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Pandemics and Environmental Crises

Similar Problems; Different Governance Systems

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Pandemics and environmental degradation are both deadly global crises, which often disproportionately impact the world's most vulnerable populations (see the Introduction to this volume by Ackerly et al.). The 2014 Ebola outbreak, for example, killed more than 11,000 people across several of the world's poorest countries in Africa. Many environmental crises, such as climate change-related weather events, have similar distributional impacts. The 2003 heat wave in Europe, for example, affected at least 16 countries and caused more than 70,000 excess deaths, disproportionately impacting the elderly. Hurricane Mitch, the second deadliest hurricane on record, killed 10,000 people in Honduras and Nicaragua in 1998.

The scale of devastation for both pandemics and environmental problems can be immense. At its peak in the mid-2000s, for example, the HIV/AIDS pandemic was responsible for the death of almost 2 million people per year. Similarly, according to the World Health Organization (WHO), known avoidable environmental risks, such as air pollution, cause 13 million deaths each year (WHO 2019a: 2).

This chapter compares pandemics and environmental crises on two dimensions: their underlying problem structures and governance systems. Several political scientists assume that policymakers design governance systems to fit with the characteristics of the specific problems they try to address (Koremenos et al. 2001, Koremenos 2016). For example, studies have found that states favoured the WHO's high-level design because it simultaneously protected global health and did not interfere too deeply in states' sovereign control of health policy and decision-making (Ip 2020; Benvenisti 2020). Other studies have shown that the nature of the problems raised by environmental degradation influences the design of international environmental agreements (Mitchell 2006; Mitchell and Keibach 2001). One conjecture resulting from this line of thinking is that states will prefer similar governance systems for different issue areas if they have similar problem structures, and different governance systems for problems with different problem structures (Mitchell 2006).

This chapter highlights how pandemics and environmental degradation present similar problem structures. Yet they have triggered very different policy responses, and their governance systems are also different. Moreover, even if pandemics and environmental degradation are similar types of problems, there is little attempt to coordinate policies that tackle the interrelated aspects of these issues. We explain these incongruities by power differentials and perception biases that lead to an underinvestment in environmental degradation compared to pandemics.

The chapter is divided into two parts. The first part illuminates the problem structures of pandemics and environmental degradation, including their similarities and interactions. The second part compares the existing approaches governing each of these issues and explains this variation. We conclude by discussing policy solutions to create positive synergies between the two issue areas.

Pandemics and Environmental Crises

Similar Problem Structures

Pandemics and environmental degradation have similar problem structures, which might suggest similarities in governance responses. This section focuses on five key similarities: global interdependence, exponential dynamics, disproportionate impacts, scientific uncertainty, and their relationship to economic liberalization. These characteristics are not exclusive to pandemics and environmental crises; the problem structures of several other global issues share one or two of these features, but few share all five.

First, both problems are characterized by a high degree of global interdependence. The health of a population and the quality of its environment are both dependent on the health and environmental conditions of other populations. This is because governments cannot stop viruses and pollution from crossing borders. In this context of interdependence, government actions to protect a population in one country may benefit other countries. Conversely, a government's failure to address health or environmental problems may be detrimental to other countries. Implementing health and environmental measures can be expensive, which means that governments may be tempted to 'free ride', letting other states foot the bill. Governments rarely have to pay for the consequences that their policies have on foreign countries. The full costs of an infectious disease outbreak or deforestation of the Amazon, for example, are not borne by the responsible parties. Rather, these costs are distributed globally through, for example, loss of human and non-human life. Individualistic state behaviour can exacerbate these impacts and occurs particularly when there is a shortage of scarce resources—for example, when a government restricts exports of valuable pharmaceutical products during a pandemic to safeguard its own stock or when a state siphons excess water from a

transboundary river for its own use. This type of behaviour may serve individual states in the short term, but it leads to suboptimal outcomes at the global level: it results in unfair and inefficient resource distribution (Morin et al. 2020).¹

A second key feature of pandemics and environmental degradation is their exponential dynamics. They are both non-linear problems, which amplify at an increasing rate over time. For example, if each infected person transmits a virus to two individuals every day, the infected population goes from 1 to 81 individuals in just 5 days and then jumps to 19,683 individuals five days later. Similarly, the biosphere is characterized by various feedback loops that accelerate the speed of climate change. For example, if the temperature were to rise sufficiently to melt the permafrost, this would release huge quantities of methane, a powerful greenhouse gas, into the atmosphere, and it would amplify climate change significantly. As a result, epidemiologists and earth scientists alike are trying to identify the thresholds beyond which a crisis spirals out of control. For a pandemic, this tipping point is based on the capacity of the health-care infrastructure to treat infected patients. For climate change, it is estimated that an increase of 2 degrees Celsius would create large-scale environmental discontinuities (Intergovernmental Panel on Climate Change (IPCC) 2018). Therefore, the governance challenge for both issues is to implement measures to flatten the exponential curve (of infected people or carbon dioxide in the atmosphere). The idea of an exponential curve putting human populations at risk has been well understood since Thomas Malthus's work in the eighteenth century. However, studies have found that the human mind has difficulty grasping its explosive nature. Exponential dynamics are consistently underestimated as a result (Wagenaar and Sagaria 1975; Kunreuther and Slovic 2020).

Another common feature of pandemics and environmental problems is that historically marginalized populations are disproportionately impacted (Venkatapuram 2011; Anand 2017; Mascarenhas 2020). When a crisis occurs, the most vulnerable groups often include lower socio-economic classes, ethnic minorities, and women. This occurs both within and between countries. Within countries, for example, Indigenous groups and black communities in the United States have borne disproportionate impacts of ill health, pandemics, climate change, oil exploration, and toxic exposure (Bullard 2020; Clark et al. 2020; Pellow 2018; Quinn et al. 2011; Watt-Cloutier 2018; Whyte 2020; Yancy 2020). At the international level, least-developed countries and developing countries often lack the necessary resources to protect their populations or adapt to changing circumstances. The poorest people in the poorest countries in the world, for example, are expected to bear the brunt of climate impacts, such as fisheries depletion

¹ Like that of the environment, the preservation of public health is a public good. Chapter 14 in this volume by Herrmann and Isabelle also discusses how, even at the micro level, individuals may opt for suboptimal behaviours for a societal point of view in the context of a pandemic if they adopt them based only on calculations involving their private benefit.

(Blasiak et al. 2017; Byers et al. 2018), and developing countries who are least responsible for global emissions are the most vulnerable to climate impacts (Althor et al. 2016). Similarly, global health research is increasingly illuminating the social determinants of (ill) health, such as lower socio-economic status and the impacts of pandemics (Donkin et al. 2018; Singu et al. 2020).² Redistributive measures, in addition to mitigation and adaptation policies, are required to tackle the regressive effects of health and environmental crises. Yet redistributive measures are often politically contested, both domestically and internationally.

The problem structure of pandemics and environmental degradation is also characterized by a degree of scientific uncertainty. When a new crisis arises, scientists are often unsure about the causes, the consequences, and the most effective responses; we saw such a dynamic with the initial HIV/AIDS outbreak and the discovery of the ozone hole in the 1980s. Scientists work with incomplete information, contested assumptions, and unstable models during the initial stages of a crisis. They make progress incrementally. In this context, some groups advocate action to protect human health and the environment, as the precautionary principle suggests (Vogel 2012), despite limited scientific evidence. Political opponents of the precautionary principle typically start by denying that the problem exists and then minimize its importance. As scientific knowledge advances and the magnitude of the crisis can no longer be credibly denied, opposition groups typically argue that there is no effective solution or seek to place blame on others to avoid responsibility for (in)action. As diverse political actors make scientific claims, the boundary between science and politics becomes increasingly unstable and blurred. Ultimately, difficult policy decisions, such as imposing a three-month shelter-in-place order to avoid disease transmission, or cutting CO₂ emissions by 20% by 2020 (a European Union target), are not simply based on science, they are also deeply political. They involve various ethical considerations that science alone cannot arbitrate (see the Introduction to this volume by Ackerly et al.).

One last similarity that health and environmental problems have is their tense and ambiguous relationship with economic liberalization. Globalization has created conditions that facilitate the diffusion of pandemics and accentuate environmental degradation. For this reason, several health and environmental groups are calling for policies, such as local supply chains, that run against the principles of economic liberalism. In contrast, certain industrial groups claim that health and environmental regulations are unnecessary and expensive job-killing measures (Tienhaara 2014). At the international level, some of the most controversial trade disputes concern health or environmental measures. The disputes are arbitrated by the World Trade Organization (WTO) and include issues such

² See Chapter 14 in this volume by Herrmann and Isabelle for a discussion on the distribution of the health and economic impacts of the COVID-19 pandemic across groups with different pre-existing vulnerabilities.

as asbestos, genetically modified organisms, beef hormones, and fisheries (such as the tuna/dolphin and shrimp/turtle controversies). Interestingly, several health and environmental measures are covered under WTO law by the same exception, which refers to measures that are ‘necessary to protect human, animal or plant life or health’ (GATT Article XX para. b). At the same time, globalization supports scientific innovation, essential for tackling both environmental and health crises. It also helps to reduce the cost of key technologies, such as pharmaceutical products or solar panels (Lafond et al. 2018).

Given the five key similarities in their problem structure, one might expect that similar global governance systems would govern pandemics and environmental degradation (Onzivu 2016; Koremenos et al. 2001). However, as the next section discusses, pandemics and environmental degradation also interact, which further suggests that a shared governance response might be appropriate (Thomas 2001).

The Health Consequences of Environmental Degradation

Although health and environmental crises are often treated as separate problems, they are intricately linked in multiple and complex ways. Environmental health is the field of study that analyses the health-related impacts of environmental problems (Negri 2019). It shows that environmental degradation increases the risks and consequences of disease, including pandemics.

In particular, biodiversity loss increases the likelihood of zoonotic diseases—diseases caused by pathogens that ‘jump’ from wildlife to humans. An estimated 75% of new human pathogens originate from non-human animals (Jones et al. 2008; UNEP and International Livestock Research Institute 2020). Examples of zoonotic diseases include HIV/AIDS, SARS, Ebola, and COVID-19. They are increasingly frequent, which is largely because of the destruction of natural habitats (through urbanization or deforestation), which brings wildlife and humans into closer contact. Wildlife trade also contributes to the greater interaction between wildlife and humans (UNEP 2020b).

Climate change can exacerbate the development of vector-borne infectious diseases. With rising temperatures or higher rainfall, certain vector-borne diseases may spread to higher altitudes and different latitudes (IPCC 2018: 9). This can prolong transmission seasons in some endemic regions. Malaria, Zika virus, Lyme disease, and dengue fever are all zoonotic diseases that are on the rise in several areas. Climate hazards and reduced agricultural production because of climate change can also force people to live in crowded, unsanitary conditions or to migrate, thus increasing the risks of contagion. Extreme weather events, such as flooding, heat waves, and tornadoes, put exceptional pressure on hospitals and emergency services, limiting their capacity to respond to a pandemic (Phillips et al. 2020).

Air pollution is another risk multiplier. The WHO estimates that air pollution causes around 7 million preventable deaths per year (WHO 2019a). The emission of ground-level ozone, dioxins, mercury, benzene, particulate matter, and other pollutants can exacerbate respiratory diseases. During the SARS and COVID-19 outbreaks, for example, air pollution was linked to the higher rates of mortality among infected people (Cui et al. 2003; Fattorini and Regoli 2020). Although pollution may be temporarily reduced during a pandemic, a lifetime of breathing polluted air, both indoors and outdoors, can make people more susceptible to respiratory infections.

The lack of sufficient safe water can also exacerbate health risks during infectious disease outbreaks. Frequent handwashing, which requires a continuous supply of clean water, is one of the most important public health indications to limit contagion. Yet, according to the WHO, 'more than half the world's population is still exposed to unsafely managed water, inadequate sanitation and poor hygiene' (WHO 2019a: 2). Pollution of water sources and destruction of natural habitats around river basins are partly responsible for these poor sanitary conditions. The WHO estimates that 'more than 800,000 preventable deaths each year' result from the lack of sufficient safe water (WHO 2019a: 2). This figure may increase significantly in the event of a pandemic in populations where people do not have access to clean water to wash their hands and where sanitary facilities are shared by a large number of people.

Polluted cities with few green spaces and little access to nature can worsen mental health problems when new pandemics occur. New health risks generate uncertainty, social isolation, and financial losses, which are stressors that can contribute to distress and mental illness. During the spring of 2020, a higher proportion of the population suffered from anxiety and depressive disorders compared to the previous year (Centers for Disease Control and Prevention (CDC) 2020). In short, environmental degradation can create and exacerbate health hazards, which get worse during times of pandemics.

The Environmental Impacts of Pandemics

Pandemics also have adverse consequences on the environment. In the early stages, their environmental impact might appear to be positive; for example, the economic slowdown they induce might reduce air and water pollution. In the first months of 2020, daily CO₂ emissions dropped significantly compared to the previous year. In some countries, emissions decreased by more than 25% (Le Quéré et al. 2020). Newspapers reported that blue skies were visible once more in cities usually smothered by heavy smog, and wildlife was increasingly visible in areas suddenly devoid of economic activities (Rutz et al. 2020). Yet, as with other types of economic downturn, pandemics are followed by economic recovery and increased

pollution levels (Kuzemko et al. 2020). Temporary reductions in pollution, even when they are significant, as in the case of the COVID-19 pandemic, are too short-lived to have a meaningful long-term environmental impact (Forster et al. 2020). The planet needs more than a few months to get its breath back.

Pandemics can exacerbate environmental degradation in many different ways. One of their immediate environmental consequences is linked to greater waste production, including medical products and protective equipment (masks, gloves, gowns, etc.). The United Nations Conference on Trade and Development estimates that global sales of disposable masks alone jumped from \$800 million in 2019 to \$166 billion in 2020 (UN 2020). A pandemic also leads to a resurgence of disposable, single-use plastic products to reduce contagion, including bags, cups, and plates. Some waste is burned in the open, releasing toxins into the environment, and some ends up in the sea. Greater quantities of active pharmaceutical ingredients may be released into the environment via saturated sewage systems, further polluting ecosystems. This pollution reveals and exacerbates a host of environmental justice-related impacts associated with, for example, adequate protection for workers who manage such waste.

Pandemics can also have adverse effects on biodiversity. During the COVID-19 pandemic, several developing countries saw a major reduction in safari tourism and ecotourism, depriving parks and reserves of an important source of income for anti-poaching surveillance (UNEP 2020a). At the same time, the economic recession induced by COVID-19 may increase the incentives to hunt wild animals, thereby paradoxically also increasing exposure risk to zoonotic diseases. In some communities, hunting can provide necessary food or a source of income. Likewise, when tourism no longer provides income for local communities, farmers may be tempted to kill wild animals to protect their crops and livestock (Buckley 2020; Lindsey et al. 2020). Governments may see the overexploitation of natural resources, including forests and fish stocks, as a short-term solution to the major economic downturn created by a pandemic.

More broadly, a pandemic and the associated economic downturn can create political conditions that are favourable to more lax environmental regulations. Public opinion tends to be less enthusiastic about environmental measures in times of economic recession (Ratter et al. 2012). Short-term economic sacrifices for long-term environmental gains are difficult to accept when the economy is hit by a pandemic. As unemployment soars, more people are likely to perceive environmental regulations as an extravagant inhibitor of economic growth (Kenny 2018). During the Great Recession of 2007–2009, surveys reported a decline in the level of concern for climate change (Kenny 2019; Brulle et al. 2012; Kahn and Kotchen 2011; Scruggs and Benegal 2012; Shum 2012). There is not a strong correlation between the magnitude of the economic downturn and the disinterest in environmental protection (Bakaki and Bernauer 2018; Andreas et al. 2017; Skovgaard 2014). However, recessions create favourable conditions so that

political leaders opposed to environmental measures can make their voices heard and gain influence (Mildenberger and Leiserowitz 2017). As such, during the first months of the COVID-19 pandemic, several governments suspended the enforcement of their pollution regulations, relaxed environmental impact assessments for infrastructure projects, and postponed their investment in renewable energy. The need to create jobs fast, combined with a greater concentration of executive power (often a feature of public health emergencies) paves the way for those who profit from environmental degradation (Russel and Benson 2014).

In short, environmental crises and pandemics interact in ways that make both problems worse. Importantly, historically marginalized populations are disproportionately impacted by these crises because of a lack of capacity and resources to protect their communities (see the Introduction to this volume by Ackerly et al.). As much as pandemics and environmental crises exacerbate one another, social inequalities become further entrenched and more difficult to correct. That said, since health and environmental systems are closely interrelated, there is an opportunity for governments to design policy measures that have positive effects on both. For example, reducing air pollution, designing transportation systems that encourage active transport, providing access to family planning services, and encouraging people to eat less red meat can improve health and have a positive environmental impact (IPCC 2014; Quam et al. 2017; Schucht et al. 2015). Yet, as the next section discusses, few governments are striving to achieve these co-benefits.

Health and Environmental Governance

Contrasting Reactions to Health and Environmental Crises

Despite similar problem structures, the global governance systems for health and environmental issues are remarkably different. They both have strengths, weaknesses, room for improvement, and more alignment to maximize synergies (see Chapter 12 in this volume by Davies for the challenge of global health governance). Of the two, the global health governance system appears better equipped to face global crises.

Very few governance initiatives have succeeded in solving global environmental problems. In most cases, actions are geared to limiting the pace of degradation, instead of stopping it or restoring the environment. Overall, public policies related to climate change and biodiversity loss are inadequate to tackle these crises of such immense magnitude. In contrast, some health responses to viral epidemics have been effective. While deaths are not always avoided, efficient treatments and preventative measures have been developed. Notably, smallpox was eradicated in 1980, and polio has almost been eradicated worldwide. These are two of the most remarkable achievements of global health governance.

A key asset of the global health governance system in addressing global crises is its higher degree of centralization, relative to the global environmental governance system (Fazal 2020). Centralization is a key asset when it comes to dealing with global crises. Health governance coalesces around the WHO, in Geneva, whereas environmental governance is notoriously fragmented into myriad institutions around the world (Biermann et al. 2009). The United Nations Environment Programme (UNEP) in Nairobi does not enjoy the same degree of political clout and autonomy as the WHO, as evidenced most basically by its designation as a ‘programme’, not an organization within the UN system. It also faces intense competition from several other intergovernmental organizations and programmes under the UN umbrella. While fragmentation and competition can make a governance system more innovative and adaptive in the long run, centralization and autonomy can facilitate effective decision-making in times of crisis (Biermann and Kim 2020).

Related to the issue of centralization, the most active global health organizations have more resources than their environmental counterparts. For example, the WHO’s annual budget is around US\$2.5 billion per year (WHO 2019c). In contrast, the UNEP has an annual budget of less than one-fifth of that amount (UNEP 2018). This disparity is also manifest in the resources available to key foundations and non-governmental organizations (NGOs) in both fields. The Bill & Melinda Gates Foundation, a leading actor in global health, spends around US\$5 billion every year (Gates Foundation 2020). In contrast, Greenpeace International, a major environmental NGO, has a budget of less than one-twentieth of that amount (Greenpeace 2019).

The COVID-19 pandemic revealed that public health policies can be implemented promptly, even when they are expensive. Governments around the world (with some notable exceptions) implemented emergency measures to protect public health. This disrupted economic activities and limited individual freedom. No government has ever implemented such drastic measures to reduce greenhouse gas emissions or curb environmental pollution. Yet environmental crises will ultimately be responsible for far more deaths than COVID-19 (WHO 2019a: 2).

Political systems across the globe were much more responsive to COVID-19 than they ever have been for an environmental crisis. Journalists reported daily statistics for COVID-19 infections and victims, while the death toll associated with environmental degradation rarely hits the headlines. Some government leaders, who previously questioned the validity of climate science to avoid action or claimed that economic development should come before environmental protection, gave press conferences during COVID-19 announcing major restrictions on economic activities in the name of health imperatives. Even government leaders who initially underestimated the gravity of the pandemic gradually became more supportive of basic public health measures. Several political leaders wanting to be seen as public health champions used the opportunity to boost their popular

support. In some countries, opposing health measures became politically toxic. Even industries severely hit by COVID-19, such as airline companies, did not organize opposition to public health measures, unlike the oil and gas industries, which have opposed measures to tackle climate change for decades. COVID-19 demonstrated that governments can act decisively, with little political opposition and strong public support, when confronted with a major crisis. We saw similar trends with the 2003 outbreak of SARS and the 2014 outbreak of Ebola. Yet these same governments have failed to act decisively on the same scale for climate change, biodiversity loss, or ocean pollution.

Clearly, global health responses have not always been as reactive as they were during the COVID-19 crisis. HIV/AIDS responses were initially slow (Sell and Prakash 2004), and Ebola has long remained a neglected disease (Nunes 2016). Further, as the COVID-19 case demonstrates, when some states fail to act, the crisis can be prolonged unnecessarily. The governance of pandemics also suffers, like global environmental governance does, from an imbalance between prevention and treatment (Dauvergne 2005). Governments tend to favour short-term solutions to health and environmental crises, despite the fact that investment in prevention pays off in the long run. Nevertheless, the governance responses to health crises appear to be more decisive than the response to environmental crises.

Explaining Variations in Policy Responses

At least three factors can explain this discrepancy in policy responses to environmental and health crises: income distribution and political influence, perceived urgency, and the presence of identifiable victims.

The first relates to income distribution and the political influence of the people impacted. Pandemics and environmental degradation disproportionately affect the most vulnerable populations. However, pandemics such as COVID-19 and HIV/AIDS are more directly life-threatening to rich and powerful individuals than are climate change or biodiversity loss. In the first few months of 2020, the COVID-19 pandemic was particularly prevalent in high-income countries, at least according to official records. The contagion was acute in highly connected global cities, such as New York and London, which are home to many of the transnational elite. Even government leaders and royalty were diagnosed with COVID-19 during the spring of 2020, including the British prime minister and the Prince of Wales. In contrast, rich and powerful individuals may have the impression that environmental degradation does not directly threaten their lives. When leaders (mis)perceive a crisis as a problem that affects foreign countries, they are unlikely to implement expensive preventative measures. In several high-income countries, the response of policymakers to climate change is biased by a spatial overoptimism (Gifford et al. 2009). This type of optimism bias only lasted a few weeks

during the COVID-19 pandemic, when it was limited to Asia in January 2020. However, climate change is still perceived as a problem that affects geographically or socio-economically distant populations.

Another key factor is the degree of perceived urgency related to a public policy problem. Environmental degradation is often (mis)perceived as a crisis to come that will affect future generations, not an immediate crisis. The sudden SARS and COVID-19 crises called for immediate short-term reactions. For COVID-19, in February and March of 2020 several political leaders actually announced that public health measures would probably only last for a few weeks. In contrast, climate action advocates have been calling for reduced greenhouse gas emissions for decades. Moreover, the effects of climate change will slowly unfold over decades, even after drastic cuts in greenhouse gas emissions. This reduces the perceived urgency to act. It allows for psychological adjustments to a new normal and suggests that we might have time to find solutions before it is too late. The climate crisis requires immediate and drastic action if we are to avoid catastrophic scenarios, but it is rarely perceived as an urgent crisis. Mark Carney, the head of the Bank of England, describes this short-term bias as the ‘tragedy of the horizon’ (BBC 2019).

Finally, a crucial variable that explains differences in policy response is the presence of identifiable victims. In a pandemic, viral infections can be connected to specific contagious contacts. Many people diagnosed with COVID-19 know when, where, and by whom they were infected. There are ‘identifiable victims’ in the sense that their disease can be causally linked to the pandemic. On the contrary, it is not possible to identify the victims that will fall prey to a specific source of greenhouse gas emissions. Viral infections have direct and traceable effects, whereas the consequences of greenhouse gas emissions are diffuse. It is not even possible to assert with certainty that a specific weather event was caused by a high level of greenhouse gases in the atmosphere. Climate change has probabilistic effects and only causes so-called ‘statistical victims’. The WHO estimates that climate change will cause 250,000 additional deaths per year on average between 2030 and 2050 (WHO 2018). However, none of these victims will have ‘climate change’ listed as the cause of death on their death certificate. The diffuse effect of climate change reduces the collective motivation to take decisive action (Marx et al. 2007). On the contrary, the direct consequences of a pandemic like COVID-19 trigger an immediate response.

Strengthening the Health–Environment Linkage

Several international institutions have already linked human health and environmental protection. The vast majority of global environmental governance is fundamentally anthropocentric—that is, the primary motivations for protecting the environment are explicitly related to the well-being of humans, including

human health. The 1992 Rio Declaration on Environment and Development, one of the pillars of global environmental governance, was revealing. Its first principle states that ‘Human beings ... are entitled to a *healthy* and productive life in harmony with nature’ (UN 1992, emphasis added).

Human health has motivated the conclusion of several environmental agreements, including the following: the 1987 Montreal Protocol on the ozone layer, the 1992 Basel Convention on hazardous wastes, the 2004 Stockholm Convention on Persistent Organic Pollutants, and the 2013 Minamata Convention on Mercury. The Paris Agreement on climate change argues that greenhouse gas reductions are justified on human health grounds. It also includes a provision stipulating that when states act to address climate change, they should ‘respect, promote and consider their respective obligations on the right to health’ (UN 2015 preamble). Morin and Blouin (2019) have identified a total of 338 environmental treaties that refer explicitly to human health.

Intergovernmental organizations devoted to environmental protection and human health are already cooperating. As early as 2002, the WHO and UNEP launched the Health and Environment Linkages Initiative to support actions in developing countries to reduce environmental threats to health. Since 2000, the WHO has partnered with UNEP and the World Meteorological Organization to raise awareness about the health impacts of climate change. In 2010, the secretariat of the Convention on Biological Diversity reinforced its cooperation with the WHO in the framework of a joint work programme to produce and diffuse scientific knowledge on health and biodiversity. The WHO, the World Organization for Animal Health, and the UN Food and Agriculture Organization created an early warning system for animal diseases and zoonoses. These are just a few of the existing institutional linkages between intergovernmental organizations that create synergies between human health and environmental protection.

Some transnational civil society organizations are also actively promoting synergies between health and the environment, for example, the EcoHealth Alliance and the Healthy Environments for Children Alliance. Several of these groups meet annually at the Global Climate and Health Summits, which are organized in parallel to the Conference of the Parties to the UN Framework Convention on Climate Change. These groups combine public health and environmental concerns to form broad coalitions to coordinate convincing advocacy narratives for policy action (Mayer 2009).

Several international institutions and actors are promoting new paradigms to reinforce the synergies between health and environmental policies. In recent decades, the concepts of ‘sustainable development’ and ‘green growth’ have brought together broad coalitions that have developed global policy actions geared towards the joint objectives of economic development and environmental protection (Morin et al. 2020). After COVID-19, concepts that connect human health to environmental protection are likely to gain prominence in global debates. Possible

candidates include ‘one health’ and ‘planetary health’. These two concepts are already being promoted by organizations such as the Wildlife Conservation Society, the Rockefeller Foundation, and the International Development Research Centre. While the two concepts differ, they stress the interdependence between human health, the health of other animals, and healthy ecosystems. They also call for a holistic and interdisciplinary understanding of health.

Despite this, the governance of human health and environmental protection is not fully integrated and several potential synergies are not exploited. According to the WHO, in 2019 half of its member-states did not have a strategy to tackle the twin issues of public health and climate change, and several countries that did have a strategy failed to implement it (WHO 2019b). This suggests that environmental and health policymaking remains largely siloed.

The social and economic disruption caused by the COVID-19 pandemic provides an opportunity to engage in recovery plans that address environmental protection like never before. Public measures could have a multiplier effect on the economy, by providing jobs and income to economic victims of COVID-19, while at the same time accelerating the transition towards a greener economy. For example, public money could be invested in renewable energy infrastructure, public transportation systems, modernizing the electric grid, or renovating buildings for energy efficiency. These investments would create jobs and significantly reduce greenhouse gas emissions (Hepburn et al. 2020; IRENA 2020). In addition, public support to industries that were heavily impacted by COVID-19 could be conditional on new environmental requirements. The significant reduction in oil prices makes 2020 a good time to introduce carbon taxes and eliminate consumption subsidies for fossil fuels. Although COVID-19 has had tragic consequences, it has also pushed governments to design recovery plans, which open up new opportunities for environmental protection (Kuzemko et al. 2020; McNamara and Newman 2020; OECD 2020).

Nonetheless, governments around the world might be more inclined to focus their recovery plans solely on economic growth because of pressure to boost the economy. The 2008 economic crisis revealed that not all political leaders are interested in creating synergies between economic development and environmental transition. It also suggested that the window of opportunity for large-scale initiatives is short-lived. After the 2008 economic crisis, new equilibriums emerged, and political groups jointly opposed reforms (Geels 2013). Post-COVID-19 recovery plans might provide a rare opportunity to boost the environmental transition.

Conclusion

Despite similarities and interactions between health and environmental crises, very different policy responses have emerged to tackle them. Governments have

adopted drastic policy changes and agreed to massive public investments to address pandemics such as COVID-19, while similar measures appear out of reach for environmental problems like climate change. Moreover, few synergies exist between policy responses to health and environmental issues.

The relative success of global health governance, as indicated by, for example, the swift government response to COVID-19 in many countries, offers lessons for global environmental governance. In particular, environmental governance could be more effective if it (1) framed environmental impacts more explicitly in human health and economic terms; (2) made victims more visible and proximate; and (3) communicated the short-term consequences for all, across geographies and classes. Some of this could be done via ‘bandwagoning’, or more generously put, by creating ‘strategic linkages’ between global environmental and health governance (Jinnah 2011). Rather than creating new institutions, strategic linkages capitalize on existing untapped capacities within international institutions to identify overlaps that can maximize synergistic cooperation and even open up new sources of funding by identifying previously opaque connections (Jinnah 2014).

The COVID-19 crisis has also drawn into sharp relief some of the shortcomings of global health governance. There is a need for greater international coordination on things like medical supply production and distribution, public messaging, and coordinated responses. Further, the COVID-19 crisis illuminated the social determinants of health, such as ethnicity, class, and gender, which have deep implications not only for health vulnerability, but also for environmental vulnerability. In order for countries to make equitable progress in either domain, redistributive support is imperative, and a failure to address these systemic problems head on will only further entrench and exacerbate existing inequalities.

Global challenges require systemic changes as related to both formal institutions and norms of what is right and what is possible. Strong government action is needed not only to respond to the crises as they emerge, but to prevent them from emerging in the first place. Investment in prevention, such as by ensuring health-care access for all and transitioning away from fossil fuels, is necessary to prepare not just for the next pandemic or environmental crisis, but also to create long-term, healthy living conditions for all. Prevention is a cheaper, safer, and more equitable option.

References

- Althor, Glenn, James E. M. Watson, and Richard A. Fuller. 2016. ‘Global Mismatch between Greenhouse Gas Emissions and the Burden of Climate Change’. *Scientific Reports* 6: 20281. <https://doi.org/10.1038/srep20281>.
- Anand, Ruchi. 2017. *International Environmental Justice: A North–South Dimension*. Abingdon: Routledge.
- Andreas, Jan-Justus, Charlotte Burns, and Julia Touza-Montero. 2017. ‘Renewable Energy as a Luxury? A Qualitative Comparative Analysis of the Role of the Economy

- in the EU's Renewable Energy Transitions during the "Double Crisis". *Ecological Economics* 142: pp. 81–90.
- Bakaki, Zorzeta, and Thomas Bernauer. 2018. 'Do Economic Conditions Affect Public Support for Environmental Policy?' *Journal of Cleaner Production* 195: pp. 66–78.
- BBC. 2019. 'Bank of England Chief Mark Carney Issues Climate Change Warning'. 30 December. <https://www.bbc.com/news/business-50868717>.
- Benvenisti, Eyal. 2020. 'The WHO—Destined to Fail? Political Cooperation and the COVID-19 Pandemic'. University of Cambridge Faculty of Law Research Paper No. 24, 30 June.
- Biermann, Frank, and Rakhyun E. Kim, eds. 2020. *Architectures of Earth System Governance: Institutional Complexity and Structural Transformation*. Cambridge: Cambridge University Press.
- Biermann, Frank, Philipp Pattberg, Harro Van Asselt, and Fariborz Zelli. 2009. 'The Fragmentation of Global Governance Architectures: A Framework for Analysis'. *Global Environmental Politics* 9 (4): pp. 14–40.
- Blasiak Robert, Jessica Spijkers, Kanae Tokunaga, Jeremy Pittman, Nobuyuki Yagi, and Henrik Österblom. 2017. 'Climate Change and Marine Fisheries: Least Developed Countries Top Global Index of Vulnerability'. *PLoS One* 12 (6): e0179632. <https://doi.org/10.1371/journal.pone.0179632>.
- Brulle, Robert J., Jason Carmichael, and J. Craig Jenkins. 2012. 'Shifting Public Opinion on Climate Change: An Empirical Assessment of Factors Influencing Concern over Climate Change in the U.S., 2002–2010'. *Climatic Change* 114 (2): pp. 169–88.
- Buckley, Ralf. 2020. 'Conservation Implications of COVID-19: Effects via Tourism and Extractive Industries'. *Biological Conservation* 247: 108640.
- Bullard, Robert D. 2020. 'From Civil Rights to Black Lives Matter'. In *Lessons in Environmental Justice: From Civil Rights, to Black Lives Matter, to Idle No More*, edited by Michael Mascarenhas, pp. 2–18. Thousand Oaks, CA: Sage Press.
- Byers, Edward, Matthew Gidden, David Leclère, et al. 2018. 'Global Exposure and Vulnerability to Multi-Sector Development and Climate Change Hotspots'. *Environmental Research Letters* 13: 055012. <https://doi.org/10.1088/1748-9326/aabf45>.
- Centers for Disease Control and Prevention (CDC). 2020. 'Anxiety and Depression: Household Pulse Survey'. <https://www.cdc.gov/nchs/covid19/pulse/mental-health.htm>.
- Clark Eva, Karla Fredricks, Laila Woc-Colburn, Maria Elena Bottazzi, and Jill Weatherhead. 2020. 'Disproportionate Impact of the COVID-19 Pandemic on Immigrant Communities in the United States'. *PLOS Neglected Tropical Diseases* 14 (7): e0008484. <https://doi.org/10.1371/journal.pntd.0008484>.
- Cui, Yan, Zuo-Feng Zhang, John Froines, et al. 2003. 'Air Pollution and Case Fatality of SARS in the People's Republic of China: An Ecologic Study'. *Environmental Health* 2 (15).
- Dauvergne, Peter. 2005. 'Cancer and Global Environmental Politics: Proposing a New Research Agenda'. *Global Environmental Politics* 5 (3): pp. 6–13.
- Donkin Angela, Peter Goldblatt, Jessica Allen, Vivienne Nathanson, and Michael Marmot. 2018. 'Global Action on the Social Determinants of Health'. *BMJ Global Health* 3: e000603.
- Fattorini, Daniele, and Francesco Regoli. 2020. 'Role of the Chronic Air Pollution Levels in the COVID-19 Outbreak Risk in Italy'. *Environmental Pollution* 264: 114732.
- Fazal, Tanisha. 2020. 'Health Diplomacy in Pandemical Times'. *International Organization* 74 (supp): pp. E79–E97.

- Forster, Piers M., Harriet I. Forster, Mat J. Evans, et al. 2020. 'Current and Future Global Climate Impacts Resulting from COVID-19'. *Nature Climate Change* 10: pp. 913–19. <https://doi.org/10.1038/s41558-020-0883-0>.
- Gates Foundation. 2020. 'Who We Are: Financials'. <https://www.gatesfoundation.org/Who-We-Are/General-Information/Financials>.
- Geels, Frank W. 2013. 'The Impact of the Financial–Economic Crisis on Sustainability Transitions: Financial Investment, Governance and Public Discourse'. *Environmental Innovation and Societal Transitions* 6: pp. 67–95.
- Gifford, Robert., Leila Scannell, Christine Kormos, et al. 2009. 'Temporal Pessimism and Spatial Optimism in Environmental Assessments: An 18-Nation Study'. *Journal of Environmental Psychology* 29 (1): pp. 1–12.
- Greenpeace. 2019. 'International Combined Financial Statement'. <https://storage.googleapis.com/planet4-international-stateless/2020/06/a3d5435f-greenpeace-international-combined-financial-statement-2019.pdf>.
- Hepburn, Cameron, Brian O'Callaghan, Nicholas Stern, Joseph Stiglitz, and Dimitri Zenghelis. 2020. 'Will COVID-19 Fiscal Recovery Packages Accelerate or Retard Progress on Climate Change?' *Oxford Review of Economic Policy* 36 (S1): pp. S359–S381.
- Ip, Eric C. 2020. 'The Constitutional Economics of the World Health Organization'. *Health Economics, Policy and Law* 16 (3): pp. 1–15.
- Intergovernmental Panel on Climate Change (IPCC). 2014. 'Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change'. Geneva: IPCC.
- IPCC. 2018. 'Global Warming of 1.5°C'. <https://www.ipcc.ch/sr15>.
- International Renewable Energy Agency. 2020. *The Post-COVID Recovery: An Agenda for Resilience, Development and Equality*. Abu Dhabi: IRENA.
- Jinnah, Sikina. 2011. 'Climate Change Bandwagoning: The Impacts of Strategic Linkages on Regime Design, Maintenance, and Death'. *Global Environmental Politics* 11 (3): pp. 1–9.
- Jinnah, Sikina. 2014. *Post-Treaty Politics: Secretariat Influence in Global Environmental Governance*. Cambridge, MA: MIT Press.
- Jones, Kate E., Nikkita G. Patel, Marc A. Levy, et al. 2008. 'Global Trends in Emerging Infectious Diseases'. *Nature* 451: pp. 990–4.
- Kahn, Matthew E., and Matthew J. Kotchen. 2011. 'Business Cycle Effects on Concern about Climate Change: The Chilling Effect of Recession'. *Climate Change Economics* 2 (3): pp. 257–73.
- Kenny, John. 2018. 'The Role of Economic Perceptions in Influencing Views on Climate Change: An Experimental Analysis with British Respondents'. *Climate Policy* 18 (5): pp. 581–92.
- Kenny, John. 2019. 'Economic Conditions and Support for the Prioritisation of Environmental Protection during the Great Recession'. *Environmental Politics* 29 (6): pp. 937–58.
- Koremenos, Barbara. 2016. *The Continent of International Law: Explaining Agreement Design*. Cambridge: Cambridge University Press.
- Koremenos, Barbara, Charles Lipson, and Duncan Snidal. 2001. 'The Rational Design of International Institutions'. *International Organization* 55 (4): pp. 761–99.
- Kunreuther, Howard, and Paul Slovic. 2020. 'Learning from the COVID-19 Pandemic to Address Climate Change'. 29 May 2020. <https://riskcenter.wharton.upenn>.

- edu/wp-content/uploads/2020/06/Learning-from-the-COVID-19-Pandemic-to-Address-Climate-Change_wp.pdf.
- Kuzemko, Caroline, Michael Bradshaw, Gavin Bridge, et al. 2020. 'COVID-19 and the Politics of Sustainable Energy Transitions'. *Energy Research & Social Science* 68: 101685.
- Lafond, François, Aimee Gotway Bailey, Jan David Bakker, et al. 2018. 'How Well Do Experience Curves Predict Technological Progress? A Method for Making Distributional Forecasts'. *Technological Forecasting and Social Change* 128: pp. 104–17.
- Le Quéré, Corinne., Robert B. Jackson, Matthew W. Jones, et al. 2020. 'Temporary Reduction in Daily Global CO₂ Emissions during the COVID-19 Forced Confinement'. *Nature Climate Change* 10: pp. 647–53.
- Lindsey, Peter, James Allan, Peadar Brehony, et al. 2020. 'Conserving Africa's Wildlife and Wildlands through the COVID-19 Crisis and Beyond'. *Nature, Ecology & Evolution* 4: pp. 1300–10.
- Marx, Sabine M., Elke U. Weber, Benjamin S. Orlove, et al. 2007. 'Communication and Mental Processes: Experiential and Analytic Processing of Uncertain Climate Information'. *Global Environmental Change* 17 (1): pp. 47–58.
- Mascarenhas, Michael. 2020. *Lessons in Environmental Justice: From Civil Rights, to Black Lives Matter, to Idle No More*. Thousand Oaks, CA: Sage Press.
- Mayer, Brian. 2009. *Blue-Green Coalitions: Fighting for Safe Workplaces and Healthy Communities*. Ithaca, NY: Cornell University Press.
- McNamara, Kathleen R., and Abraham L. Newman. 2020. 'The Big Reveal: COVID-19 and Globalization's Great Transformations'. *International Organization* 74 (supp): pp. E59–E77.
- Mildenberger Matto, and Anthony Leiserowitz. 2017. 'Public Opinion on Climate Change: Is There an Economy–Environment Tradeoff?' *Environmental Politics* 26 (5): pp. 801–24.
- Mitchell, Ronald B. 2006 'Problem Structure, Institutional Design, and the Relative Effectiveness of International Environmental Agreements'. *Global Environmental Politics* 6 (3): pp. 72–89.
- Mitchell, Ronald B., and Patricia M. Keilbach. 2001. 'Situation Structure and Institutional Design: Reciprocity, Coercion, and Exchange'. *International Organization* 55 (4): pp. 891–917.
- Morin, Jean-Frédéric, and Chantal Blouin. 2019. 'How Environmental Treaties Contribute to Global Health Governance'. *Globalization and Health* 15 (1): p. 47.
- Morin, Jean-Frédéric., Amandine Orsini, and Sikina Jinnah. 2020. *Global Environmental Politics. Understanding the Governance of the Earth*. Oxford: Oxford University Press.
- Negri, Stefania, ed. 2019. *Environmental Health in International and European Law*. Abingdon: Routledge.
- Nunes, João. 2016. 'Ebola and the Production of Neglect in Global Health'. *Third World Quarterly* 37 (3): pp. 542–56.
- Onzivu William. 2016. 'Rethinking Transnational Environmental Health Governance in Africa: Can Adaptive Governance Help?' *Review of European, Comparative & International Environmental Law* 25 (1): pp. 107–22.
- Organisation for Economic Co-operation and Development (OECD). 2020. *Making the Green Recovery Work for Jobs, Income and Growth*. Paris: OECD.
- Pellow, David Naguib. 2018. *What Is Critical Environmental Justice?* Cambridge: Polity Press.

- Phillips, Carly A., Astrid Caldas, Rachel Cleetus, et al. 2020. 'Compound Climate Risks in the COVID-19 Pandemic'. *Nature Climate Change* 10: pp. 586–8.
- Quam, Vivian G. M., Joacim Rocklöv, Mikkel B. M. Quam, and Rebekah A. I. Lucas. 2017. 'Assessing Greenhouse Gas Emissions and Health Co-Benefits: A Structured Review of Lifestyle-Related Climate Change Mitigation Strategies'. *International Journal of Environmental Research and Public Health* 14 (5): p. 468.
- Quinn, Sandra Crouse, Vicki S. Supriya Kumar, Donald Musa Freimuth, Nestor Casteneda-Angarita, and Kelley Kidwell. 2011. 'Racial Disparities in Exposure, Susceptibility, and Access to Health Care in the US H1N1 Influenza Pandemic'. *American Journal of Public Health* 101: pp. 285–93.
- Ratter, Beate M. W., Katharina H. I. Philipp, and Hans von Storch. 2012. 'Between Hype and Decline: Recent Trends in Public Perception of Climate Change'. *Environmental Science & Policy* 18: pp. 3–8.
- Russel Duncan, and David Benson. 2014. 'Green Budgeting in an Age of Austerity: A Transatlantic Comparative Perspective'. *Environmental Politics* 23 (2): pp. 243–62.
- Rutz, Christian, Matthias-Claudio Loretto, Amanda E. Bates, et al. 2020. 'COVID-19 Lockdown Allows Researchers to Quantify the Effects of Human Activity on Wildlife'. *Nature Ecology & Evolution* 22: pp. 1–4.
- Schucht, Simon, Aaugustine Colette, Shilpa Rao, and Mike Holland. 2015. 'Moving towards Ambitious Climate Policies: Monetised Health Benefits from Improved Air Quality Could Offset Mitigation Costs in Europe'. *Environmental Science & Policy* 50: pp. 252–69.
- Scruggs, Lyle, and Salil Benegal. 2012. 'Declining Public Concern about Climate Change: Can We Blame the Great Recession?'. *Global Environmental Change* 22 (2): pp. 505–15.
- Sell, Susan, and Aseem Prakash. 2004. 'Using Ideas Strategically: The Contest between Business and NGO Networks in Intellectual Property Rights'. *International Studies Quarterly* 48: pp. 143–75.
- Shum, Robert Y. 2012. 'Effects of Economic Recession and Local Weather on Climate Change Attitudes'. *Climate Policy* 12 (1): pp. 38–49.
- Singu, Sravani, Arpan Acharya, Kishore Challagundla, and Siddappa N. Byrareddy. 2020. 'Impact of Social Determinants of Health on the Emerging COVID-19 Pandemic in the United States'. *Frontiers in Public Health* 8: p. 406.
- Skovgaard, Jakob. 2014. 'EU Climate Policy after the Crisis'. *Environmental Politics* 23 (1): pp. 1–17.
- Thomas, Caroline. 2001. 'Environmental and Health Research: Overlapping Agendas'. *Global Environmental Politics* 1 (4): pp. 10–7.
- Tienhaara, Kyla. 2014. 'Varieties of Green Capitalism: Economy and Environment in the Wake of the Global Financial Crisis'. *Environmental Politics* 23 (2): pp. 187–204.
- United Nations (UN). 1992. 'Report of the United Nations Conference on Environment and Development'. 3–14 June 1992. https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf.
- UN. 2015. 'Paris Agreement'. https://unfccc.int/sites/default/files/english_paris_agreement.pdf.
- UN. 2020. 'Five Things You Should Know about Disposable Masks and Plastic Pollution'. 30 July. <https://news.un.org/en/story/2020/07/1069151>.
- UN Environment Programme (UNEP). 2018. 'UNEP Annual Report 2018'. https://wedocs.unep.org/bitstream/handle/20.500.11822/27689/AR2018_EN.pdf?sequence=1&isAllowed=y.

- UNEP. 2020a. 'Virus which Causes COVID-19 Threatens Great Ape Conservation.' Interview with Johannes Refisch, United Nations Great Apes Survival Partnership Programme, Manager and Coordinator.
- UNEP. 2020b. 'Three Ways the United Nations Environment Programme Works to Address Illegal Trade in Wildlife.' 17 February.
- UNEP and International Livestock Research Institute. 2020. *Preventing the Next Pandemic: Zoonotic Diseases and How to Break the Chain of Transmission*. Nairobi: UNEP.
- Venkatapuram, Sridhar. 2011. *Health Justice: An Argument from the Capabilities Approach*. Cambridge: Polity Press.
- Vogel, David. 2012. *The Politics of Precaution: Regulating Health, Safety, and Environmental Risks in Europe and the United States*. Princeton, NJ: Princeton University Press.
- Wagenaar, William A. and Sabato D. Sagaria. 1975. 'Misperception of Exponential Growth'. *Perception & Psychophysics* 18 (6): pp. 416–22.
- Watt-Cloutier, Sheila. 2018. *The Right to Be Cold: One Woman's Fight to Save the Arctic and Save the Planet from Climate Change*. Minneapolis, MN: University of Minnesota Press.
- Whyte, Kyle Powys. 2020. 'Environmental Justice, Indigenous Peoples and Consent'. In *Lessons in Environmental Justice: From Civil Rights, to Black Lives Matter, to Idle No More*, edited by Michael Mascarenhas, p. 35. Thousand Oaks, CA: Sage Press.
- World Health Organization (WHO). 2018. 'Climate Change and Health, Key Facts'. Updated 30 October 2021. <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>.
- WHO. 2019a. 'Health, Environment and Climate Change'. A72/15, 18 April.
- WHO. 2019b. 'Health and Climate Change Survey Report'. WHO/CED/PHE/EPE/19.11.
- WHO. 2019c. '2018–2019 Annual Report'. https://www.who.int/about/finances-accountability/reports/results_report_18-19_final1.pdf?ua=1.
- World Trade Organization (WTO). n.d. 'GATT Article XX: General Exceptions'. https://www.wto.org/english/res_e/publications_e/ai17_e/gatt1994_art20_gatt47.pdf.
- Yancy Clyde W. 2020. 'COVID-19 and African Americans'. *Journal of the American Medical Association* 323 (19): pp. 1891–2.