

Addressing the COVID-induced healthcare backlog: How can we balance the interests of people and nature?

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Abstract

The COVID-19 pandemic created healthcare backlogs of routine primary and preventive care, elective procedures, dental care, and mental healthcare appointments across the world. So far, governments are responding by enacting pandemic recovery policies that expand their healthcare sector activity, without much, if any, consideration of its effects on the environmental crisis that is (among other things) worsening human health and health equity. This paper argues that, as a matter of health and social justice, governments have an ethical responsibility to equitably reduce the backlog with minimal environmental damage. To do so, a first key action is to give priority to policy options that minimise negative human impacts on the environment. Yet these policies alone will not be sufficient to address the backlog, particularly in relation to elective procedures. The paper therefore contends that a second key action for governments is to enact the policy options that are best able to equitably reduce the remainder of the backlog, while accelerating the transition to sustainable health care in ways that are best able to reduce the specific environmental costs of those policy options. It concludes by considering whether limits apply to governments' ethical responsibilities that ultimately mean accelerating the transition to sustainable health care is not required when addressing the backlog.

KEYWORDS

COVID-19, environment, ethics, health care, justice

1 | INTRODUCTION

Backlogs and delays in nonemergency health care caused by the COVID-19 pandemic are affecting populations globally and generating avoidable morbidity and mortality across the world. During the pandemic's crisis peaks, millions of people saw not only their elective procedures but also their routine primary and preventive care, dental care, and mental health care appointments cancelled or

postponed.¹ The CovidSurg Collaborative estimated that 28,404,603 surgeries would be cancelled or postponed across 190 countries in the initial 12 weeks of COVID-19, including 37.7% of cancer surgeries and 81.7% of other (benign) surgeries.²

¹van Ginneken, E., Reed, S., Siciliani, L., Eriksen, A., Schlepper, L., Tille, F., & Zapata, T. (2022). *Addressing backlogs and managing waiting lists during and beyond the COVID-19 pandemic*. World Health Organisation.

²CovidSurg Collaborative. (2020). Elective surgery cancellations due to the COVID-19 pandemic: Global predictive modelling to inform surgical recovery plans. *British Journal of Surgery*, 107(11), 1440–1449.

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Estimates from October 2022 placed the UK backlog at a record high of 7.21 million people. Over 400,000 patients had been waiting over a year for treatment.³ A US study projected a backlog of more than half a million joint and spinal surgeries by mid-2022 that could take the country 16 months to work through.⁴ South Africa estimated a surgical backlog of 1017 operations across six government hospitals over a 4-month period, which would take between 4 and 14 months to address if each hospital did one additional operation per weekday.⁵ However, the true backlog in most countries was likely much larger than these waitlist numbers indicate, due to an invisible backlog of unknown proportions.⁶ The invisible backlog consists of patients who required care but were not yet on a waitlist because they had either not yet presented or had referrals cancelled due to the impact of COVID-19 on their healthcare system.⁷ In the United Kingdom, the waitlist could have increased to 14 million patients if all such people had come forward.⁸

A *Lancet* editorial therefore proclaimed, 'drastic measures will be required to clear these backlogs'.⁹ Existing data confirmed that simply returning to pre-pandemic levels of healthcare activity wouldn't be enough.¹⁰ For that reason, many countries have been trying to expand their healthcare sectors as part of their pandemic recovery¹¹ so that waitlisted patients can be treated quickly and efficiently. Some estimates suggest that anywhere from a 10% to 20% increase above baseline volumes is needed.¹² A recent World Health Organisation study shows that governments in the United Kingdom and European region are adopting three main strategies to catch up on backlogs and bring down waiting times: increasing workforce and staffing; improving productivity, management of capacity and demand; and investing in capital, infrastructure, and new models of care.¹³ Similar

strategies are being enacted by other high-income country governments like Canada and Australia.¹⁴

Yet we are also facing an environmental crisis. So far, six of the nine planetary boundaries have been exceeded, including climate change, loss of biodiversity, chemical pollution, and land-system change.¹⁵ Healthcare system's built environment, delivery of healthcare and services, procurement, and patient and staff travel generate greenhouse gas emissions, hazardous, and nonhazardous waste, and other pollutant emissions, including ammonia, carbon monoxide, methanol, nitrogen oxides, and sulphur dioxide.¹⁶ On average, they are responsible for 5.2% of worldwide carbon emissions.¹⁷ During the COVID-19 pandemic, healthcare waste generation rose dramatically.¹⁸ In some cities, the amount of hazardous healthcare waste per day increased ten fold.¹⁹ Healthcare systems also affect aspects of circularity and biodiversity via their material extraction, blue water consumption, and land use practices.²⁰ They, thus, contribute to exceeding levels of several of the planetary boundaries.

Governments then face an ethical dilemma in addressing the healthcare backlog: How can they balance the interests of people and nature? So far, there is substantial literature on the ethics of the COVID-19 response. Yet the Covid-19 recovery differs from the Covid-19 response, with each phase of the pandemic raising its own ethical challenges. In relation to the COVID-19 recovery, the ethical dilemmas raised by tackling the healthcare backlog are discussed in the literature, at times in relation to equity and social justice²¹ but not in relation to the environment. There is also a growing literature that

³British Medical Association. (2022). *NHS backlog data analysis*. <https://www.bma.org.uk/advice-and-support/nhs-delivery-and-workforce/pressures/nhs-backlog-data-analysis2022>

⁴Mehta, A., Awuah, W. A., Ng, J. C., Kundu, M., Yarlagadda, R., Sen, M., Nansubuga, E. P., Abdul-Rahman, I., & Hasan, M. M. (2022). Elective surgeries during and after the COVID-19 pandemic: Case burden and physician shortage concerns. *Annals of Medicine and Surgery*, *81*, 104395.

⁵Chu, K. M., Marco, J., Bougard, H., Strauss, C. P., Bertels, L., Victor, A. E., Van der Walt, L., & Duvenage, R. (2021). Estimating the surgical backlog from the COVID-19 lockdown in South Africa: A retrospective analysis of six government hospitals. *South African Medical Journal*, *111*(7), 685–688.

⁶Specia, M. (2022). 'I feel really hopeless': In U.K., millions see non-Covid health care delayed. *New York Times*. <https://www.nytimes.com/2022/01/26/world/europe/coronavirus-uk-nhs-backlog.html?smid=url-share>

⁷British Medical Association, op. cit. note 3.

⁸UK National Health Service. (2022). *Delivering plan for tackling the COVID-19 backlog of elective care*. <https://www.england.nhs.uk/coronavirus/delivering-plan-for-tackling-the-covid-19-backlog-of-elective-care>

⁹(2021). Too long to wait: The impact of COVID-19 on elective surgery. *The Lancet Rheumatology*, *3*(2), e83.

¹⁰Van Ginneken, E., et al., op. cit. note 1; Carroll, L., & Ward, M. (2022). Overdue elective surgeries to triple after pandemic backlog, analysis shows. *Sydney Morning Herald*. <https://www.smh.com.au/national/nsw/overdue-elective-surgeries-to-triple-after-pandemic-backlog-analysis-shows-20220406-p5abau.html>

¹¹Pandemic recovery means the short- to medium-term actions that healthcare systems take to restore care access and catch up on service backlogs while COVID-19 transmission is controlled but still present in the community. It is distinct from the pandemic response, which refers to the actions that healthcare systems took during peaks of the crisis to address surges of COVID-19 cases while protecting access to essential health care.

¹²Mehta, A., et al. op. cit. note 4; Gordon, J., & Cunningham, M. (2022). Victoria announces \$1.5 billion COVID catch-up plan. *The Age*. <https://www.theage.com.au/national/victoria/victoria-announces-1-5-billion-covid-catch-up-plan-20220403-p5aaeo.html>

¹³Van Ginneken, E., et al., op. cit. note 1.

¹⁴Carroll and Ward, op. cit. note 10; Gordon and Cunningham, op. cit. note 12; Born, K., & Levinson, W. (2021). Using health care resources wisely during and following the COVID-19 pandemic. *Canadian Journal of Health Technologies*, *1*.

¹⁵Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., Druke, M., Fetzer, I., Bala, G., von Bloh, S., Feulner, G., Gleeson, T., Hofmann, M., Kummu, M., Mohan, C., Nogués-Bravo, Rockström, J. (2023). Earth beyond six of nine planetary boundaries. *Science Advances*, *9*(37), eadh2458.

¹⁶Eckelman, M. J., Sherman, J. D., & MacNeill, A. J. (2018). Life cycle environmental emissions and health damages from the Canadian healthcare system: An economic-environmental-epidemiological analysis. *PLoS Medicine*, *15*(7), e1002623; National Health Service. (2022). *Delivering plan for tackling the COVID-19 backlog of elective care*. NHS; Malik, A., Lenzen, M., McAlister, S., & McGain, F. (2018). The carbon footprint of Australian health care. *The Lancet Planetary Health*, *2*(1), e27–e35.

¹⁷Romanello, M., Di Napoli, C., Drummond, P., Green, C., Kennard, H., Lampard, P., Scamman, D., Arnell, N., Ayeb-Karlsson, S., Ford, L. B., Belesova, K., Bowen, K., Cai, W., Callaghan, M., Campbell-Lendrum, D., Chambers, J., van Daalen, K. R., Dalin, C., Dasandi, N., ... Costello, A. (2022). The 2022 report of the Lancet Countdown on health and climate change: Health at the mercy of fossil fuels. *The Lancet*. *400*(10363), 1619–1654.

¹⁸Rume, T., & Islam, S. M. D. (2020). Environmental effects of COVID-19 pandemic and potential strategies of sustainability. *Heliyon*, *6*(9), e04965.

¹⁹World Health Organisation. (2022). *Global analysis of healthcare waste in the context of COVID-19: Status, impacts and recommendations*. WHO.

²⁰Capon, A., Malik, A., Pencheon, D., Weisz, H., & Lenzen, M. (2020). Health care has a huge environmental footprint, which then harms health. This is a matter of ethics. *The Conversation*. <https://theconversation.com/health-care-has-a-huge-environmental-footprint-which-then-harms-health-this-is-a-matter-of-ethics-142651>; Steenmeijer, M. A., Rodrigues, J. F. D., Zijp, M. C., & Waaijers-van der Loop, S. L. (2022). The environmental impact of the Dutch health-care sector beyond climate change: An input-output analysis. *The Lancet Planetary Health*, *6*(12), e949–e957.

²¹Pugh, J., Seah, M., Carr, A., & Savulescu, J. (2023). Tackling the COVID elective surgical backlog: Prioritising need, benefit or equality? *Clinical Ethics*, *18*(4), 354–360; Baines, P., Draper, H., Chiumento, A., Fovargue, S., & Frith, L. (2020). COVID-19 and beyond: The ethical challenges of resetting health services during and after public health emergencies. *Journal of Medical Ethics*, *46*(11), 715–716. <https://doi.org/10.1136/medethics-2020-106965>

articulates the ethical responsibilities of governments, healthcare systems, and healthcare professionals to reduce the environmental impacts of healthcare delivery.²² The healthcare backlog is not currently discussed within that literature.

In this article, I first argue that governments have an ethical responsibility to equitably address the healthcare backlog with minimal environmental damage as a matter of health and social justice. The remainder of the paper then considers what upholding this responsibility demands of governments going forward and identifies two key actions that they should take. As much of the data so far on the healthcare backlog comes from high-income countries, the ideas in this paper are most relevant to such settings. The terms nature and the environment are used interchangeably throughout the paper and refer to the living beings (e.g., animals, plants), nonliving entities (e.g., soil, rocks), and collectives (e.g., species, ecosystems) that comprise the Earth.

2 | AN ETHICAL RESPONSIBILITY TO EQUITABLY ADDRESS THE BACKLOG WITH MINIMAL ENVIRONMENTAL HARM

Theories of health and social justice purport that, within just states, governments must secure a set of basic capabilities or functionings, including health, so that their populations achieve human flourishing.²³ Governments should ensure a sufficient level of health for all members of their society, independent of gender, ethnicity, sexual orientation, place of birth or residence, social status, political beliefs, and religion.²⁴ People should be free of preventable morbidity and premature mortality²⁵ and able to function normally²⁶ such that they can achieve either a normal lifespan of decent quality²⁷ or an optimal lifespan—the highest life expectancy achieved by a nation worldwide—of high quality.²⁸ Beyond the nation-state, health justice requires, at a minimum, governments not make the health of populations in other countries, especially poorer ones, worse than it otherwise would be.²⁹ More demanding, it requires governments to support and facilitate other countries' efforts to achieve sufficient health for their populations, particularly for those countries where

the shortfall between their health achievement and a sufficient level is large.³⁰

To ensure sufficient health for their populations, governments must create and maintain *equal access* to high-quality public health measures,³¹ high-quality healthcare and services,³² and the social determinants of health.³³ These entitlements are primarily secured via basic social institutions with an explicit health focus—namely, public health, health care, and health research systems—and other basic social institutions that impact the social determinants of health.³⁴ Multiple theories purport that some priority should be given to securing them for those individuals, groups, and communities who are considered systematically disadvantaged.^{35,36}

Such entitlements must arguably *also* be provided with minimal environmental impact as a matter of health and social justice. That is because governments' duty to ensure sufficient health for their populations is countered when basic social institutions cause or contribute to environmental damage. Their duty is countered where healthcare systems generate greenhouse gases because doing so worsens climate change and its effects on human health and health equity—namely, increasing chronic undernutrition, respiratory impacts (e.g., chronic obstructive pulmonary disease, asthma), vector-borne and waterborne illnesses, and heat stroke and death.³⁷ Those already experiencing marginalisation and disadvantage are the most severely affected.³⁸ Governments' duty to ensure sufficient population health is also countered where healthcare systems generate or contribute to other environmental harms such as resource scarcity, hazardous waste generation, air pollution, and biodiversity loss.³⁹ Healthcare services rely on an enormous array of natural resources, including common and rare metals, rubber, petroleum, biomass, and

³⁰Ruger, J. P. (2009). Global health justice. *Public Health Ethics*, 2(3), 261–275.

³¹Powers & Faden, op. cit. note 23; Ruger, op. cit. note 23; Daniels, op. cit. note 26.

³²Ruger, op. cit. note 23; Daniels, op. cit. note 26.

³³Daniels, op. cit. note 26; Venkatapuram, op. cit. note 24.

³⁴Ibid.

³⁵Systematic disadvantage means individuals, groups, or communities experience deficits below sufficiency on multiple dimensions of well-being. Dimensions of well-being include health, reasoning, personal security, respect, and affiliation (i.e., relations of love, friendship) (Powers & Faden, op. cit. note 20).

³⁶Powers & Faden, op. cit. note 23; Ruger, op. cit. note 23; Wolff, J. & de Shalit, A. (2007). *Disadvantage*. Oxford University Press.

³⁷Watts, N., Amann, M., Arnell, N., Ayeb-Karlsson, S., Belesova, K., Berry, H., Bouley, T., Boykoff, M., Byass, P., Cai, W., Campbell-Lendrum, D., Chambers, J., Daly, M., Dasandi, N., Davies, M., Depoux, A., Dominguez-Salas, P., Drummond, P., Ebi, K. L., Ekins, P., ... Costello, A. (2018). The 2018 report of the Lancet Countdown on health and climate change: Shaping the health of nations for centuries to come. *The Lancet*, 392(10163), 2479–2514; Zhao, Q., Guo, Y., Ye, T., Gasparrini, A., Tong, S., Overcenco, A., Urban, A., Schneider, A., Entezari, A., Vicedo-Cabrera, A. M., Zanobetti, A., Analitis, A., Zeka, A., Tobias, A., Nunes, B., Alahmad, B., Armstrong, B., Forsberg, B., Pan, S.-C., Íñiguez, C., ... Li, S. (2021). Global, regional, and national burden of mortality associated with non-optimal ambient temperatures from 2000 to 2019: A three-stage modelling study. *The Lancet Planetary Health*, 5(7), e415–e425.

³⁸Intergovernmental Panel on Climate Change. (2018). *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Cambridge University Press.

³⁹Eckelman & Sherman, op. cit. note 16; Steenmeijer, M. A., et al., op. cit. note 20; Howes, M.-J., Quave, C., Collemare, J., Tatsis, E., Twilley, D., Lulekal, E., Farlow, A., Li, L., Cazar, M.E., Leaman, D. J., Prescott, T. A. K., Milliken, W., Martin, De Canha, M. N., Lall, N., Qin, H., Walker, B. E., Vásquez-Londoño, C., ... Nic Lughadha, E. (2020). Molecules from nature: Reconciling biodiversity conservation and global healthcare imperatives for sustainable use of medicinal plants and fungi. *Plants People Planet*, 2, 463–481.

²²Macpherson, C. C. (2014). Climate change matters. *Journal of Medical Ethics*, 40(4),

288–290; Thiel, C., & Richie, C. (2022). Carbon emissions from overuse of U.S. health care: Medical and ethical problems. *Hastings Center Report*, 52(4), 10–16; Kurth, A., & Potter, T. (2022). The public health crisis is planetary—and nursing is crucial to addressing it. *American Journal of Public Health*, 112(5), S259–S261.

²³Powers, M., & Faden, R. (2006). *Social justice: The moral foundations of public health and health policy*. Oxford University Press; Ruger, J. P. (2010). *Health and social justice*. Oxford University Press.

²⁴Powers & Faden, op. cit. note 23; Nussbaum, M. (2000). *Women and human development: The capabilities approach*. Cambridge University Press; Venkatapuram, S. (2011). *Health justice: An argument from the capabilities approach*. Polity Press.

²⁵Ruger, J. P. (2004). Health and social justice. *Lancet*, 364(9439), 1075–1080.

²⁶Daniels, N. (2008). *Just health: Meeting health needs fairly*. Cambridge University Press.

²⁷Powers & Faden, op. cit. note 23; Shue H. (1996). *Basic rights: Subsistence, affluence, and U.S. foreign policy*. Princeton University Press.

²⁸Ruger, op. cit. note 23; Crisp, R. (2003). Equality, priority, and compassion. *Ethics*, 113(4), 745–763.

²⁹Pogge, T. (2002). *World poverty and human rights*. John Wiley & Sons.

water.⁴⁰ They use 1.5% of scarce water in the world.⁴¹ Water insecurity and scarcity increase the likelihood of water and hygiene-related illnesses.⁴² Air pollution causes respiratory diseases and deleterious impacts on soil and water, which, in turn, affect crop yields and food security.⁴³ Biodiversity loss affects food production, mental health, and the spread of infectious diseases.⁴⁴

Given the strong connection between the environment and human health, health and social justice require governments to ensure their healthcare systems not only create equal access to high-quality healthcare and services but also do so in ways that minimise environmental harms that negatively impact human health and health equity. Both are necessary to ensure sufficient population health. The backlog, however, means that many people's access to health care is hindered, particularly those least advantaged. Delaying and cancelling routine primary and preventive care, mental health care, and time-sensitive elective surgeries such as cancer or transplant surgeries leads to preventable morbidity—worsening quality of life from living longer in pain or deterioration in a given condition—and/or premature mortality.⁴⁵ Within these backlogs are underlying and substantial inequities in wait times. The UK National Health Service backlog, for example, is disproportionately affecting England's most deprived, who are nearly twice as likely to wait more than a year for treatment relative to those living in affluent areas.⁴⁶

As such, governments have a responsibility as a matter of health and social justice to, at a minimum, clear the backlog of anyone for whom waiting is generating preventable morbidity and premature mortality that is causing them to live a life below decent quality and/or will lead them to die before reaching a normal lifespan. More demanding, it could be argued that backlogs should be cleared of anyone for whom waiting causes them to live a life below high-quality and/or will lead them to die before reaching an optimal lifespan. In clearing the backlogs, governments should give some priority to reducing wait times for those who are considered systematically disadvantaged.

However, ensuring sufficient health demands healthcare systems create and maintain equal access, *while* minimising environmental harms that threaten human health and health equity. To fully uphold their duties of health and social justice, governments should thus not only address their COVID-induced backlogs in ways that give some priority to those who are least advantaged but also do so with minimal environmental impact. Concerningly, many of the strategies to expand healthcare activity during the pandemic recovery will not

achieve that outcome and will serve to further progress the environmental crisis. For example, increasing staffing and performing elective surgeries at a higher rate will lead to substantial waste production and greenhouse gas emissions through energy consumption for heating, ventilation, and air conditioning and use of inhalation anaesthetics.⁴⁷ Both products have significant negative environmental effects such as global warming and harm to wildlife and ecosystems. Plastic waste is the main cause of entanglement of animals and marine life, resulting in their injury and mortality.⁴⁸ Hazardous waste can kill animals and plants in a contaminated area and/or limit the ability of an ecosystem to survive.⁴⁹

It could be argued that healthcare utilisation decreased during the COVID-19 response, reducing many healthcare systems' environmental impacts. As such, increasing healthcare activity during the COVID-19 recovery will not result in an *overall* increase in harm to the environment. It will yield roughly the same amount of environmental damage as healthcare activity would have, had it not been interrupted by the pandemic. That means it is permissible to clear the backlog without consideration of the environment because no extra harm will be caused by doing so. Even if that were true (which is debatable),⁵⁰ doing so is inconsistent with upholding the duty to equitably deliver health care with minimal environmental harm. Clearing the backlog with no net increase in environmental damage does not reduce (let alone minimise) the sector's environmental impact.

3 | HOW SHOULD THE RESPONSIBILITY BE UPHELD?

3.1 | Prioritising people and nature

If governments are to uphold their duty, they should prioritise policy options to eliminate the backlog that have no or low environmental impact. As previously noted, governments are adopting three main strategies to catch up on their healthcare backlogs: increasing workforce and staffing; improving productivity, management of capacity and demand; and investing in capital, infrastructure, and new models of care.⁵¹ A range of policy options are being implemented to

⁴⁰Jameton, A., & Pierce, J. (2001). Environment and health: 8. Sustainable health care and emerging ethical responsibilities. *Canadian Medical Association Journal*, 164(3), 365–369.

⁴¹Capon, A., et al., op. cit. note 20.

⁴²Schrecker, T., Birn, A.-E., & Aguilera, M. (2018). How extractive industries affect health: Political economy underpinnings and pathways. *Health & Place*, 52, 135–147.

⁴³Manisalidis, I., Stavropoulou, E., Stavropoulos, A., & Bezirtzoglou, E. (2020). Environmental and health impacts of air pollution: A review. *Frontiers in Public Health*, 8.

⁴⁴Sala, O. E., Meyerson, L. A., & Parmesan, C. (2009). *Biodiversity change and human health: From ecosystem services to spread of disease*. Island Press.

⁴⁵Krelle, H., Barclay, C., & Tallack, C. (2021). *Waiting for care: Understanding the pandemic's effects on people's health and quality of life*. <https://www.health.org.uk/publications/long-reads/waiting-for-care>

⁴⁶Ibid.

⁴⁷Friederich, H. J., Sperna Weiland, N. H., van der Eijk, A. C., & Jansen, F. W. (2019). Steps for reducing the carbon footprint of the operating room. *Ned Tijdschr Geneeskde*, 163; Rizan, C., Steinbach, I., Nicholson, R., Lillywhite, R., Reed, M., & Bhutta, M. F. (2020). The carbon footprint of surgical operations: A systematic review. *Annals of Surgery*, 272(6), 986–995.

⁴⁸Li, L., Zuo, J., Duan, X., Wang, S., Hu, K., & Chang, R. (2021). Impacts and mitigation measures of plastic waste: A critical review. *Environmental Impact Assessment Review*, 90, 106642.

⁴⁹Environmental Protection Agency. (2023). *Health and ecological hazards caused by hazardous substances*. <https://www.epa.gov/emergency-response/health-and-ecological-hazards-caused-hazardous-substances>.

⁵⁰First, it is possible that reducing the backlog will take more healthcare activity than if patients had been treated as normal during the years of the pandemic response because waiting for diagnosis or treatment will have caused many conditions to deteriorate. Second, policies to increase the rate of healthcare activity to clear the backlog may mean healthcare is delivered with a larger environmental footprint than it previously was. Delivering the same amount of healthcare may come with a higher environmental impact, for example, if it entails flying in health workers from overseas.

⁵¹van Ginneken, E., et al., op. cit. note 1.

advance each strategy, and I will show that they fall into four categories: (A) policy options that minimise environmental harms, (B) policy options that alter the healthcare built environment in ways that increase environmental harms, (C) policy options that alter staff and patient travel (and healthcare delivery) in ways that increase environmental harms, and (D) policy options that alter healthcare delivery in ways that generate environmental harms (see Table 1). Here and in Table 1, the focus is on policy options identified in the World Health Organisation report because those options are being enacted across many high-income countries worldwide to reduce the backlog.⁵²

Some policy options being enacted are consistent with sustainable healthcare and thus comprise options that minimise environmental harms (category A). Sustainable healthcare minimises the impact of healthcare delivery on the environment while providing the best quality care and promoting healthy living.⁵³ Core components include but are not limited to: low emissions models of care; low emissions healthcare buildings and spaces that also minimise their impact on biodiversity, habitats, and animal migration; low emissions transport; reducing, reusing, and recycling waste; and procurement of low emissions goods and services, including energy, pharmaceuticals, medical equipment, office equipment, and food.⁵⁴ They thus seek to reduce the greenhouse gas emissions and waste generated by health care, which, as previously mentioned, are each linked to particular negative impacts on the environment. Examples of policy options in category A include investing in primary care and community care and expanding home care, telehealth, and virtual models of care. They each comprise low emissions models of care. The former helps minimise the healthcare sector's environmental impact by reducing the number of people who get very sick and require hospital care. Growing evidence shows healthcare system emissions largely come from hospitals and pharmaceuticals. For instance, hospital emissions comprise 36% of total healthcare sector emissions in the United States, 44% in Australia, and 24% in Canada.⁵⁵ Telehealth, home care, and virtual models of care reduce the healthcare sector's environmental footprint by decreasing its transport-related emissions.

It could be argued that primary and community care and telehealth each have environmental impacts themselves, and this is true.⁵⁶ They generate greenhouse gas emissions, solid waste, and e-waste. Inadequate resources to effectively handle e-waste leads to the pollution of local environments, creating significant health

risks.⁵⁷ Ideally, investments in primary and community care and telehealth would, therefore, incentivise sustainable practices in both areas. In telehealth, for example, that could mean prioritising initiatives that reduce the environmental impacts of the devices used, data storage, and digital health communications infrastructures.

Another policy option in category A is implementing demand-side prioritisation policies, which can entail 'using clinical validation of waiting lists or quality assurance of referrals to avoid adding patients to the waiting list with little or no expected benefits'.⁵⁸ Low emissions models of care also entail eliminating low value healthcare such as redundant tests, procedures, and treatments; care that lacks evidence; and care where the cost of intervention is not proportionate to benefits.⁵⁹ Eliminating such care eliminates the environmental impacts associated with it.

In contrast, other policy options have clear potential to harm the environment. Upgrading healthcare infrastructure and facilities (category B) encompass undertaking capital works. For instance, the UK National Health Service and the Australian states of Victoria and Queensland have each announced multibillion dollar hospital expansions as part of their COVID-19 recovery programmes.⁶⁰ The design and construction of new or expanded hospitals and other healthcare buildings can have significant environmental effects. Healthcare buildings may be constructed using ozone depleting substances, high carbon products and materials, and scarce water. When they are built on sites that involve a change in land use, they can destroy lands that provide critical ecosystem services, contribute to biodiversity loss, and/or destroy animal habitats. They are commonly designed in ways that generate substantial greenhouse gases emissions through their operations.⁶¹ Having more and/or larger healthcare buildings will then ultimately increase a given healthcare sector's total environmental impact relative to before the pandemic recovery.

It could be argued that net zero healthcare policies mean capital works in the healthcare sector must adhere to such standards and will, therefore, minimise their environmental impact. However, meeting such standards does not necessarily rule out any greenhouse emissions or other environmental harms like biodiversity loss or habitat destruction.⁶² It is also important to recognise that, at present, most healthcare systems globally are not building net zero or low emissions healthcare facilities. At the national level, 50 countries

⁵²van Ginneken, E., et al., op. cit. note 1; Gordon, op. cit. note 12; Health Canada announces Coalition for Action for Health Workers [press release], 2022. <https://www.canada.ca/en/health-canada/news/2022/11/health-canada-announces-coalition-for-action-for-health-workers.html>

⁵³Schroeder, K., Thompson, T., Frith, K., & Pencheon, D. (2013). *Sustainable healthcare*. Wiley-Blackwell.

⁵⁴National Health Service, op. cit. note 16; Schroeder, K., et al., op. cit. note 53; Hoban, E., Haddock, R., & Woolcock, K. Deeble Issues Brief No. 41. (2021). *Transforming the health system for sustainability: Environmental leadership through a value-based health care strategy*. Australian Healthcare and Hospitals Association.

⁵⁵Malik, A., et al., op. cit. note 16; Eckelman & Sherman, op. cit. note 16.

⁵⁶Prasad, P. A., Joshi, D., Lighter, J., Agins, J., Allen, R., Collins, M., Penna, F., Velletri, J., & Thiel, C. (2022). Environmental footprint of regular and intensive inpatient care in a large US hospital. *The International Journal of Life Cycle Assessment*, 27(1), 38–49.

⁵⁷Thompson, M. (2021). The environmental impacts of digital health. *Digital Health*, 7.

⁵⁸van Ginneken, E., et al., op. cit. note 1, p. 18.

⁵⁹National Health Service, op. cit. note 16; Schroeder, K., et al., op. cit. note 53; Hoban, E., et al., op. cit. note 54.

⁶⁰PM confirms £3.7 billion for 40 hospitals in biggest hospital building programme in a generation [press release], 2020. <https://www.gov.uk/government/news/pm-confirms-37-billion-for-40-hospitals-in-biggest-hospital-building-programme-in-a-generation>; Massive \$9.78 billion investment in new hospitals and new beds in record health budget [press release], 2022. <https://statements.qld.gov.au/statements/95474>; Victorian Budget 2022–2023 Pandemic repair plan: Building and upgrading Victoria's hospitals [press release], 2022. <https://www.budget.vic.gov.au/building-and-upgrading-victorias-hospitals>

⁶¹National Health Service, op. cit. note 16.

⁶²Net zero means that greenhouse gases are still being emitted, but the emissions are offset through some action taken. Such offsetting (e.g., carbon offsetting) remains contentious and has the potential to generate injustices.

TABLE 1 Examples of ways to address the backlog and their different environmental impacts.^a

Government Strategy	Policy Options	Type of Environmental Impact ^b
Increasing the supply of workforce and staffing	(1) Introducing new professional roles and competencies	D
	(2) Flexible recruitment and training	C
	(3) Improving work conditions and offering mental health support	D
	(4) Improving compensation	D
Improving productivity, capacity management, and demand management	(5) Separating planned and unplanned care	D
	(6) Extending hours of care delivery	D
	(7) Outsourcing more care to the private sector	D
	(8) Introducing financial incentives to clear backlog	D
	(9) Introducing maximum waiting time targets	D
	(10) Expanding access to telehealth services and virtual models of care	A
	(11) Implementing demand-side prioritisation policies	A
	(12) Increasing patient choice	C
	(13) Better spreading patients across available capacity	C
	(14) Exploring the potential of care abroad	C
Investing in capital, infrastructure, and new community-based models of care	(15) Upgrading health infrastructure and facilities	B
	(16) Investing in primary and community care	A
	(17) Expanding digital infrastructure	B
	(18) Expanding home care and rehabilitative capacity	A

^aThe first two columns of this table replicate those in Table 2 in van Ginneken, E., et al., op. cit. note 1.

^bA refers to policy options that minimise environmental harms.

B refers to policy options that alter the healthcare-built environment in ways that increase environmental harms.

C refers to policy options that alter staff and patient travel in ways that increase environmental harms.

D refers to policy options that alter healthcare delivery in ways that generate environmental harms.

have pledged to transition to sustainable healthcare.⁶³ Within those and other countries, state health departments, local health departments, and individual healthcare organisations are also working to make the healthcare they deliver more sustainable.⁶⁴ But there is a long way to go.

Flexible recruitment policies largely seem to mean international recruitment and are a policy option that falls into category C. For instance, Canada has introduced measures to facilitate the entry of foreign national physicians as permanent residents through Canada's federal economic immigration programmes.⁶⁵ The Victorian government in Australia has announced it is recruiting up to 2000 ex-

patriate and international healthcare workers through a global workforce recruitment drive.⁶⁶ Such measures have both global equity and environmental implications. They will likely serve to exacerbate the medical brain drain from low- and middle-income countries. Previously, government policies that were specifically designed to encourage medical immigration have been linked to worsening the brain drain. For example, in 2001, South Africa's High Commissioner to Canada publicly rebuked Canada for recruiting so many doctors away from its struggling healthcare system.⁶⁷ In the context of a pandemic recovery, reducing the health workforce could have severe effects on affected countries, worsening their populations' access to healthcare in ways that cause individuals to live a life

⁶³Wise, J. (2021). COP26: Fifty countries commit to climate resilient and low carbon health systems. *BMJ*, 375, n2734.

⁶⁴Health Care Without Harm. (2023). *New race to zero milestone: 70 health care institutions from 25 countries commit to net-zero*. <https://greenhospitals.org/news/new-race-zero-milestone-70-health-care-institutions-25-countries-commit-net-zero>

⁶⁵Health Canada announces Coalition for Action for Health Workers [press release], op. cit. note 52.

⁶⁶Victorian Budget 2022-2023 Pandemic repair plan: COVID catch-up [press release], 2022. <https://www.budget.vic.gov.au/covid-catch>

⁶⁷McIntosh, T., Torgerson, R., & Klassen, N. (2007). *The ethical recruitment of internationally educated health professionals: Lessons from abroad and options for Canada*. Canadian Policy Research Networks Inc.

below a decent quality and/or length.⁶⁸ Flexible recruitment will also entail thousands of international flights when people relocate as well as every time they return home to visit their families. Similarly, policy options of exploring care abroad, spreading patients across available capacity, and increasing patient choice of hospitals involve more travel by car or by plane. That means the healthcare sector's greenhouse gas emissions will increase because more staff and patient travel is involved in healthcare delivery than before the pandemic recovery.

Policy options in categories C and D each serve to alter healthcare delivery in ways that elevate its rate and harm the environment. For instance, increasing the number of healthcare workers, extending the hours of healthcare delivery, and outsourcing to the private sector will boost the rate at which elective procedures can be done. Those procedures will produce waste, greenhouse gas emissions, air pollution, as well as rely on material extraction to generate the medical supplies to carry them out.⁶⁹ Like greenhouse gas emissions, material extraction is linked to global warming. It also has further negative effects on the environment: air pollution, global water stress, and land-related biodiversity loss.⁷⁰ Policy options in category D thus generate environmental harms but may not yield more overall harm than if the same amount of healthcare had been delivered at the usual rate. Greater total harm will occur if it takes more healthcare activity to address the backlog than it would have to treat patients during the pandemic because their conditions have deteriorated. Given policy options in category A minimise environmental harms, whereas those in categories B–D result in environmental harms, implementing the former comprises the best way to reduce the backlog with the least environmental impact. To advance health and social justice, category A policy options should be enacted as a priority by governments during the pandemic recovery and in ways that reduce inequities in access to health care. For instance, by making greater investments in deprived areas.

3.2 | Making hard choices

Although governments should prioritise policy options in category A, investing in and expanding primary and community care, home care, and telehealth services will not be sufficient to address the backlog, particularly in relation to elective procedures. Elective procedures typically require face-to-face care in hospitals or out-patient clinics. Policy options in categories B–D are thus necessary to address the massive backlog of elective procedures. This leaves us with an ethical dilemma.

Enacting policy options in categories B–D to reduce the backlog comes at the cost of worsening the health of current patients in other countries (by exacerbating the brain drain) and generating environmental damage that will fuel the environmental crisis, which, in turn, will generate preventable morbidity and premature mortality and worsen health inequities in the present and future, particularly for the most vulnerable. However, refraining from enacting these policies will deny many current patients in a given country the freedom to avoid preventable morbidity and premature mortality and cause them to live a life below a decent quality and/or hasten their deaths. Assuming governments design policy options in categories B–D to give some priority to the systematically disadvantaged, their implementation will help reduce health inequities within countries. Without such policies, those inequities will remain.

From a health and social justice perspective, neither enacting policy options in categories B–D to reduce the backlog nor refraining from enacting them to protect the environment is ideal. Instead, what is needed is a middle-ground position that better balances the interests of people and nature. Achieving that balance requires governments to enact policy options in categories B–D while undertaking their best efforts to reduce those options' environmental impacts. The aim is to implement policy options to clear the backlog at the least environmental cost that is achievable given relevant background conditions in a particular country context.⁷¹ To help identify what comprises a middle-ground position, a key consideration for governments going forward during the COVID-19 recovery is then: *What combination of ramping up healthcare activity using policies that harm the environment and of accelerating the transition to sustainable healthcare equitably reduces the backlog with the least environmental cost achievable in their country?* (Here, it is assumed category A policy options are enacted. Category B–D policy options are only enacted to address the remainder of the backlog that category A policy options do not).

One part of the equation is: How can healthcare activity be expanded above pre-pandemic levels to equitably address the backlog using policy options in categories B–D? That means identifying which set of policy options ramps up healthcare activity sufficiently to clear the backlog, while reducing inequities in wait times and causing no or minimal negative impact on healthcare access in other countries. Although none of the policy options in Table 1 are clearly geared to reduce inequities in wait times, they can be supplemented by equity-oriented policies. For instance, the UK government has mentioned giving priority on waitlists to those from England's most deprived populations and areas.⁷² For those environmentally harmful policies identified as best able to equitably reduce the backlog, we also need

⁶⁸Such policies have high potential to violate governments' obligations of global health justice. They would be a clear case of where wealthy countries engage in a practice or policy that foreseeably makes the health of those in poorer countries worse than it would otherwise be—specifically, by making it harder than it would otherwise be to realize a sufficient level of health.

⁶⁹Rizan, op. cit. note 47.

⁷⁰Neslen, A. (2024). Extraction of raw materials to rise by 60% by 2060, says UN report. *The Guardian*. <https://www.theguardian.com/environment/2024/jan/31/raw-materials-extraction-2060-un-report>

⁷¹Relevant background conditions refer to factors that negatively affect healthcare systems' capacity to minimise their environmental impacts and that are difficult to alter in the short-term. For example, evidence shows how important the broader energy system is to minimising healthcare emissions (see Pichler, P.-P., Jaccard, I. S., Weisz, U., & Weisz, H. (2019). International comparison of health care carbon footprints. *Environmental Research Letters*, 14(6), 064004). In some countries, the domestic energy system may thus limit how far their healthcare's environmental impacts can be reduced during the pandemic recovery.

⁷²NHS Providers. (2021). *Health inequalities: A core concern*. <https://nhsproviders.org/health-inequalities-a-core-concern>

information about their costs. Costs would be in terms of the environmental damage (i.e., greenhouse gas emissions, waste generation, air pollution, scarce resource use, biodiversity loss, habitat destruction) and its associated negative health impacts on existing and future individuals.

The second part of the equation is: What can be done to reduce the environmental impacts of the policy options identified as best able to equitably reduce the backlog? That means determining which measures to accelerate the transition to sustainable health care are best able to reduce those options' specific environmental costs. Given that elective procedures typically occur in hospitals and out-patient clinics, these settings will be essential to target with policies and practices to cut their particular environmental impacts. Examples include having policies in place that require new and existing healthcare buildings to be green or regenerative⁷³ and/or that require steps to reduce or minimise the emissions and waste generated by surgeries and out-patient care. That is because waste and greenhouse gas emissions are the two main sources of surgery's harmful environmental impacts.⁷⁴ Possible steps include (but are not limited to) increasing the use of renewables, choosing reusable or reprocessed products, and recycling.⁷⁵ By investigating both parts of the equation, governments can better determine which combination of policy options to equitably increase healthcare activity and policy options to accelerate the transition to sustainable healthcare advance the interests of current patients at the lowest possible expense to the interests of existing and future people and the environment.

4 | LIMITS TO THE RESPONSIBILITY?

It could be argued that limits should apply to governments' duty to ensure equal access to health care and services with minimal environmental harm, which ultimately mean that accelerating the transition to sustainable health care is not required in the backlog context. A claim could be made that limits to the duty should exist when minimising environmental harm comes at the expense of current patients' access to health care and services that they need to avoid preventable morbidity and premature mortality. That is because saving patients is the core business of healthcare systems and their primary duty of social justice.

Such limits imply that minimising environmental harm when clearing the backlog should not obstruct waitlisted patients' access to health care and services in ways that generate preventable morbidity and premature mortality. Accelerating the transition to sustainable health care should then not come at the cost of slowing the rate at which the backlog is cleared below the rate at which it otherwise would have been cleared. It could further be purported that this means we should equitably ramp up healthcare activity *without*

accelerating the transition to sustainable health care. That is because *any* acceleration of the transition to sustainable health care will result in a slower clearing of the backlog than is possible by diverting at least some (if not more) current resources away from ramping up healthcare activity.⁷⁶ Even if accelerating to sustainable healthcare saves money and other resources in the medium or long-term, right now it will take at least some resources away from clearing the backlog.

Returning to the claim that minimising the healthcare sector's environmental impact should not come at the expense of current patients' access to health care and services. Does it hold in the context of the backlog? (I do not assess whether such limits should apply beyond the backlog context but highlight it as an important area of future inquiry.) The moral concern that doing so could come at the expense of treating current patients reflects a desire to save identifiable, endangered lives that are salvageable, regardless of the costs. As Charles Fried describes, 'the apparent anomaly that we are prepared to expend far greater resources saving the lives of known persons in present peril, than we are prepared to devote to measures that will avert future dangers to persons, perhaps unknown and possibly not yet even in existence'.⁷⁷ That moral impulse is at the core of the Rule of Rescue, which calls for saving identifiable lives in immediate danger, even at great expense.⁷⁸

Typically, the Rule of Rescue has been discussed in relation to resource allocation dilemmas between treatment and prevention or where the cost of treating certain identifiable patients is extremely high, thereby generating significant opportunity costs for the treatment of other patients by the healthcare system.⁷⁹ However, the same moral impulse also seems at the core of placing the aforementioned limit on the duty to ensure sufficient health with minimal environmental harm. We want to ensure preventable morbidity and premature mortality is avoided for current patients, even at the expense of preventing climate-related harms to the health of existing and future individuals.

So when is it morally justified for resource allocations to follow the Rule of Rescue? Some scholars are prepared to justify allocative

⁷⁶Existing evidence shows certain sustainable healthcare measures will reduce costs but others will increase them, at least in the short term (see Kubicki, M. A., McGain, F., O'Shea, C. J., & Bates, S. (2015). Auditing an intensive care unit recycling program. *Critical Care and Resuscitation*, 17(2), 135–140; McGain, F., McAlister, S., McGavin, A., & Story, D. (2010). The financial and environmental costs of reusable and single-use plastic anaesthetic drug trays. *Anaesthesia Intensive Care*, 38(3), 538–544). There are also often upfront costs for sustainable healthcare measures that take time to be recouped, for example, constructing a green healthcare building (see Green Building Council of Australia and New Zealand Green Building Council. (2018). *The case for sustainable healthcare*. <https://new.gbca.org.au/news/thought-leadership/case-sustainable-healthcare-gbca-nzgbca>). If some measures increase costs and others decrease costs, it is possible that they may balance out in the short term. But it seems more likely that the transition to sustainable healthcare will divert at least some resources in the short term that will be recouped in the medium to long term.

⁷⁷Fried, C. (1970). *An anatomy of values*. Harvard University Press, p. 1416.

⁷⁸Largent, E. A., & Pearson, S. D. (2012). Which orphans will find a home? The rule of rescue in resource allocation for rare diseases. *Hastings Center Report*, 42(1), 27–34.

⁷⁹Lübbe, W. (2019). Appeal to the Rule of Rescue in health care: Discriminating and not benevolent? *Med Health Care Philosophy*, 22(1), 53–58; Sinclair, S. (2022). Explaining rule of rescue obligations in healthcare allocation: Allowing the patient to tell the right kind of story about their life. *Medicine, Health Care and Philosophy*, 25(1), 31–46; Largent & Pearson, op. cit. note 78.

⁷³Guenther, R. (2017). Transforming hospitals: Building restorative healthcare. *Architectural Design*, 87(2), 128–133.

⁷⁴Friedericy, H. J., et al., op. cit. note 47; Prasad, P. A., et al., op. cit. note 56.

⁷⁵Ibid.

decisions in line with the Rule of Rescue, albeit under certain circumstances.⁸⁰ Others say we should never apply the Rule of Rescue as normative principle in resource allocation decisions.⁸¹ If the latter position holds, then the imperative to follow it cannot be used as an ethical justification for setting limits to the duty to ensure sufficient health with minimal environmental harm. But what if we assume a more moderate position? If the Rule of Rescue should only be followed under certain circumstances, perhaps the backlog context is one such circumstance where it should be followed.

Mark Sheehan argues that government policymakers should follow the Rule of Rescue in resource allocation when their agent-relative obligation to do so overrides their agent-neutral obligation to do the most good with the government resources at their disposal.⁸² However, he purports there is no formula for deciding when the agent-relative obligation wins out. Which (if any) of the two obligations takes precedence depends on the circumstances. When arguments exist in favour of saving lives and in favour of preventing harms, neither obligation is given up all together. In such cases, both obligations need to be considered, rather than favouring one over the other.⁸³

Emily Largent and Steven Pearson subsequently took the position that, when allocating resources, policymakers need to consider the Rule of Rescue in relation to its opportunity costs in order to avoid undue burden on others.⁸⁴ Following an unrestrained Rule of Rescue is unsustainable. They affirm that it is only permissible to follow the Rule of Rescue when the benefits gained 'appropriately balance' the opportunity costs incurred. An 'appropriate balance' is defined as ensuring the benefits to the weakest outweigh costs to others.⁸⁵

I now turn to what their accounts imply for the question: Should the Rule of Rescue be followed in the backlog context? According to Sheehan, the Rule of Rescue should be followed in situations where agent-relative obligations outweigh agent-neutral obligations.⁸⁶ However, I contend that, in the backlog context, arguments in favour of solely ramping up healthcare activity (saving current lives) do not outweigh arguments for some acceleration of the transition to sustainable health care (preventing harms to current and future individuals). That is because each action relates to addressing a 'slow onset, extensive crisis'⁸⁷ that negatively affects health and health equity globally. Saving lives during the pandemic recovery and preventing more health-related harms during the on-going environmental crisis are *both* pressing matters. As such agent-relative *and* agent-neutral obligations need to be considered, rather than

following the Rule of Rescue alone and allocating resources solely to ramp up healthcare activity. Here, it is assumed the suffering and death of persons in the future are no less real and equally morally significant as the suffering and death of persons in the here and now, which has previously been argued to be a reasonable assumption.⁸⁸

Allocating resources solely to equitably clear the backlog arguably does not comprise an 'appropriate balance' either. It benefits current patients, including those considered systematically disadvantaged, with opportunity costs for current and future individuals across the world, especially the systematically disadvantaged. That is because sustainable healthcare helps mitigate climate change, whose effects disproportionately burden the worst-off.⁸⁹ If we again assume that the suffering and death of persons in the present and future are equally morally significant, the benefits to current patients don't clearly outweigh the costs to others. Perhaps, it is possible to justify giving priority consideration to or rescuing some—though not all—patients on the waitlist—namely, those for whom treatment would generate 'dramatic improvements' and have a significant impact on length and quality of life.⁹⁰ The benefits to those patients may outweigh the opportunity costs to others. Yet rescuing them could likely be achieved by allocating some resources to clear the backlog of such patients, while still allocating some resources to accelerate the transition to sustainable health care.

In sum, neither account strongly supports applying the Rule of Rescue—at least not on its own—to guide resource allocation in the backlog context. At most, the Rule of Rescue may put some limits on the ethical responsibility to minimise environmental harm when clearing the backlog. It could require rescuing patients on the waitlist for whom treatment would have a significant impact on length and quality of life but doing so does not necessarily require allocating resources solely to ramping up healthcare delivery.

5 | CONCLUSIONS

Healthcare systems around the world are grappling with COVID-induced backlogs. So far, most governments are responding by enacting policies to expand their healthcare sector activity, without much, if any, consideration of the impact of doing so on the environmental crisis. This paper argued that, as a matter of health and social justice, governments have a responsibility to equitably address the COVID-induced backlogs with minimal environmental damage. It identifies two key actions for governments going forward if they are to uphold that responsibility:

1. Prioritise policy options to address the backlog that are consistent with sustainable health care, such as expanding primary and community care, home care, and telehealth services.

⁸⁰Sheehan, M. (2007). Resources and the Rule of Rescue. *Journal of Applied Philosophy*, 24(4), 352–366; Lübke, op. cit. note 79; Largent & Pearson, op. cit. note 78.

⁸¹Cookson, R., McCabe, C., & Tsuchiya, A. (2008). Public healthcare resource allocation and the Rule of Rescue. *Journal of Medical Ethics*, 34(7), 540–544.

⁸²Sheehan, op. cit. note 80.

⁸³Ibid.

⁸⁴Largent & Pearson, op. cit. note 78, p. 31.

⁸⁵Ibid.

⁸⁶Sheehan, op. cit. note 80.

⁸⁷da Silva, J. (2020). Disaster v crisis? How the nature of the Covid-19 crisis affects our response. <https://resiliencerisinglobal.org/disaster-v-crisis/>

⁸⁸Rennie, S. (2013). Ethical use of antiretroviral resources for HIV prevention in resource poor settings. *Developing world Bioethics*, 13(2), 79–86; Brock, D. W., & Wikler, D. (2009). Ethical challenges in long-term funding for HIV/AIDS. *Health Affairs*, 28(6), 1666–1676.

⁸⁹IPPC, op. cit. note 38.

⁹⁰Largent & Pearson, op. cit. note 78, p. 32.

2. Ramp up healthcare activity using the policy options that are best able to equitably reduce the backlog, while accelerating the transition to sustainable health care in ways that are best able to reduce the specific environmental costs of those policy options.

Ideally, governments would not have to use any policy options that cause more than minimal harm to the environment during the pandemic recovery. Unfortunately, that is not possible if we are to effectively diminish the backlog and thereby avoid many people experiencing reduced quality of life over an even longer period and/or preventable mortality. However, enacting policy options that harm the environment must be paired with an accelerated transition to sustainable healthcare. Our healthcare sectors are facing not only a pandemic recovery but also an on-going and ever-worsening environmental crisis with significant health and health equity ramifications. Government policymaking must take account of both to advance health and social justice.

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