION 1, 1 (2021).

58. Millán, *supra* note 47, at 21.

59. *Id.*

60. *Id*.; *See also* Dilys Roe & Tien Ming Lee, *Possible Negative Consequences of a Wildlife Trade Ban,* NATURE SUSTAINABILITY (Jan. 19, 2021), https://www.nature.com/articles/s41893-020-00676-1.

61. Millán, *supra* note 47, at 24.

62. *Id*. at 5.

63. *Id*. at 22.

ban. Suppose governments strengthen legislation and regulations to control and monitor import and export, sale, and consumption of wild animals and their derivatives, as well as to ensure animal well-being throughout the whole supply chain. In that case, a positive effect is most likely to happen.[64] Periodic reviews may positively affect commercial breeding and production on farms and generally set higher standards for those animals.[65]

Additionally, the wildlife trade supports millions of families and individuals, contributing to income generation among the world's most impoverished population.[66] It is crucial to assess comprehensively the social aspects of wildlife trade in any international cooperation initiative, especially in a post-pandemic scenario. About six million tons of wild meat is harvested yearly in Africa and Latin America.[67] Thirty-nine percent of households in Africa, Asia, and Latin America declared that they harvested and consumed wild meat last year.[68] The pandemic has already hit marginalized populations hard, and a blanket ban would only add to that.[69] Furthermore, this ban would affect those who produce and consume meat for cultural, health, and livelihood security reasons.[70] Moreover, wild meat consumption is critical to ensuring the food security of Indigenous peoples and local communities worldwide.[71]

In sum, deforestation and the wildlife trade need to be better regulated.[72] It is necessary to address changes in land use and exploitation of wildlife to strengthen environmental protection.[73] UNEP has called for advancing a global biodiversity agenda that promotes human–wildlife coexistence while expanding innovative financing for restoration and ecosystem-based approaches.[74] To deliver transformational change in the post-pandemic scenario, UNEP urges collective action and firm commitments from non-

64. *Id.*

65. *Id.*

66. Uprety et al., *supra* note 57, at 1.

67. Jani Hall, *Bushmeat—Explained,* NAT'L GEOGRAPHIC (June 19, 2019), https://www.nationalgeographic.com/animals/article/bushmeat-explained.

68. Randolph et al., *supra* note 12, at 31 (citing Robert Nasi et al., *Empty Forests, Empty Stomachs? Bushmeat and Livelihoods in the Congo and Amazon Basins,* 13 INT'L FORESTRY REV. 3, 355–368 (2011); Martin Nielsen et al., *The Importance of Wild Meat in the Global South,* 146 ECOLOGICAL ECON., 696, 699 (2018)).

69. Amaël Borzée et al., *COVID-19 Highlights the Need for More Effective Wildlife Trade Legislation,* 35 TRENDS ECOLOGY & EVOLUTION 12, 1054 (2020).

70. Roe & Lee, *supra* note 60.

71. *Id.*

72. Borzée et al., *supra* note 69, at 1054.

73. Jiajia Liu et al., *Pandemics and Biodiversity: Applying Lessons Learned to Conservation in the Post-COVID-19 era,* ECOEVORXIV (2020) (Pre-print) doi:10.32942/osf.io/4det8.

74. U.N. Executive Director, *Progress in the Implementation of Resolution*, ¶ 11, U.N. Doc. K2002605 291220 (Nov. 16, 2020).

traditional players, like financial institutions, to meet international obligations.[75] To achieve this, it is necessary to address the structural and systemic causes of biodiversity loss.

Unveiling the underlying drivers of the emergence and spread of zoonotic diseases like Covid-19 would mean examining processes that massively increase interaction between animals and humans and facilitate disease transmission.[76] But this requires radical changes to our way of life. It may mean a shift away from industrialized agriculture and commodity supply chains that encourage deforestation, as well as dietary shifts. [77] Environmentalists have urged governments to take advantage of this disruption and make vital, radical changes to business as usual—towards more sustainable and nature-friendly practices. [78] However, governments seem to be doing the exact opposite and supporting harmful practices such as fossil fuel production and extractive activities.[79]

There is an apparent conflict between some conservation proposals and the world's economic development model. However, economic balance and environmental protection need to go hand-in-hand to truly overcome this pandemic and prevent future ones. Environmental protection theories that aim at setting aside large portions of the world for conservation purposes have started to gain traction, especially given the relationship between Covid-19 and biodiversity loss.[80] This begs the question: Are these theories truly effective in ensuring biodiversity protection? And more importantly, how do they interplay with an economic crisis in a post-pandemic scenario?

II. ENVIRONMENTAL PROTECTION THEORIES: WOULD SETTING ASIDE HALF OF EARTH FOR CONSERVATION PURPOSES ENSURE BIODIVERSITY PROTECTION IN A POST-PANDEMIC CONTEXT?

Environmental protection theories come in all shapes and sizes. They can push for strict and conservative measures or adopt a more nuanced approach. They can understand the human–nature relationship as one of interconnectedness or as one of exploitation. This section analyzes the benefits and pitfalls of one such theory gaining attention at the international

75. *Id*.
76. Roe & Lee, *supra* note 60, at 5.
77. *Id*.
78. Daniel Cross, *Post-pandemic Recovery Plans Fail to Address Biodiversity Loss,* SUSTAINABILITY TIMES (Oct. 13, 2020), https://www.sustainability-times.com/environmental-protection/post-pandemic-economic-plans-are-failing-to-address-biodiversity-loss/.
79. *Id*.
80. Roe & Lee, *supra* note 60, at 5.

level: the Half-Earth theory. It specifically assesses whether the Half-Earth approach responds to the world's needs in biodiversity protection and Building Back Better after Covid-19.

A. Half-Earth Theory: What is it?

Currently, close to 15% of Earth's land and 10% of waters are under some kind of environmental protection, whether as natural parks or protected areas in general.[81] It is estimated that every 30 seconds, the U.S. loses a football field's worth of nature.[82] In contrast, the Brazilian Amazon loses more than 10 square miles of rainforest due to fires and clearings daily (approximately three football fields of rainforest every minute).[83] To respond to this rapid loss of biodiversity, a radical conservation theory has gained significant attention among conservationists: the Half-Earth Theory. This approach aims at setting aside half of Earth's surface as one global conservation reserve through a series of interconnected protected areas.[84] Additionally, it aims at protecting 85% of the Earth's species.[85] Although the theory is in its early stages and lacks legal backing, it is increasingly influencing global environmental governance.[86] Alongside other projects such as the 30x30 movement[87] and Nature Needs Half,[88] Half-Earth has

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81. *The World Now Protects 15% of Its Land, but Crucial Biodiversitty Zones Left Out,* IUCN (Sept. 3, 2016), https://www.iucn.org/news/secretariat/201609/world-now-protects-15-its-land-crucial-biodiversity-zones-left-out.

82. Meilan Solly, *The U.S. Loses a Football Field-Sized Patch of Nature Every 30 Seconds*, SMITHSONIAN MAG. (Aug. 12, 2019), https://www.smithsonianmag.com/smart-news/us-loses-football-field-sized-patch-nature-every-30-seconds-180972881/#:~:text=This%20figure%2C%20detailed%20in%20a,of%20land%20every%2030%20seconds.

83. Jordan Davidson, *Amazon Deforestation Rate Hits 3 Football Fields per Minute, Data Confirms*, ECOWATCH (Jul. 26, 2019), https://www.ecowatch.com/amazon-deforestation-unrecoverable-tipping-point-2639358982.html; Jim Robbins, *Salvation or Pipe Dream? A Movement Grows to Protect Up to Half the Planet*, YALE ENV'T 360 (Feb. 13, 2020), https://e360.yale.edu/features/salvation-or-pipe-dream-a-movement-grows-to-protect-up-to-half-the-planet.

84. B. Büscher et al., *Half-Earth or Whole Earth? Radical Ideas for Conservation, and Their Implications*, 51(3) ORYX 407, 407 (2017).

85. Stuart L. Pimm et al., *How to Protect Half of Earth to Ensure it Protects Sufficient Biodiversity,* SCI. ADVANCES, Aug. 2018, at 2.

86. Erle C. Ellis, *To Conserve Nature in the Anthropocene, Half Earth is Not Nearly Enough*, 1 ONE EARTH 163, 163 (2019).

87. UNEP Open-ended Working Group on the Post-2020 Global Biodiversity Framework, *Zero Draft of the Post-2020 Global Biodiversity Framework Second Meeting*, CTR. FOR BIOLOGICAL DIVERSITY (Jan. 6, 2020), https://www.cbd.int/doc/c/Efb0/1f84/a892b98d2982a829962b6371/wg2020-02-03-en.pdf.

88. *What We Do*, NATURE NEEDS HALF, https://natureneedshalf.org/what-we-do/ (last visited Jan. 22, 2022).

gained traction, and its proponents are pressing the protection of half of Earth by 2030.[89] The proposal has been considered by the Post-2020 Global Biodiversity Framework of the Convention on Biological Diversity (CBD).[90]

As mentioned, protected areas play a fundamental role in preventing the emergence of new disease outbreaks by monitoring wildlife, limiting human-driven changes in host and reservoir abundance and distribution, and avoiding contact between humans, livestock, and wildlife, which preserves ecosystem health and integrity.[91] Protected areas may further help evaluate emerging conflicts from banning wildlife trade and understanding the interlink between wildlife trade, conservation, and the risk of future zoonoses.[92] When states implement new protected areas, their proposals should include a "disease risk mitigation" aspect to merge human health considerations with global biodiversity conservation policies.[93] Therefore, extensive internationally or regionally funded and managed protected areas would effectively preserve ecosystem health and become a priority both at the international and regional levels.[94]

In line with the goal of implementing protected areas to protect biodiversity, a 2019 report by IPBES supported (although unintentionally) the Half-Earth theory at an international level.[95] The IPBES found that more than one million species are at risk of extinction and underscored the life-support functions of species and the critical role of ecosystems.[96] It also linked the threat of extinction to drivers such as land and sea-use change, including agricultural expansion and direct exploitation of wild species,

89. Robbins, *supra* note 83.

90. Erle C. Ellis & Zia Mehrabi, *Half Earth: Promises, Pitfalls, and Prospects of Dedicating Half of Earth's Land to Conservation*, CURRENT OP. ENV'T SUSTAINABILITY, May 17, 2019, at 22, 30.

91. Julien Terraube et al., *Strengthening Protected Areas to Halt Biodiversity Loss and Mitigate Pandemic Risks,* CURRENT OP. ENV'T SUSTAINABILITY, 2020, at 35-38, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7525266/pdf/main.pdf (citing Simone C. Bauch et al., *Public Health Impacts of Ecosystem Change in the Brazilian Amazon,* 112 PROC NAT'L ACAD SCI. U.S.A., 2015, at 7414–7419; A. Marm Kilpartrick et al., *Conservation of Biodiversity as a Strategy for Improving Human Health and Well-being,* PHIL. TRANS. R. SOC. B., 2017, at 372; Julien Terraube et al., *The Role of Protected Areas in Supporting Human Health: A Call to Broaden the Assessment of Conservation Outcomes,* CURRENT OP. EVN'T SUSTAINABILITY, 2017, at 50-58 ; Julien Terraube, *Can Protected Areas Mitigate Lyme Disease Risk in Fennoscandia?,* ECOHEALTH, 2019, at 184-190).

92. *Id.* (citing I. Vandebroek, et al., *The Future of Ethnobiology Research after the COVID-19 Pandemic*, 6 NATURE PLANTS 723, 724 (2020); Gabriele Volpato et al., *supra* note 17, at 3).

93. *Id*. (citing P. Visconti et al., *Protected Area Targets Post-2020,* 364 SCI. 239, 239–41 (2019)).

94. *Id.* (citing Christoph Nolte et al., *Governance Regime and Location Influence Avoided Deforestation Success of Protected Areas in the Brazilian Amazon*, 110 PROC. NAT'L ACAD. SCI. U.S. 4956, 4958–60 (2013)).

95. *See generally* IPBES, GLOBAL ASSESSMENT REPORT ON BIODIVERSITY AND ECOSYSTEM SERVICES (2019), https://ipbes.net/global-assessment (explaining the importance of safeguarding protected areas).

96. Robbins, *supra* note 83.

climate change, and pollution, which are shaped by other drivers like social changes and economic interests.[97] Scientists are concerned that the extent of environmental damage may have prompted humanity to a tipping point of climate and biological disruption.[98] In response to these challenges, the Half-Earth project proposes to reverse habitat and biodiversity loss and maintain environmental health.[99] The Half-Earth project could be the next step for countries to support conservation efforts worldwide, implement good habitat management, and ensure biodiversity protection.

Among the promises of this approach is simplicity and universality; Half-Earth project proponents believe that its encompassing nature will appear fair, reasonable, and achievable to preserve most of Earth's ecological heritage.[100] Proponents view the theory as a catalyst for societal engagement in conservation efforts that are broad, prosocial, proactive, and socially scalable.[101] In addition to advocating for the protection of 50% of Earth's surface, the project calls for strategies to prevent land displacement and empower Indigenous Peoples as stewards of biodiversity.[102]

B. Critiques to Half-Earth Theory

Despite widespread support, the Half-Earth theory needs further analysis to be considered as a ruling paradigm. Currently, it faces myriad challenges ranging from lack of effectiveness to obscuring and perpetuating the struggles of historically oppressed groups.

1. Lack of Effectiveness in Protecting Biodiversity

Despite the goal of protecting 85% of the Earth's species, the theory does not clarify how protecting half of the planet would achieve conservation goals. Protecting half of the Earth without paying attention to specific places, and the species they contain, would be ineffective.[103] It remains unclear which "half" would be protected and what its components would be. For example, would it only encompass land or include oceans, rivers, or the

97. Pamela McElwee et al., *Ensuring a Post-COVID Economic Agenda Tackles Global Biodiversity Loss*, 3 ONE EARTH 448, 449 (2020).

98. Robbins, *supra* note 83.

99. Brian M. Napoletano, *Half-Earth: A Biodiversity 'Solution' that Solves Nothing*, CLIMATE & CAPITALISM (Oct. 2, 2018), https://climateandcapitalism.com/2018/10/02/half-earth-a-biodiversity-solution-that-solves-nothing.

100. Ellis & Mehrabi, *supra* note 90, at 22.

101. *Id*. at 23

102. *Id*.

103. Pimm et al., *supra* note 85, at 2.

Arctic? These details are significant given the propensity of governments to protect "the wild," seen as remote, cold, or arid areas that tend to hold relatively fewer species, rendering conservation efforts useless.[104]

Furthermore, finding where to ensure equitable and effective conservation is essential.[105] A rigid division between the protected half and the human-inhabited half is unsustainable and does not align with the ecosystems' functioning.[106] Even if one could separate humanity from nature, the proposal would need to address how to carry out activities in the human half because they will undoubtedly have significant consequences on the entire planet.[107] The solution is not to set aside large portions of land, especially given the planet's current damaging condition and the fragmented state of the world's biodiversity.[108] The challenges are enormous; a systematic approach is the only way to promote and achieve the goals outlined in the Half-Earth theory in a way that genuinely protects biodiversity and is equitable and fair to humankind.

The theory also ignores the root causes of biodiversity loss, particularly the powerful engines behind resource extraction and consumption, which would eventually have negative impacts on people (especially impoverished people) and biodiversity.[109] Degradation factors, like climate change-inducing activities, have accelerated displacement of both human and animal populations, making them already vulnerable to any additional change in their ways of living.[110] Critics of the Half-Earth theory underscore that preservation areas will likely do more harm than good by exacerbating preexisting conflicts and inequalities and avoiding addressing underlying drivers of biodiversity loss,[111] such as extractive activities. Any conservation strategy pre- and post-pandemic needs to focus on the real drivers of biodiversity loss if it expects to be successful.[112] This entails addressing how the global economy works, especially concerning resource extraction and consumption.[113]

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104. *Id*.

105. Ellis & Mehrabi, *supra* note 90, at 23.

106. Robbins, *supra* note 83.

107. Büscher et al., *supra* note 84, at 408.

108. Robbins, *supra* note 83.

109. Büscher et al., *supra* note 84, at 408.

110. Ellis & Mehrabi, *supra* note 90, at 24.

111. Brian M. Napoletano, *Half-Earth: A Biodiversity 'Solution' that Solves Nothing*, CLIMATE & CAPITALISM (Oct. 2, 2018), https://climateandcapitalism.com/2018/10/02/half-earth-a-biodiversity-solution-that-solves-nothing/.

112. Judith Schleicher et al., *Protecting Half of the Planet Could Directly Affect over One Billion People,* NATURE SUSTAINABILITY, 2019, at 3–4, https://doi.org/10.1038/s41893-019-0423-y.

113. Büscher et al., *supra* note 84, at 408.

The idea of preserving a pristine nature with no human intervention has been receding, giving way to a paradigm where knowledge of local communities in conservation and land management efforts is at the center stage. Nevertheless, power imbalances, inequality, and stakeholder engagement arise when analyzing the pitfalls of this approach, especially due to the long history of land reallocations and conservation practices that have already impacted disadvantaged rural and agricultural populations negatively.[114] Therefore, a multi-level, bottom-up (as opposed to a top-down) mode of governance is needed, where local and regional institutions and new ways of social collaboration and community governance are part of the solution.[115]

2. Impacts on Marginalized Populations

At the core of the proposal to increase protected areas is its consequences on human populations. Half-Earth entails a complex system of socio-environmental challenges by managing multiple levels of governance. Covering vast areas of the Earth could affect one billion people and increase poverty by disrupting the lives of those living inside potential protected areas.[116] It is critical to consider social aspects to ensure benefits for the biosphere and the humans that inhabit it,[117] especially in a post-pandemic scenario. Meaningful participation of relevant stakeholders is thus crucial.[118] Otherwise, we risk making decisions that negatively affect entire populations by, for example, forcing displacement from their ancestral home and making them face more burdens to access resources for their survival.[119]

Moreover, the Half-Earth proposal pushes for a restrictive type of protected area that does not allow human activity, which entails challenges of physical and economic displacements that can be seen in current strict protected areas embedded with deep social conflicts.[120] Similarly, critics argue that by focusing on conservation, the approaches obscure other sets of strategies and practices that have also been essential to successful

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114. Ellis & Mehrabi, *supra* note 90, at 27.

115. *Id*.

116. Schleicher et al., *supra* note 112, at 3–4.

117. Robbins, *supra* note 83.

118. Büscher et al., *supra* note 84, at 408.

119. *Id*.; *See also* Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean, princ. 10, Apr. 22, 2021, United Nations publication LC/PUB.2018/8/-*, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-18&chapter=27&clang=_en.

120. Büscher et al., *supra* note 84, at 408.

biodiversity conservation efforts[121] and helped nuance strict conservation-only approaches.[122] It is critical to be mindful of the current state of Earth's surface: agriculture, settlements, and forestry already occupy approximately 57% of ice-free area; cities and other infrastructure cover about 2%, cropland accounts for 12%, livestock grazing covers about 25%, and forestry production and multi-use forests account for 18% approximately.[123] Given the human need for agricultural consumption and the current economic model, the Half-Earth theory would need to expand conservation areas without displacing these activities.[124] Otherwise, a "nature only" approach would cost 31% of current global cropland and 25% of crop calories, making it unrealizable.[125]

Furthermore, the Half-Earth theory rests on three dubious premises: (i) all humans share equal responsibility for the biodiversity crisis; (ii) the rights of nature circumscribe the needs of humans; and (iii) it is the only solution to this crisis, and thus is a moral imperative.[126] The first premise is the most problematic, where humans are seen as an abstract entity that is race-free, gender-free, and class-free.[127] This obscures the historical struggles of marginalized groups while considering everyone to bear the same level of responsibility in transgressing the rights of nature regardless of reality.[128] Such an approach is dangerous as it ignores global historical responsibility, which could help fuel class conflicts and further divide humanity, while unfairly punishing those least responsible for the biodiversity crisis.[129]

The second premise is then understood as being supported by allegedly unbiased and neutral science, where nature has intrinsic value, and its conservation should therefore trump any possible harm it may cause to humans. However, this approach is naive at best since metaphors used in natural science are deeply rooted in socio-political concepts. Once again, the historically evolved social relations are obscured to give way to a "human nature" that encompasses all.[130] The third premise would be uncontested if it resolved the biodiversity crisis by addressing the root and underlying causes

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121. *Id.* Such as land use planning, threatened and endangered species programs, taxation and economic development programs, among others.

122. Büscher et al., *supra* note 84, at 408.

123. Ellis & Mehrabi, *supra* note 90, at 25.

124. *Id*.

125. *Id*. at 25–26.

126. Napoletano, *supra* note 99.

127. *Id*.

128. Napoletano, *supra* note 99.

129. Brian M. Napoletano & Brett Clark, *An Ecological-Marxist Response to the Half-Earth Project*, 18(1) CONSERVATION & SOCIETY 37, 42 (2020).

130. Napoletano, *supra* note 99.

rather than just the apparent and immediate issues.[131] Nevertheless, as mentioned earlier, setting aside half of the planet for undisturbed conservation diverts the attention from the activities and populations that are truly responsible for the biodiversity crisis, thus doing nothing to prevent them from happening again.

C. The Future of Half-Earth Theory: An Answer to Biodiversity Loss or a Burden in Building Back Better?

Suppose all the issues mentioned above remain unresolved. In that case, the approach could turn into a tool against progressive social struggles, preventing historically marginalized groups from accessing redress and achieving progress in modern society. But it could also help strengthen efforts against conservation by pitting it against social movements that will end up fighting those efforts. Therefore, it is critical to put the Half-Earth theory and progressive social struggles in conversation with one another and join forces to fight against instrumentalism, both of nature and historically oppressed groups.[132]

One thing is clear: these conservation theories need to be more deeply studied and further developed, especially regarding who gets to control said protected areas and how. Current conservation efforts tend to focus on biodiversity-rich areas that generally coincide with low-income countries with major poverty problems and a lack of infrastructure, industry, and employment.[133] The fact that the removal of land from non-conservation use will impact the poorest and least responsible communities is one aspect that the Half-Earth theory fails to address.[134]

One opportunity could be found in advancing land sovereignty by Indigenous Peoples. Doing so, however, would require further discussion prior to setting Half-Earth in motion. Half-Earth proponents argue that a critical part in achieving the 50% goal is to support Indigenous lands, given that these communities occupy or manage around 28% of the planet's land, out of which 40% correspond to protected areas.[135] For example, Indigenous

131. *Id*.
132. *Id*.
133. Büscher et al., *supra* note 84, at 408.
134. *Id*.
135. Robbins, *supra* note 83.

communities in Latin America have been known to help reduce deforestation in the Amazon region.[136]

On the other hand, some proponents have argued that local communities sometimes pose a threat to nature. This understanding is deeply bound to a colonial mindset: the categorization of local communities as ecological villains, heroes, or passive recipients of the impertinent ideology.[137] The colonial mindset only serves to obscure numerous contingent factors that underlie their worldviews and interactions with nature, as well as the historic struggles they have faced.[138] More than a goal to be managed and implemented by a single institution, the project should be conceived as an emergent social project that cuts through different people, cultures, institutions, conceptions, definitions, and practices in a system that aims to combine livelihoods and land use with urban food systems, environmental governance, and other social functions.[139]

Finally, the Half-Earth theory has to cope with the current scenario during and post-Covid-19. One benefit of the approach is allowing more interaction between animals and humans.[140] However, given the alleged origin of Covid-19 and the emphasis on preventing the emergence of zoonoses, this benefit might as well be a threat to the emergence of future pandemics. Moreover, the world economy has been hit hard, and poverty has reached unprecedented highs.[141] Some estimate that over $5 trillion will be wiped out of the world's economy.[142]

The downsides for biodiversity and conservation derived from the pandemic are inextricably linked to the severe global economic recession it has triggered.[143] People experiencing economic hardships can turn to the production and consumption of wild species to derive livelihoods for their subsistence.[144] Likewise, conservation organizations' financial and human capital is expected to be reduced due to Covid-19-related consequences.[145]

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136. FOOD & AGRIC. ORG. OF THE UNITED NATIONS, FOREST GOVERNANCE BY INDIGENOUS AND TRIBAL PEOPLES: AN OPPORTUNITY FOR CLIMATE ACTION IN LATIN AMERICA AND THE CARIBBEAN 42 box 1 (2021), https://doi.org/10.4060/cb2953en.

137. *Id*.

138. Napoletano & Clark, *supra* note 129, at 41.

139. Ellis & Mehrabi, *supra* note 90, at 28.

140. *Id*. at 25.

141. *Id.*

142. Melissa Leach et al., *Post-Pandemic Transformations: How and Why COVID-19 Requires Us to Rethink Development*, 138 WORLD DEV. 3, 6 (Feb. 2021).

143. Chris Sandbrook et al., *Biodiversity Conservation in a Post-COVID-19 Economy*, ORYX: J. FAUNA PRES. SOC'Y (2020), doi:10.1017/S0030605320001039.

144. *Id*. at 1.

145. *Id*.

Conservation efforts should thus support measures that address inequality; otherwise, it would not be feasible.[146] Returning to a "business as usual" economic model—which was already unsustainable pre-Covid-19 and nevertheless seemed to be most appealing for politicians, businesses, and the public—would hurt both nature and those outside the power elites.[147]

As it is today, the Half-Earth proposal insufficiently responds to the biodiversity crisis by relying on misconceptions of underlying and systemic forces that drive nature's destruction,[148] which is only exacerbated by the pandemic. Covid-19 response measures have already forced displacement of several communities who seek to improve their socio-economic conditions.[149] A restrictive conservation strategy like Half-Earth would intentionally and unintentionally contribute to this forced displacement of local communities both through direct dispossession or processes of expropriation-without-dispossession, that is, through land-use restrictions and other measures that would only undermine livelihoods of marginalized populations.[150] Adopting a narrow focus on the immediate drivers of habitat loss allows the neglect of larger-scale and systemic impacts of extractivism, as well as the structural, political, and economic forces that undergird them.[151] The pandemic has exposed the limits of conventional framings of development in both the Global North and South, which is not necessarily a bad thing and could help move humanity forward towards radical ways of understanding the world.[152] The Covid-19 pandemic has shown us the interconnectedness of economies and societies, just like nature and its ecosystems. This undoubtedly calls for global and international cooperation and solidarity, which can lead to significant environmental benefits while protecting people and their livelihoods simultaneously, as critical factors in the ongoing environmental crises.[153]

146. Büscher et al., *supra* note 84, at 409.

147. Sandbrook et al., *supra* note 143, at 2.

148. Napoletano & Clark, *supra* note 129, at 38.

149. Manfred Lenzen et al., *Global Socio-Economic Losses and Environmental Gains from the Coronavirus Pandemic,* 15 PLOS ONE 7, 9 (2020), https://doi.org/10.1371/journal.pone.0235654.

150. *Id*. at 40.

151. *Id*. at 41.

152. Leach et al., *supra* note 142, at 1.

153. Lenzen et al., *supra* note 149, at 9.

III. INTERNATIONAL COOPERATION: COULD INTERNATIONAL LAW BETTER PROTECT BIODIVERSITY?

Beyond the consequences of climate-driven shifts on humans and ecosystems, the Covid-19 health crisis has had a significant impact on biodiversity and calls for solid solutions at the international level to incorporate both biodiversity and human health concerns into post-pandemic recovery. Countries worldwide need to consider environmental protection as a core value and strengthen their conservation efforts, both at a national and international level. Environmental protection theories such as Half-Earth still need to be further developed before implementing them. This leaves us questioning: where could we find the answer to biodiversity protection as we seek to overcome the Covid-19 pandemic?

Two proposals that could help mitigate the devastating effects of deforestation and the wildlife trade could be international regulation and cooperation. Based on the principle of solidarity, States should cooperate towards creating and implementing international norms to protect biodiversity, a healthy environment, and thus, the health of the world's population.[154] States must negotiate in good faith and adopt international measures to regulate wildlife trade, deforestation, and any other threats that biodiversity faces, such as habitat loss and fragmentation, pollution, invasive species, and climate change. These regulations must enforce cooperation by creating administrative and judiciary bodies at the international level to hold countries accountable.

Some argue that the development of public health agencies would help detect and avoid future pandemics and strengthen global health security.[155] In contrast, others call for the development of a "network of forensic laboratories" at the regional level to address wildlife trafficking and the emergence of zoonosis.[156] However, restricting the interactions between humans and wildlife,[157] preserving forests and biodiversity would better

154. Daniel Noroña, *Grow Together or Perish Alone: The Obligation to Cooperate as a Guarantee for the Full Realization of Human Rights,* VÖLKERRECHTSBLOG (Feb. 25, 2021), https://voelkerrechtsblog.org/grow-together-or-perish-alone/.

155. *Id.*

156. Michel Halbwax, *Addressing the Illegal Wildlife Trade in the European Union as a Public Health Issue to Draw Decision Makers Attention,* 251 BIOLOGICAL CONSERVATION 1, 2 (2020).

157. *Id*. (citing William Karesh et al., *Ecology of Zoonoses: Natural and Unnatural Histories,* 380 THE LANCET 1936, 1936–45 (2012), and Kathryn H. Jacobsen et al., *Lessons from the Ebola Outbreak: Action Items for Emerging Infectious Disease Preparedness and Response*, 13 ECOHEALTH 200, 200–12 (2016)).

prevent the emergence and the spread of zoonotic diseases.[158] While some existing agreements such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) are already being implemented, they require better enforcement mechanisms and enhanced international cooperation.[159] This section addresses the existing agreements and collaboration on biodiversity protection, and their weaknesses, before envisioning a post-pandemic scenario.

A. International Cooperation for Biodiversity Protection

The need to address wildlife trade and biodiversity loss at the international level led States to adopt international legal frameworks such as CITES and the Convention of Biological Diversity (CBD).[160] However, the three crises we are facing today—biodiversity, environmental, and health crises—unequivocally highlight these agreements' weaknesses.

1. CITES: Benefits and Shortcomings in Biodiversity Protection

While CITES could provide a critical legal framework for biodiversity protection at the international level, capacity and resources are often inadequate to implement it fully.[161] CITES was adopted in 1973 to ensure that the international trade of wild animals and plants does not threaten their survival and overexploit them.[162] The Convention came into force in 1975 and is ratified by 183 countries.[163] CITES regulates the international trade of approximately 5,800 animal species and 30,000 plant species listed in the three CITES Appendices.[164] Appendix I includes "species that are the most endangered," while Appendix II references "species that are not necessarily

158. Halbwax, *supra* note 156 (first citing Alex Hyatt et al., *Effective Coordination and Management of Emerging Infectious Diseases in Wildlife Populations,* 12 ECOHEALTH 408, 408–11 (2015); then citing Moreno Di Marco et al., *Sustainable Development Must Account for Pandemic Risk,* 117 PROC. NAT'L ACAD. SCI. U.S. 3888, 3888–92 (2020), and then citing Brian Pike et al., *The Origin and Prevention of Pandemics*, 50 CLINICAL INFECTIOUS DISEASES 1636, 1636–40 (2010)).

159. Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, U.N.T.S. 243, https://cites.org/sites/default/files/eng/disc/CITES-Convention-EN.pdf.

160. Convention on Biological Diversity, April 6, 1993, U.N.T.S. 1760, https://www.cbd.int/doc/legal/cbd-en.pdf.

161. Janine E. Robinson et al., *Supplying the Wildlife Trade as a Livelihood Strategy in a Biodiversity Hotspot*, 23 ECOLOGY AND SOC'Y 1 (2018).

162. *What is CITES?*, CITES, https://cites.org/eng/disc/what.php (last visited Jan. 25, 2022).

163. *List of Parties to the Convention*, CITES, https://cites.org/eng/disc/parties/index.php (last visited Dec. 9, 2021).

164. P. DASZAK ET AL. *supra* note 2, at 37.

now threatened with extinction but that may become so unless trade is closely controlled."[165] Finally, Appendix III covers "species included at the request of a Party that already regulates trade in the species, and that needs the cooperation of other countries to prevent unsustainable or illegal exploitation." [166] CITES is considered one of the "cornerstones of international conservation" as well as "one of the best tools we have for addressing international wildlife crime. . . ."[167]

The CITES compliance mechanism has had an important, yet unforeseen, influence on the types of traded species. However, CITES is not self-executing, and implementation is highly dependent on domestic legislation and governance that ensure adequate controls by State agencies.[168] Signatory countries that implement CITES must enforce national legislation that prohibits any trade violation and penalizes.[169] When countries do not comply with their CITES obligations, the Conference of the Parties (COP) and the Standing Committee can recommend the suspension of trade with the country concerned.[170]

Besides, resolutions adopted during the meetings of the COP include recommendations regarding wildlife health and what is expected of countries.[171] Despite their non-binding nature, the resolutions represent a "consensus of action" necessary for the protection of endangered species.[172] For example, the CITES resolution on Compliance and Enforcement Resolution Conference 11.3(Rev. CoP15) highlights the necessity to gather more resources and efforts to combat illegal wildlife trade [173] and the importance of making illegal trade "a matter of high priority for their national law enforcement agencies."[174] This resolution gives a detailed list of what an effective compliance and enforcement regime looks like. Furthermore, the

165. *Id.*

166. *The CITES Appendices,* CITES, https://cites.org/eng/app/index.php (last visited Dec. 9, 2021).

167. *CITES*, WORLD WILDLIFE, https://www.worldwildlife.org/pages/cites (last visited Dec. 9, 2021); *The CITES Species*, CITES, https://cites.org/eng/disc/species.php (last visited Dec. 9, 2021).

168. *National Laws for Implementing the Convention*, CITES, https://cites.org/eng/legislation (last visited Dec. 9, 2021).

169. Borsky et al., *supra* note 32, at 1012.

170. *Id*. at 1004.

171. *The CITES Secretariat*, CITES, https://cites.org/eng/disc/sec/index.php (last visited Jan. 25, 2022).

172. Patricia L. Farnese, *The Prevention Imperative: International Health and Environmental Governance Responses to Emerging Zoonotic Diseases*, 3 TRANSNATIONAL ENV'T L. 296 (2014).

173. *Id*. at 299 (citing CITES Res. Conf. 11.3 (Rev. CoP15), Compliance and Enforcement); U.N. Res. Conf. 11.3 (Rev. CoP15), https://cites.org/sites/default/files/eng/res/all/11/E11-03R15.pdf.

174. Farnese, *supra* note 172, at 299.

CITES Secretariat administered by the UNEP assists countries at their request with legislation and enforcement.[175]

Yet, CITES only covers species threatened by international trade, not those threatened by internal trade or habitat loss.[176] Of the 6,495 different species of recognized mammals globally as of 2020, Appendix I only lists 318 species and Appendix II lists 513 species.[177] Besides, it is estimated that between 1998 and 2007, 300 CITES-listed species, for a total of 30 million animals, were illegally wild-caught in South-East Asia before being exported worldwide.[178]

For example, although all E.U.-member states and the E.U. ratified CITES, the illegal importation of CITES-listed species, including bushmeat and live animals, still occurs frequently.[179] Weaknesses of E.U. policies toward wildlife protection, loopholes in their enforcement, insufficient inspection measures, and a lack of resources are proof that even developed countries do not efficiently tackle wildlife trafficking.[180] The E.U. should thus show leadership and implement measures to address illegal wildlife trade.

States should also implement electronic databases to record illegal trade activity, create more robust controls at the borders to search for illegal bushmeat, and better monitor the trade of wildlife.[181] The UNEP and other partners conducted a study on the relationship between the legal and illegal international animal trades.[182] The study highlighted the need to maintain long-term records of border seizures and enforcement effort, and to account for "known illegal trade when setting quotas and determining the level of legal trade that is sustainable to strengthen non-detriment findings under

175. *The CITES Secretariat*, *supra* note 172.

176. De Sadeleer & Godfroid, *supra* note 4, at 223.

177. *Id*. (citing Connor J. Burgin et al., *How Many Species of Mammals Are There?*, 99 J. MAMMALOGY 1–14 (2018), https://doi.org/10.1093/jmammal/gyx147).

178. Halbwax, *supra* note 156 (citing Vincent Nijman, *An Overview of International Wildlife Trade from Southeast Asia*, 19 BIODIVERSITY & CONSERVATION 1101–14 (2010)).

179. Halbwax, *supra* note 156.

180. *Id*. (first citing Tanya Wyatt & Anh Ngoc Cao, *Corruption and Wildlife Trafficking*, U4 ANTI-CORRUPTION RESOURCE CTR., CHR MICHELSEN INST. (2015), and then citing Jennifer Maher & Ragnhild Sollund, *Law Enforcement of the Illegal Wildlife Trafficking: A Comparative Strengths, Weaknesses, Opportunities and Threats Analysis of the UK and Norway,* 2 J. TRAFFICKING, ORGANIZED CRIME & SEC. 82, 82–99 (2016)).

181. Halbwax, *supra* note 156 (citing Gail Emilia Rosen &Katherine F. Smith, *Summarizing the Evidence on the International Trade in Illegal Wildlife*, 7 ECOHEALTH 24, 24–32 (2010)).

182. Zahawi et al., s*upra* note 55, at 803.

CITES."[183] Finally, although the illegal wildlife trade is one of the biggest threats to biodiversity, other threats that wildlife face—including habitat loss and fragmentation, pollution, invasive species, and climate change—must be addressed together.[184] As a result of CITES weaknesses, many argue that an international trade agreement is the answer to effectively manage zoonotic disease risk if it helps limit the number of contacts between humans and animals effectively.[185]

2. Lack of Solid Cooperation on Biodiversity Protection

Although Covid-19 is not the first zoonotic disease, there is almost no specific provision on what this means and how it should be addressed from an environmental perspective. While CITES should be the most comprehensive international agreement regarding zoonosis, the Convention does not explicitly address it. The lack of global and regional regulation has made the measures against zoonotic spillovers still a relatively underdeveloped topic. Likewise, international regulation on habitat restoration is currently lacking.[186]

Additionally, the CBD, which also provides a general and nominal framework for biodiversity conservation, addresses wildlife diseases as a threat to biodiversity rather than a reservoir of pathogens for livestock and humans.[187] Because negotiations advance too slowly to respond to the fast and irreversible decline of biodiversity, meetings of the COP have not led to any binding agreements on essential solutions to address the extinction of species.[188]

Despite the gravity of the pandemic, the past year clearly illustrates the lack of cooperation between States. Instead of cooperating to fight the disease's spread, each country chose to apply its own rules to its territory. As of February 2022, the Global North is failing to fully cooperate at the international level to take measures demanded by the principles of solidarity and morality to ensure that Covid-19 vaccines are available to the entire

183. *Progress in the Implementation of Resolution 2/14 on Illegal Trade in Wildlife and Wildlife Products*, UNEP/EA.5/21 at 3 *(*Nov. 26, 2020) [hereinafter *Resolution 2/14*]; Derek Tittensor et al., *Evaluating the Relationships between the Legal and Illegal International Wildlife Trades*, J. SOC'Y FOR CONSERVATION BIOLOGY, Sept./Oct. 2020, at 9, https://doi.org/10.1111/conl.12724.

184. *Resolution 2/14*, *supra* note 183, at 2.

185. Borsky et al., *supra* note 32, at 1013.

186. Zahawi et al., *supra* note 55, at 803.

187. De Sadeleer & Godfroid, *supra* note 4, at 221.

188. MARIA ANTONIA TIGRE, GAPS IN INTERNATIONAL ENVIRONMENTAL LAW: TOWARD A GLOBAL PACT FOR THE ENVIRONMENT 3 (2020).

world, thus risking prolonging the pandemic.[189] States must now realize that seeing their interest instead of prioritizing the international community's interest will never help remediate these crises.

In sum, despite the existence of some frameworks that could ignite regional and international cooperation for the protection of biodiversity, the implementation challenges they face have proven to be more influential than the desire to cooperate, rendering all these efforts relatively ineffective.

B. Envisioning a Post-Pandemic Scenario

While some countries may have well-developed national laws to deal with wildlife trade, illegal forest cutting, and other sources of deforestation,[190] either regional cooperation, international cooperation, or both, would strengthen these laws and their enforcement.[191] At a global level, while the United Nations Human Rights Council adopted resolution A/HRC/48/L.23/Rev.1 recognizing the human right to a safe, clean, healthy and sustainable environment,[192] there is no one treaty or internationally binding instrument that recognizes the right to a healthy environment. The adoption of either at the international level could potentially play a crucial role in advancing the protection of biodiversity.[193] An international framework that clearly defines the roles, rights, responsibilities, and duties of all stakeholders at the national, regional, and international levels with the control of administrative and judiciary bodies would ensure more robust implementation and accountability from governments.[194]

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189. Claire-Marie Richter, *Time to Counter "Vaccine Nationalism"?: International Obligations of States in the Context of the COVID-19 Pandemic*, VÖLKERRECHTSBLOG (Mar. 26, 2021), https://voelkerrechtsblog.org/time-to-counter-vaccine-nationalism/; Miguel Calmon Dantas, *A Glimmer of Hope for All?*, VÖLKERRECHTSBLOG (Mar. 26, 2021), https://voelkerrechtsblog.org/a-glimmer-of-hope-for-all/.

190. Tigre, *supra* note 23, at 403.

191. *See* REGIONAL COOPERATION IN AMAZONIA, *supra* note 23, at 353-89 (analyzing the flaws of the ACTO).

192. *See* Maria Antonia Tigre & Victoria Lichet, *Historic Breakthrough for Environmental Justice: The UNHRC Recognizes the Right to a Healthy Environment as a Human Right*, OPINIO JURIS, 2021, http://opiniojuris.org/2021/10/20/historic-breakthrough-for-environmental-justice-the-unhrc-recognizes-the-right-to-a-healthy-environment-as-a-human-right/ (last accessed January 31, 2022).

193. U.N. Gen. Assembly, *Follow-up to the Report of the Ad Hoc Open-Ended Working Group Established Pursuant to General Assembly Resolution 72/277*, U.N. Doc. A/RES/73/333 (Sep. 05, 2019) [hereinafter U.N. Doc. A/RES/73/333]; *see* TIGRE, *supra* note 189; Maria Antonia Tigre & Victoria Lichet, *Update on Negotiation of a New International Environmental Agreement*, ENV'T L. REP. 10818, 10819 (2020).

194. Christian Prip, *The Convention on Biological Diversity as a Legal Framework for Safeguarding Ecosystem Services*, 29(B) ECOSYSTEM SERVS. 199, 202 (Feb. 2018).

The U.N. is currently debating a new political declaration on international environmental law to be adopted in 2022.[195] Ignited by the Global Pact for the Environment (GPE), this new declaration could be an opportunity to bring biodiversity to the heart of international environmental law. Additionally, the declaration could incorporate innovative concepts and principles that would respond to the environmental, biodiversity, and health crises we currently face, rather than simply repeating previous declarations. For example, the current draft of the GPE includes the Principle of Resilience, requiring States to "take necessary measures to maintain and restore the diversity and capacity of ecosystems and human communities to withstand environmental disruptions and degradation and to recover and adapt."[196] The Principle of Resilience implies that States must understand the capability of ecosystems and communities to resist disturbance in order to reinforce their ability to recover and adapt. Despite the significant importance of this principle to fight the biodiversity crisis, it has never been included in a legally binding instrument. Yet, it was defined in the 1970s by C.S. Holling as "[t]he capacity of a system to absorb disturbances and reorgani[z]e itself while undergoing change to still retain essentially the same function, structure, identity, and feedback."[197]

The current draft of the GPE also includes the principle of "integration and sustainable development" which would require States to "integrate the requirements of environmental protection into the planning and implementation of their policies and national and international activities, especially to promote the fight against climate change, the protection of oceans and the maintenance of biodiversity." This draft illustrates the willingness of some countries to truly cooperate and fight against biodiversity loss. While the GPE was first intended as an international environmental treaty, States, unfortunately, chose to relegate the GPE to a political declaration because a few States were against the adoption of a legally binding text.[198] This declaration is scheduled for adoption at the next Earth Summit in 2022—the 50th anniversary of the Stockholm Declaration and the 30th anniversary of the Rio Declaration. All States should use this opportunity to negotiate the text in good faith while keeping in mind the urgency of the three crises we are facing. Including biodiversity at the heart

195. *See* Tigre & Lichet, *supra* note 193 (discussing possible U.N. legislation for 2022).

196. *Draft of the Global Pact for the Environment*, GLOB. PACT FOR ENV'T, https://globalpactenvironment.org/uploads/EN.pdf (last visited Jan. 25, 2022) (quoting article 16 Resilience).

197. C. S. Holling, *Resilience and Stability of Ecological Systems*, 4 ANN. REV. ECOLOGY & SYSTEMATICS, 1973 at 1, 7.

198. TIGRE, *supra* note 188; U.N. Doc. A/RES/73/333, *supra* note 193.

of this declaration would pave the way towards more vigorous international cooperation regarding biodiversity protection. The initiative continues to offer an opportunity for post-pandemic collaboration. For example, the declaration could recommend negotiating and adopting a legally binding treaty guaranteeing concrete actions to protect the environment and fight biodiversity loss.

Additionally, the universal right to a healthy environment could help develop new norms to protect the environment while strengthening human health-related provisions.[199] Preexisting environmental challenges such as climate change, water scarcity, and illegal wildlife trafficking, as well as new ones derived from the pandemic, call for better protection of the environment. At the same time, adopting an integral perspective takes into consideration the lives and health of present and future generations. Thus, international cooperation is crucial for advancing these goals and for Building Back Better.

2020 was supposed to be vital for advancing environmental negotiations. Two key United Nations meetings were delayed due to the pandemic—the 26th COP to the Framework Convention on Climate Change (COP26) and the 15th COP to the CBD (COP15)—impeding national governments from assessing current progress or renewing restoration commitments.[200] The implementation of the Paris Agreement was further delayed along with the International Union for Conservation of Nature.[201] Postponement of these summits allowed countries to move towards economic recovery without considering environmental protection.[202] In October of 2021, CBD's COP 15 met virtually in the first of a two-part summit.[203] The second part will meet in May 2022 in China under the theme "Ecological Civilization: Building a Shared Future for All Life on Earth" to review the achievement of the Strategic Plan for Biodiversity 2011.[204] These meetings are crucial to address the current biodiversity crisis.

Finally, a more significant focus on how humans interact with nature is necessary. Initiatives such as the One Health Approach could help emphasize

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199. Maria-Antonia Tigre & Victoria Lichet, *The Human Rights Council Urges States to Realize the Rights of the Child through a Healthy Environment,* GLOB. NETWORK FOR STUDY HUM. RTS. & ENVIRONMENT (Oct. 19, 2020), https://gnhre.org/environmental-rights-2/the-human-rights-council-urges-states-to-realize-the-rights-of-the-child-through-a-healthy-environment/.

200. *Id*.

201. Nyekwere, *supra* note 17, 104–05.

202. *Id.* at 106 (explaining the negative impact of suspending environmental regulations).

203. *Convention on Biological Diversity*, U.N. FOOD SYS. SUMMIT 2021, https://www.un.org/en/food-systems-summit-2021-en/un-biodiversity-conference (indicating that the UN Biodiversity Conference was scheduled for May 8, 2021 in Kunming, China).

204. *Id*.

the need for multidisciplinary cooperation at different governance levels.[205] The current research system cannot deal with a complex phenomenon that involves geophysical, biological, and human diversity from a systemic and integrated perspective, limiting the capacity to generate knowledge and create policies and actions to address Covid-19.[206] Therefore, there is an urgent need to implement a holistic approach involving the human, animal, and environmental health communities to respond to the illegal trade of wildlife and forest products.[207] However, so far, examples of collaboration barriers like power imbalances, conflicts of interest, and coordination gaps have represented challenges for designing and implementing One Health strategies.[208]

States can no longer prioritize their own interests because zoonoses have no borders. Considering the gravity of the Covid-19 crisis and the understanding of the causes of zoonosis, States have an unequivocal moral obligation to negotiate in good faith the adoption of an international agreement that would better regulate the causes of zoonoses. The solutions to address biodiversity loss and zoonotic diseases must encompass a proper understanding of the human activities that cause species extinction and transmission of zoonotic diseases to humans. International cooperation will be crucial in the coming years to prevent future pandemics and face biodiversity loss and climate change.

CONCLUSION

The Covid-19 pandemic has shown the connection between economies, societies, ecosystems, and human health. This connection reflects the need for holistic responses that address economic balance and environmental protection. As our understanding of the drivers of the emergence and spread of Covid-19 progresses, it is vital to regulate human–animal interactions. To achieve transformational change in the post-pandemic scenario, States need to address the structural and systemic causes of biodiversity loss: changes in land use and exploitation of wildlife.

While the Half-Earth proposal insufficiently responds to the biodiversity crisis, it has prompted international debate and pushed the international

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205. JOHN S. MACKENZIE ET AL., ONE HEALTH: THE HUMAN-ANIMAL-ENVIRONMENT INTERFACES IN EMERGING INFECTIOUS DISEASES 114 (Juergen A. Richt ed., 2013)(ebook).

206. *Id*.

207. *Resolution 2/14, supra* note 183, at 3.

208. Carolina dos S. Ribeiro et al., *Overcoming Challenges for Designing and Implementing the One Health Approach: A Systematic Review of the Literature,* ONE HEALTH, Mar. 18, 2019, at 1, 2.

agenda towards protecting biodiversity as a shared goal among States. Despite the existence of some frameworks that could ignite regional and international cooperation for the protection of biodiversity, the challenges regarding their implementation can render these frameworks ineffective. This unequivocally calls for international cooperation and solidarity, which can lead to significant environmental benefits while protecting human health. International cooperation will thus be crucial in the coming years to prevent future pandemics and face biodiversity loss and climate change.