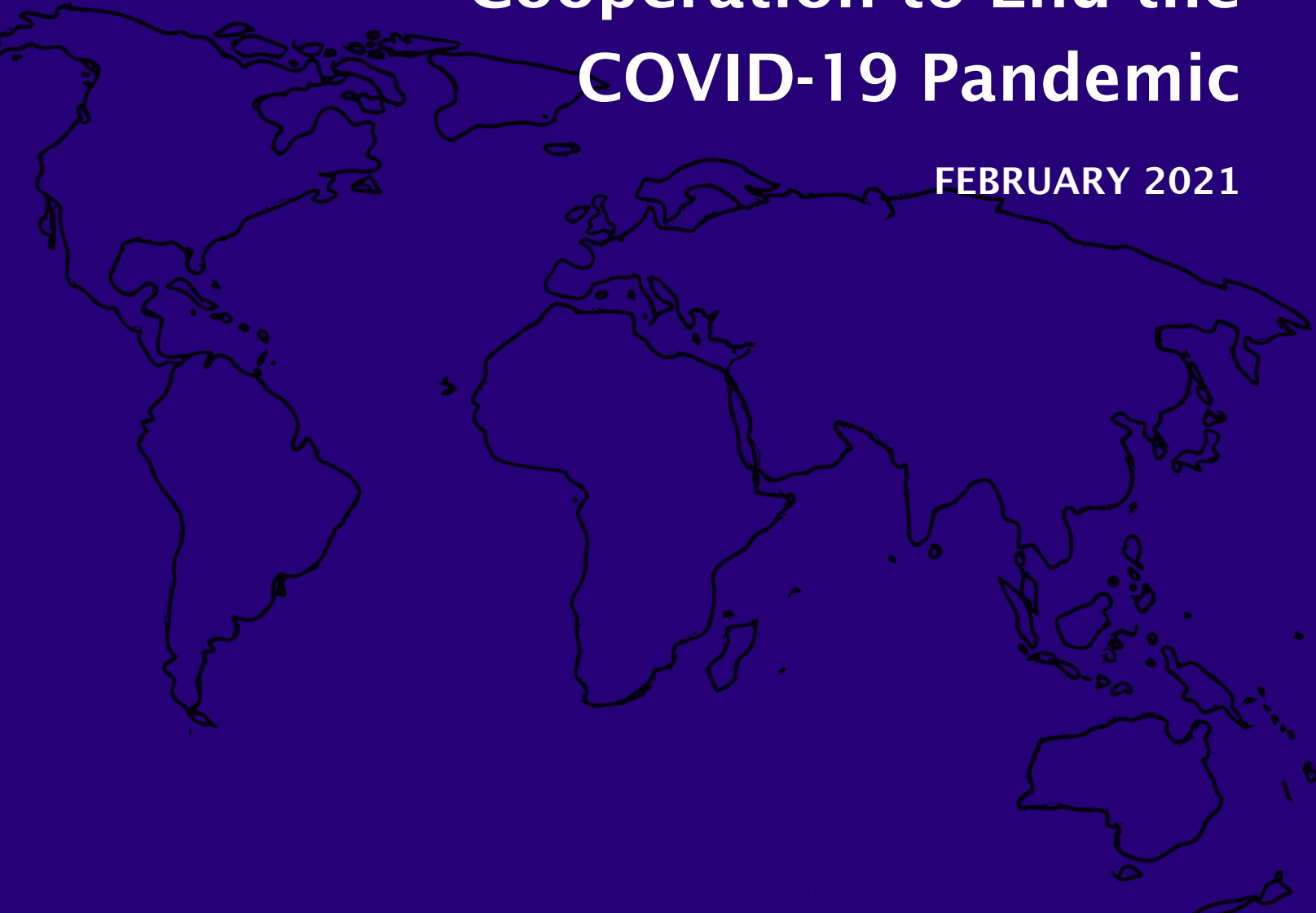


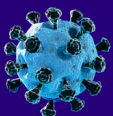
STATEMENT OF THE *LANCET*
COVID-19 COMMISSION

Enhancing Global Cooperation to End the COVID-19 Pandemic

FEBRUARY 2021



The *Lancet* COVID-19 Commissioners, Task Force Chairs and
Members, and Commission Secretariat



THE *LANCET*
COVID-19 COMMISSION

Commissioners and Secretariat

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The following report has been posted online by the Commission Secretariat, and has not been peer-reviewed or published in *The Lancet*, nor in any other journal. This reports intends to bring together expert views on key topics as the COVID-19 pandemic unfolds.

KEY RECOMMENDATIONS FOR 2021

A full year after the onset of the COVID-19 pandemic, the global situation remains acute. The virus continues to surge in many regions of the world. As shown in Table 1, the highest incidence (measured as cases per day per 1 million population) has been in Northern America, Latin America and the Caribbean, and Europe. The lowest incidence regions have been in East Asia and the Pacific and sub-Saharan Africa. Northern Africa and the Middle East and South and Central Asia occupy the middle range of incidence. It is important to note that while these trends have remained fairly consistent since the onset of pandemic, new viral lineages could certainly impact regional incidence going forward.

The prospects for 2021 are highly uncertain. On the positive side, several vaccines are now being deployed and these offer protection against severe illness and death and may reduce transmission of the disease. Yet global vaccination coverage varies worldwide, and it will take well over one year, and possibly several years, to achieve high levels of immunization coverage worldwide.

Global vaccination coverage is critical to suppress the pandemic. However, the duration of vaccine-induced immunity and the efficacy of the new vaccines remain uncertain. Moreover, the virus continues to mutate, with an apparent increased transmissibility of the virus in new lineages, most worryingly, 501Y.V2; therefore, long-lasting suppression of the virus globally may require booster shots for new lineages. An equitable, rapid, and extensive global vaccination campaign requires a system of global financing through the International Monetary Fund (IMF), World Bank, and the multilateral development banks to finance the Access to COVID-19 Tools (ACT) Accelerator and COVAX to expand vaccination to all.

Additionally, multiple humanitarian crises are expanding, including destitution and hunger and many human rights issues. The World Food Programme (WFP) warns of the imminent risk of famine in as many as a dozen countries. Low- and middle-income countries (LMICs) lack the fiscal means to confront these crises and special efforts must be made to ensure that all people in all countries are included in recovery efforts. It is especially urgent that more financial resources be directed to the LMICs to meet urgent and growing humanitarian needs and to direct transformative recovery for a green future.

The year 2021 must restart the stalled processes of global cooperation, first to stop the pandemic, and second, to enable a transformative, inclusive, green

and digital recovery to fulfill the globally agreed-upon Sustainable Development Goals (SDGs).

We offer the following priority recommendations for 2021.¹

1. **Strengthening the multilateral system to suppress the pandemic:** The full “firepower” of the multilateral system – including the World Health Organization (WHO), United Nations Environment Programme (UNEP), the United Nations Framework Convention on Climate Change (UNFCCC), and the other agencies of the United Nations (UN) system; the IMF, the World Bank, and other multilateral development banks; and other regional bodies – should be directed towards the multiple COVID-related crises. These vital organizations should be provided with expanded political support and financial resources by their member states. The IMF should be enabled by its shareholders to move rapidly in 2021 to provide substantial additional financial support to countries as they tackle the health emergency and seek to build a sustained and inclusive economic recovery. IMF shareholders should consider a general Special Drawing Rights (SDR) allocation. Multilateral development banks and other international financial institutions should similarly be empowered to expand their development financing, with loan conditions suitably adjusted to meet the urgent needs of their members. As global cooperation is essential to ensure global vaccination and other efforts, we welcome the return of the United States to the WHO, the Paris Agreement, and other UN processes, and urge active participation in COVAX by all countries to ensure universal and timely access to vaccines.¹
2. **Enhancing global real-time information systems:** The UN agencies, in cooperation with national governments, academia, and business, should enhance real-time global monitoring of the pandemic, its shifting features, and its social and economic fallout, especially relating to the SDGs. Aspects include virus mutations and disease transmission, health system needs, vaccine deployment, and the dynamics of hunger, poverty, population displacement, children out of school, unemployment, mental health problems, violence against women and children, lack of access to

¹ The work of the Commission has four main themes: (1) Recommendations on how to best suppress the epidemic; (2) Addressing the humanitarian crises arising from the pandemic; (3) Addressing the financial and economic crises resulting from the pandemic; (4) Rebuilding an inclusive, fair and sustainable world. The Commission's work does not cover the issue of medical treatment protocols, other than in regard to their financing and access.

digital services, and other dimensions of acute distress. Timely and high-quality information are key to informed decision making at the national and international levels. This disaggregated data must be used to inform policy decisions for COVID-19 relief, the transformatice, inclusive green and digital recovery, and beyond.

3. Deploying Nonpharmaceutical Interventions (NPIs):

All countries should urgently deploy the highly effective measures demonstrated powerfully by the successes of the East Asia and Pacific region. These NPIs include border restrictions and other limits on movement, comprehensive testing and tracing, wearing face masks and using personal protective equipment (PPE) as necessary, physical distancing, early isolation and quarantine of individuals known or suspected to be infected, safe and effective ventilation and filtration systems for indoor environments like workplaces and schools, working with local communities to build trust and meet the needs of vulnerable groups, and supporting health-promoting behaviors through rules and effective communication that make the behaviors easier to do. Measures restricting mobility and commerce (“shutdowns” or “lockdowns”) are temporary measures to reduce high rates of community transmission, relieve pressure on healthcare systems, and give vital time for the scaling up of NPIs, and can be eased once community transmission is low enough to be contained by the other NPIs. Many LMICs need urgent international financial, logistical, and capacity-building support to scale up NPIs.

4. Ensuring the rapid and equitable global deployment of vaccines:

The emergence of new lineages of the virus underlines the necessity to suppress the pandemic in every country and region. As declared by the UN, “Nobody is safe until everyone is safe.”² The global sharing of vaccines and therapeutics should be guided by global cooperation through the COVAX facility rather than dominated by a few powerful countries. We call on the WHO World Health Assembly to convene urgently to update its recommendations on the fair and equitable distribution of vaccines in light of the arrival of effective vaccines, the needs of vulnerable populations, and the goal of maximum coverage, including the urgent scale-up of production and distribution of vaccines in LMICs. This scaling up of local production and manufacturing will require urgent global financing. Governments from all regions should agree to implement the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Property

Rights (TRIPS) waiver in relation to prevention, containment, or treatment of COVID-19 for the rapid scale-up of production and distribution of vaccine and therapeutics.² Additionally, there must be an accompanying transfer of technological knowledge for production and manufacturing of vaccines. This is in line with the globally agreed target of SDG 3.8, calling for “access to safe, effective, quality, and affordable essential medicines and vaccines for all.”³ Global vaccine uptake is also critical to ensuring global economic recovery, as each country’s economic success depends not only on suppressing the epidemic at home, but also on the success of its global trading partners in suppressing the pandemic.

5. Responding to urgent humanitarian crises and widening inequalities:

COVID-19 infection rates, deaths, and economic crises are unequally distributed within and across the world, with many vulnerable groups, including children, the elderly, people suffering from multiple chronic conditions, impoverished populations, historically marginalized peoples, informal workers, displaced populations, and others facing particular hardships. Every country should execute a rapid expansion of gender-responsive social protection coverage towards universal systems, including universal childcare benefits and universal health coverage. UN agencies must work with governments to help realign their current financial investments towards safeguarding for essential services and social protection needs.

6. Ensuring accessible K-12 education:

Children face particular vulnerabilities in this pandemic with threats of increasing poverty, declining pediatric vaccine coverage, and related harms, exacerbated by continuing school closures. Countries must implement policies that allow all children to learn regardless of economic status, including in-school, online and blended learning, and promote investment in and access to communication networks and Internet as needed for all children to receive schooling. Special efforts should be made to ensure the safety of schools and keep schools open, especially primary schools, which have generally been found to be low-transmission environments.

² These flexibilities allow for compulsory licensing of medicines both for domestic use and export. WTO. [Amendment to the Agreement on Trade-Related Aspects of Intellectual Property Rights \(TRIPS\)](#), 2020.

7. **Strengthening health systems including mental health services:** Countries should strengthen health systems to ensure that strong primary and community care and high-quality health services are available to support people who have been infected, and to ensure continuity of care for all people with other health needs. Resilient health systems offer substantial economic and societal benefits for healthier and more productive populations. Services to address mental health needs have been chronically neglected, yet COVID-19 is exacerbating mental health conditions such as depression and anxiety disorders, as well as neurological conditions resulting from COVID-19 infections. We especially urge the rapid expansion of mental health care coverage, taking note of the availability of affordable and empirically supported strategies including telehealth to improve mental health and psychological wellbeing.
8. **Investigating the origins of COVID-19, pandemic preparedness, and the One Health approach:** It is important to identify the human, animal, and environment interactions that have led to the emergence of COVID-19 and other zoonotic diseases, and to implement One Health solutions to prevent future pandemic threats, including through monitoring. New policies are needed to control and monitor land use change, agricultural expansion, and the wildlife trade to prevent or intercept the emergence of new infectious diseases and ameliorate human-environmental impacts.
9. **Promoting transformative investments for an inclusive green and digital society:** National budgets and multilateral development financing must be directed towards a vigorous inclusive digital and green recovery at the global scale. The digital economy has become essential for ensuring services, access to finance, and access to information, and investments must be made to ensure equitable access to the Internet for all. The pandemic has underscored the vital need for universal access to digital services to meet the world's social, economic, health, and humanitarian needs. We call on the UN agencies, the telecommunications industry, and big tech companies to work with the LMICs to ensure the rapid scale-up of digital access and vital digital services in the context of pandemic control and the inclusive green and digital recovery.
10. **Carbon neutrality and strong outcomes at global sustainable development summits:** A transformative and inclusive green recovery from COVID-19 should encompass climate neutrality by

2050 as part of enhanced Nationally Determined Contributions (NDCs) under the Paris Climate Agreement to be presented at the UN Framework Convention on Climate Change 26 (COP 26) in Glasgow in November 2021. These NDCs should be backed by concrete action plans, public investments, and the means to finance them, including through tax reforms. To support the inclusive green recovery, we urge strong and action-oriented outcomes at all of the major international sustainable development summits in 2021, including the World Ocean Summit (Lisbon, April), the Convention on Biological Diversity (Kunming, May), the World Food Systems Summit (New York City, September), and COP 26 (Glasgow, November).

STRENGTHENING THE MULTILATERAL RESPONSE TO THE PANDEMIC

The UN system has provided the indispensable framework for global cooperation and vital support for countries and populations in need throughout the pandemic. We urge all countries and national political leaders to offer their strong backing and financial support to the vital work of the UN system. Only a strong and properly resourced UN system can convene governments, experts, civil society, and the private sector for a “whole of society” approach to containing COVID-19 and its economic and social fallout and provide the means to deal with the crisis in a coherent, cross-border, and cross-sectoral way. The emergence of new viral lineages reinforces that the pandemic is not ended anywhere until it is ended everywhere. The risk that new lineages emerge remains highly probable until the virus is suppressed in every country and region.

There have been important signs of solidarity, for example in the initiation of the COVAX facility, the IMF's emergency financing, and the Leaders' Declaration of the G20 summit in Riyadh,⁴ but financial commitments still pale in comparison with needs. Direct bilateral assistance from the high-income countries (HICs) has been scant, and some countries are cutting back on their official development assistance in the midst of the crisis.

With more funding in hand, COVAX could incentivize expanded production and delivery of vaccine doses for the LMICs and assure COVAX's place in the vaccine queue. COVAX's successful implementation would benefit not only the recipient countries but the entire global economy. Members of the Development

Country Vaccine Manufacturers Network (DCVMN) should be engaged to produce low-cost vaccines at scale. Increased production should also make use of needed waivers on intellectual property as permitted for public health emergencies under WTO rules.

To achieve meaningful results in 2021, COVAX should have committed funds on the order of \$20 - \$40 billion, which it would turn into firm agreements on expanded production. The international community should be urgently mobilized to finance COVAX. Vaccination is a vital global public good and should benefit from emergency multilateral financing, including creative and novel multilateral solutions. The global community could try to mobilize the increased financing capacity associated with a new SDR allocation for developing countries. The regional multilateral development banks should also be enabled to create instruments to make commitments to the COVAX Facility, with contributions targeted for developing countries in their regions who are addressing COVID-19 and its associated economic fallout.

As the pandemic enters its second year, humanitarian crises are deepening in many countries, especially the poorest countries, which lack the finances and technology to respond adequately to the pandemic. They lack borrowing capacity in domestic and foreign currencies and access to critical technologies, including PPE, testing equipment, hospital equipment, digital connectivity, and the capacity to develop, produce, and deploy vaccines. LMICs, with few exceptions, remain highly dependent on HICs for the ability to respond adequately to the COVID-19 emergency. Moreover, a humanitarian disaster is looming in highly vulnerable countries, including the possibility of mass famines in a dozen countries in 2021, according to the WFP.⁵

In 2020, the IMF served as a vital lender of last resort to the cash-strapped low-income countries. Under its Rapid Credit Facility (RCF) for eligible poorer countries, and the Rapid Financing Instrument (RFI) for all member states, the IMF made available emergency financing for COVID-19 response of \$100 billion for 83 countries as of end-November.⁶ The RCF provided vital financing to meet urgent needs with rapid disbursement, low conditionality, and concessional repayment terms (zero interest rate, 5.5-year grace period, 10-year maturity). Yet the sums, while significant, are insufficient compared to the need for billions of people in an ongoing crisis.

Finance ministers throughout the developing world are making it clear that they will need another significant round of emergency financing in 2021 to address humanitarian crises, fund the vaccine campaign, and

ensure basic social protection. Yet more emergency funding will require that the IMF Board approves an extension of access to such highly concessional and quick-disbursing finance. One approach, actively discussed by the G20, is an allocation of SDRs of up to \$650 billion that is directed to the benefit of low-income countries in dire financial straits.

The COVID-19 pandemic has triggered an unprecedented fiscal response estimated at about \$12 trillion globally in 2020 alone, in addition to a massive monetary stimulus. It affected all nations and governments at all levels: national, state or provincial, and local. The budgetary needs for social outlays have soared while budget revenues have plummeted. Governments with creditworthiness and strong currencies have resorted to massive borrowing, yet the financing is strongly tilted to high-income and upper-middle-income countries. In the Advanced Economies (AE, the IMF's designation for high-income countries), the budget deficit increased from 3.9 percent of GDP in 2019 to a deficit of 12.7 percent of GDP projected for 2020, or an increase of 8.8 percent of GDP. In the emerging markets (EM) and middle-income countries, budget deficits increased from 4.9 percent of GDP to 10.7 percent of GDP, or by 5.8 percent of GDP. In the low-income countries, by contrast, budget deficits rose from 4.0 percent of GDP to 6.2 percent of GDP, or by a mere 2.2 percent of GDP.⁷

This difference in fiscal response between the high-income and low-income countries does not reflect a difference in humanitarian needs – which are far more urgent in the low-income countries – but rather a difference in creditworthiness and ability to borrow.

In March 2020, a global financial crisis seemed possible after COVID-19 was declared a global pandemic. Major central banks acted decisively to restore orderly market conditions. Eventually, financial conditions eased and, in many cases, became easier than before the pandemic. Towards the end of the year, accumulated issuance by governments in advanced and EM economies was at record levels. Global financing conditions are easy and are expected to remain so for a while. Nevertheless, there is a sharp differentiation of financing conditions across countries. For example, borrowing constraints facing some EMs are becoming binding, and most LMICs simply do not have access to borrow in global financial markets, so the gap of domestic fiscal needs and available domestic resources has widened dramatically.

The growing fiscal needs and strains of all countries highlights the importance of rapid and decisive global progress on pending international tax reforms,

including digital taxation, the end of tax havens, and strengthening of international collaboration to end tax avoidance under the OECD/G20 inclusive framework on domestic tax base erosion and profit shifting (BEPS). We call on all nations to finalize long-pending agreements in these vital areas to enable a more comprehensive, just, transparent, and effective global tax regime that will enable countries to mobilize the fiscal revenues that they need to end the pandemic, address the growing humanitarian needs, and finance an inclusive, green and digital recovery.

The need for real-time global monitoring systems

Global, real-time information systems are vital to monitor and inform emergency responses and to guide the global recovery. Real-time information systems are necessary to end the pandemic and address the humanitarian fallout, including extreme deprivation, children out of school, unemployment, hunger, destitution, mental health problems, violence against women and children, lack of access to digital services, population displacements, and other dimensions of acute distress. Current data on these issues are of inadequate quality, timeliness, and sensitivity. This data must be disaggregated and easily accessible to UN agencies, country governments, and other organizations to enable equitable and responsive public health and humanitarian responses.

We call on all governments, businesses, and civil society organizations to cooperate with the UN system to enhance real-time data systems to underpin all of the SDGs, with real-time information notably focused on extreme poverty (SDG 1), hunger (SDG 2), health conditions (SDG 3), schooling (SDG 4), gender-based inequalities (SDG 5), access to safe water and sanitation (SDG 6), access to electricity (SDG 7), decent work (SDG 8), coverage of vital infrastructure including digital connectivity (SDG 9), emerging inequalities (SDG 10), safety of the urban environment (SDG 11), flows of toxic wastes (SDG 12), greenhouse gas emissions (SDG 13), changes in fisheries (SDG 14), deforestation and other land degradation (SDG 15), violence (SDG 16), and global financial cooperation (SDG 17).

DEPLOYING NONPHARMACEUTICAL INTERVENTIONS (NPIS)

As seen in Table 1, the reported COVID-19 incidence in East Asia and the Pacific, a region with 2.4 billion people or 30 percent of the world's population, has been a small fraction of the reported incidence in

Northern America and Europe. During the surge in the fourth quarter of 2020, East Asia and the Pacific accounted for just 2 percent of new reported cases worldwide. The East Asia and Pacific region reported a total of roughly 1 million new cases during the fourth quarter of 2020, or just 5 new cases per million per day. By contrast, Northern America and Europe accounted for 66 percent of the world's total, though these two regions account for only 15 percent of the world's population. The US alone accounted for 23 percent of the world's cases, despite having just 4 percent of the world's population. Even allowing for differences in case definitions and testing coverage, the outstanding performance of the Asia-Pacific region in comparison with Northern America and Europe is strongly evident.

In addition to the massive and rapid deployment of vaccines worldwide, suppression of the pandemic requires countries to implement strong NPIs, which are actions apart from vaccines and medicines that people and communities can take to help slow the spread of the virus.⁸ NPIs include behavioral,⁹ environmental, social, and systems interventions to promote personal protective behaviors, including promoting the uptake of vaccinations when available. Successful implementation of NPIs has been essential for pre-vaccine pandemic control during 2020 and will remain so during 2021, even as vaccines are being deployed.

Seven main NPIs are needed to address the COVID-19 pandemic:

- Individuals who are suspected to be infected (based on symptoms) or to have been exposed to infection (e.g., through local contact or international travel) are tested as soon as possible and given support to quarantine at home or in supervised facilities for 10-14 days. Confirmed cases are supported to isolate for a prescribed period.
- Contacts of suspected cases are quickly tracked and traced, both forward (those who may have been infected) and backward (those who may have transmitted the infection).
- All individuals are encouraged and provided with support to maintain physical distancing (>2m separation from others) and wear face masks regularly, especially in confined spaces when others are present, to reduce the probability of aerosol or droplet transmission.
- Meetings and small-scale events are held outdoors or online, or, if held indoors, only with symptom screening before entry in adequately ventilated

settings, with the added protection of physical distancing, face masks, and hand washing. Large gatherings are cancelled, postponed, or shifted online, including concerts, theaters, political rallies, sports events, parties, religious and cultural observances and festivals, weddings, funerals, and others.

- Additional mobility restrictions, service limitations, and other restrictive measures, including border controls, may be used to address objectives such as reducing the risk of overwhelming hospital capacity or reducing a high rate of community transmission to a level low enough to be controlled by other NPIs.
- Behavior change interventions are undertaken by governments to promote long-term adherence with NPIs.
- Government communication should at all times be clear, consistent, and evidence-based to build trust and to ensure that all population groups are reached effectively and in relevant languages.

The design of NPIs should be based on robust data analytics and modeling, robust evidence and contextualization, and thoughtful use of behavioral-science approaches, and should be revised in view of new evidence. NPIs should be accompanied by efforts to leverage and strengthen health-system arrangements (e.g., primary and community care) and address shortcomings (e.g., in long-term care settings). NPIs should be underpinned by a well-coordinated public communication infrastructure and an agile political leadership that avoids politicizing the pandemic response. Delivery of NPIs may be facilitated by Community Health Workers with adequate training and support,^{10,11} including the provision of PPE.¹²

Many countries of East Asia and the Pacific have demonstrated the feasibility of suppressing transmission through the effective deployment of NPIs and wider public health policies, including the deployment of surge health-system capacity to prevent hospital systems from being overwhelmed. These measures have held illnesses and death rates to relatively low levels while averting catastrophic overloads on the health system. The NPIs have enabled East Asia and the Pacific to return to near-normal life, with open movement of people, retail trade, and partial restoration of economic activity. Many governments in the region have not hesitated to reintroduce strong measures, including shutdowns and widespread testing and isolation, in the event of a new outbreak of the disease. Most importantly, these governments

have continued to prioritize suppressing the virus as the key to recovery. The situation in the region is still not without challenges: episodic flare-ups of community transmission of infection continue to occur, with the need to impose local shutdowns from time-to-time. There are worrisome increases in incidence in several countries, especially with the discovery of new viral lineages, though reported incidence rates in most countries in this region continue to be very low relative to Northern America and Europe.

The successful implementation of NPIs in many countries of East Asia and the Pacific has reflected a combination of measures and socio-cultural conditions. Success has been fostered by the following government actions:

- Emergency preparedness following previous epidemics of SARS, MERS, and other diseases. The member states of WHO Western Pacific region (WPRO) have adopted and continually updated a highly effective regional strategy (Asia Pacific Strategy for Emerging Diseases and Public Health Emergencies, or APSED, now APSED III) to guide and coordinate efforts throughout the region.¹³
- Strong commitment to suppressing the transmission of the virus, rather than merely coping with an ongoing epidemic.³
- Deployment of comprehensive systems for testing, tracing, and isolation of infected individuals.
- Adequate financial, practical, and social support by governments to support people required to isolate, which is only feasible when case numbers are low. This further emphasizes the need for individual countries to act rapidly at the onset of the pandemic.
- Promotion and resourcing of widespread and convenient testing facilities, including through public-private partnerships with companies making test equipment, and prompt communication of results, linked with comprehensive contact tracing. Testing should also include sequencing of subsets of virus samples to assess the spread of new COVID-19 variants in the population.

³ Suppressing the epidemic is sometimes phrased in terms of the effective reproduction rate R , which measures the average number of infections spread by an infectious individual. When $R < 1$, the epidemic is said to be suppressed. When R is reduced below its initial level R_0 but remains greater than 1, the epidemic is slowed but not ended, and the policy of reducing R so that $1 < R < R_0$ is termed flattening the curve," as opposed to suppressing transmission (when $R < 1$).

- Government tracking of potentially infectious cases via active surveillance, meaning that governments have actively sought to identify and break chains of transmission in the community rather than passively waiting for individuals to seek testing.
- Fostering of public trust and compliance with NPIs, facilitated by government information that is provided in a clear, regular, consistent, and transparent manner, and with policies that are applied on the basis of available evidence that is clearly presented and explained to the public and reflects the current state of knowledge (as has been exemplified by New Zealand and Australia). Politicians and public figures visibly demonstrate safe behaviors. When necessary, this is reinforced through stronger policies, including threat of fines, in addition to enabling support for desired behaviors.
- Engagement of the public health system directly in neighborhoods and communities, using local languages and respecting local cultural values and practices, thereby building trust and cooperation.
- Government promotion of behavioral changes by the public (such as mask-wearing, physical distancing, early testing, safe isolation, and others) using best practices in behavior-change management (including communication, building trust, providing incentives, modeling behaviors, making behaviors easy, monitoring, and evaluation).
- The public is highly compliant in personal behaviors, including the use of face masks, physical distancing, refraining from attending large events or indoor meetings in unsafe conditions, and adhering to self-isolation or quarantine when required.

By contrast with East Asia and the Pacific, Northern America and Europe exemplified the failure of pandemic control in 2020. In the US, while the federal government invested in vaccine development, it failed to promote NPIs or actively blocked their implementation. Individual US states were tasked with key decision-making in public health activities, even though they lacked the epidemiologic expertise and knowledge base required to launch such an undertaking.¹⁴ There was no coordinated national testing-and-tracing effort, encouragement of the use of face masks, or prevention of super-spreader events. Messaging about the pandemic by the federal government remained highly contradictory. The US incurred three successive waves of the epidemic,

becoming increasingly severe throughout the year, with more than 400,000 deaths by mid-January 2021.

Europe's performance has varied across countries,¹⁵ but overall was less successful than East Asia and the Pacific,¹⁶ especially in the second half of 2020. After successfully bringing new infection rates to low levels during May-July (below 10 per million per day in the EU as a whole during May 25 – July 16) through strong shutdown measures during the northern-hemisphere spring, the EU members generally failed to implement NPIs in a systematic way to ensure that viral transmission would remain suppressed after the shutdown was lifted. Insufficient control of inter-country travel, as well as inconsistent enforcement of NPIs, has led to soaring incidence rates. New lineages, such as SARS-CoV-2 lineage B.1.1.7 in the UK, are also leading to increased transmission of infection.

The epidemic has hit Latin America and the Caribbean (LAC) hard, with the worst effects felt by the region's most vulnerable people.¹⁷ Although government efforts have at times focused responses on these groups of people,¹⁸ the region nevertheless faces numerous difficulties that present significant challenges in the ongoing recovery effort. These include low trust between government and the public, high levels of inequality, pre-existing social discontent, inconsistent and changing plans on how to limit community transmission, and a lack of planning for the rollout of vaccines.¹⁹ In terms of GDP, the region experienced a negative growth of 8 percent in 2020.²⁰ As the pandemic has continued, the emergence of new lineages of the virus has created further challenges to ongoing responses and has had at times specific geopolitical implications. A new variant was recently identified in Brazil, causing many governments to adopt specific responses targeting Brazil and its Latin American neighbours in an attempt to curb the spread of this new lineage.^{21,22} The region is not yet deploying large scale vaccination programs.

Sub-Saharan Africa offers a regional bright spot of the pandemic to date. Daily newly confirmed cases are running below 10 per million per day, with the notable exception of substantial second waves in South Africa and Namibia, where confirmed incidence is greater than 100 new cases per million per day, partially due to a new more transmissible variant. Sub-Saharan Africa's relatively low reported case numbers may be due to the following four factors, although more research is needed to understand the dynamics in the region. First, the region's population is very young (median age 18.7 years) and therefore less vulnerable on average to severe COVID-19 disease than regions with older populations (e.g., Europe, with a median

age of 42.5 years).²³ Seroprevalence surveys in African countries such as Kenya indicate that the prevalence of viral infection is comparable to Europe but clinical disease rates are low.²⁴ Second, sub-Saharan Africa has an extensive system of community-based healthcare and epidemic disease surveillance built up over years in response to the challenges of HIV/AIDS, malaria, tuberculosis, Ebola, and other infectious diseases. Third, with modest levels of international travel between sub-Saharan Africa and hard-hit regions, sub-Saharan Africa has been able to successfully limit incoming infections from the rest of the world. We note also that the number of actual cases may be substantially under-reported due to insufficient testing, although the low apparent level of COVID-19 disease seems to be corroborated by the relatively low numbers of hospital admissions.²⁵ Several African countries are conducting seroprevalence surveys to assess the extent of asymptomatic infections and are introducing cheaper rapid antigen tests to improve case detection rates. In addition, the African CDC has established a continental network of laboratories to conduct genomic sequencing of circulating viruses.²⁶

While African countries have reported relatively lower COVID-19 cases, the African CDC reported a higher case fatality rate in Sub-Saharan Africa at 2.5 percent compared to 2.2 percent in the rest of the world.²⁷ This reported higher case fatality rate points to potential vulnerability of the continent, especially in the backdrop of under-funded, weak health systems. For example, there is an ongoing shortage of medical oxygen in many African countries, potentially leading to avoidable mortality.²⁸ Oxygen supply is a critical health system challenge, and even high-income countries have had trouble maintaining adequate supplies of oxygen in the face of high demand during the pandemic. Despite early warnings about the importance of oxygen in the response to COVID-19, oxygen shortages have surfaced in many LMICs due to the second pandemic surge. There are media reports of extensive shortages leading to diversion, unregulated markets for oxygen and hoarding by patients for personal use.²⁹ Lack of oxygen may be contributing to the higher case fatality in some African countries. It is important that global mechanisms such as ACT Accelerator are fully funded to enter into framework agreements for emergency supplies of liquid oxygen, construction of pressure swing adsorbent plants, and oxygen concentrators to the most vulnerable countries.

In Northern Africa and the Middle East, many governments reacted swiftly to put in place strong measures to contain the spread of the virus, and these measures managed to limit the impact of the first wave

of the virus until they began to be relaxed in June.³⁰ Fatality rates in the region have remained relatively low, although the situation varies greatly between the richer Gulf states, which have greater medical facilities and resources to invest in health, and the LMICs and fragile states or states in conflict.^{31,32} Restrictions of movement, stay-at-home orders, closure of schools, and social distancing measures have increased economic instability in the region and worsened humanitarian crises like widespread food insecurity, poverty, and inequality.³³ COVID-19 has exacerbated the issues that stemmed from ongoing conflict in the region, and has further destabilized already-weakened health systems in conflict regions.³⁴

Central and Southern Asia have experienced a middle-level transmission of the virus, less than in Northern America and Europe and LAC, but generally higher than in East Asia and the Pacific and sub-Saharan Africa. This applies both to confirmed incidence and mortality rates. The region may have benefited from a relatively young population and a high proportion of the population in rural areas. The application of NPIs in India and Pakistan has been uneven, and large informal and economically disadvantaged populations are very difficult to protect. In the northern-hemisphere spring, large numbers of poor migrant workers carried COVID-19 infections from urban India back to their home villages.³⁵ The epidemiological evidence establishes that the movement of people by rail and vehicles was a key channel of disease transmission in two Indian states carefully studied by epidemiologists.³⁶ After peaking in September 2020, infection rates have fallen dramatically in India. Periodic sero-surveys show COVID-19 antibodies are present in a significant proportion of the population in large urban centers, signifying higher exposure levels than those reported.³⁷

ENSURING THE RAPID AND EQUITABLE GLOBAL DEPLOYMENT OF VACCINES

Vaccines offer the greatest promise for ending the COVID-19 pandemic through their potential global reach, the individual protection they bestow, and their contribution, alongside NPIs, to the suppression of transmission. The initial rollout of vaccines at the end of 2020 marks a great breakthrough of science and public policy and of global hope. Nonetheless, there remain great challenges ahead to ensure universal deployment of the new vaccines and questions remain concerning their long-term efficacy or even cross-protection from new variants arising out of areas of high transmission such as the United Kingdom, South Africa, Brazil and elsewhere. We emphasize the importance of maintaining NPIs during the coming period while

vaccines are rolled out, and of the importance of behavioral measures to promote the broad uptake of vaccines. This includes a sustainable financing model for expanding all of the existing vaccine platforms either released through emergency authorization or in phase 3 trials – mRNA, non-replicating adenovirus, recombinant protein and particle, and whole inactivated virus – to accommodate polyvalency or boosters to address the emerging variants. We raise the following considerations for the evidence-based, safe, rapid, and equitable uptake of vaccines in all parts of the world.

It is important that vaccines be made available and affordable for people in LMICs.³⁸ The COVAX Facility was established as a partnership between the WHO, Gavi, and the Coalition for Epidemic Preparedness Innovations (CEPI) to maximize opportunities for LMICs to receive vaccines and therapeutics at subsidized prices. COVAX is the vaccine arm of the ACT Accelerator for COVID-19 Tools.³⁹ COVAX has made tremendous strides to reduce the prospect of a two-tiered system, in which vaccines employing cutting-edge and more expensive mRNA technologies would be mainly reserved for Northern America and Europe, while the LMICs would have access to vaccines made with other traditional approaches. Today, COVAX represents the most comprehensive and ambitious equity access initiative to address a public health emergency of international concern ever undertaken. It builds on a global health security agenda that evolved following the first SARS epidemic, including international health regulations (IHR 2005).

However, financing for COVAX remains woefully short of what is needed, and the US has still not joined the COVAX initiative. The UN estimates that the COVAX financing shortfall stands at \$28 billion as of early December 2020.⁴⁰ Although COVAX is built on a moral case, we also underscore the economic case for the global uptake of vaccine coverage. Each country's economic success depends on the success of its global trading partners in suppressing the pandemic. In this sense, global vaccine uptake is a global public good in its direct macroeconomic impact, while access to innovation is a fundamental human right.^{41,42}

As vaccines are rolled out, we call on regulatory agencies to provide transparency and data on the efficacy of the various vaccines in preventing deaths, serious illness, and infection; the duration and immunological pathways of protection; the efficacy in preventing viral transmission; adverse reactions; proper dosing; and other issues. Regulators and the scientific community must also perform regular tests for changes in efficacy in the face of ongoing

mutations of the virus. We call on vaccine developers and producers to comply with international standards regarding WHO prequalification, together with reviews through designated stringent regulatory authorities (SRAs).⁴³ In the immediate future, there is a new urgency for international regulatory cooperation between national regulatory authorities, including SRAs, for guidance regarding production and testing of next generation vaccines to combat the emerging variants. This includes the need to develop multivalent COVID-19 vaccines targeting both the original and new variants, as well as proceeding with existing first generation vaccines and building in programs of booster vaccines for the variants.

With few exceptions, the main candidate vaccines are being produced in the US, Europe, Russia, and China, with little production of these candidates in the LMICs. An important exception is India, which has excelled in terms of its vaccine innovation and track record for producing WHO prequalified vaccines at industrial scales, and to some extent, Brazil and Indonesia, in partnership with other manufacturers. The lack of production facilities in most of the LMICs—currently no COVID-19 vaccines are produced on the African continent, in the Middle East, or (with the exception of Brazil or Cuba) in the Latin American and Caribbean region—is a great cause for worry regarding the adequacy of future vaccine supplies for the developing countries. We call on all parties to prioritize building, strengthening, or expanding manufacturing capacity in LMICs

In order to increase global access to the vaccines, governments may utilize the flexibilities already built into the WTO-TRIPS agreement regarding public health in order to ensure universal access to COVID-19 products,⁴ and in line with the globally agreed target of SDG 3.8, which calls for “access to safe, effective, quality, and affordable essential medicines and vaccines for all.” However, many developing countries lack the capacity to use these flexibilities as they require putting in place institutional and legal frameworks which are difficult and time-consuming. Therefore, in the context of the COVID-19 pandemic, countries should support the WTO-TRIPS waiver to encourage mass production of vaccines and related medical products.

There is little clarity on the current preparations of global and local supply chains for LMICs, especially in light of the need for hyper-cold supply chains for the mRNA vaccine.⁴⁴ Additionally, there must be oversight

⁴ These flexibilities allow for compulsory licensing of medicines both for domestic use and export. https://www.wto.org/english/tratop_e/trips_e/tripsfacsheet_e.htm.

by SRAs in regard to pharmaceutical production and quality, as has been outlined by the WHO.⁴⁵ The WHO framework includes the US, European Union (EU) member states, and Japan. Of greatest concern are the COVID-19 vaccines being produced at industrial scale in the world's middle-income nations currently lacking SRAs, especially the BRICS countries of Brazil, Russia, India, and China. It will be critical for the WHO to work with vaccine developers in these countries to ensure that they meet WHO prequalification standards or second review by an established SRA.

Even as the early vaccine candidates have proved their effectiveness and more are being approved for use, shortfalls of vaccine supplies and delivery capacity during the coming year should be expected. Rules must be agreed upon both internationally and within countries for rationing scarce supplies and determining the priority of certain groups, taking into consideration vulnerabilities based on proximity to the illness, age, and socioeconomic status. The WHO World Health Assembly should convene urgently online to update its recommendations on the fair and equitable distribution of vaccines.⁴⁶

There is as yet no international pooling of data on vaccine uptake, safety, efficacy, and financing, i.e., the basic parameters that must shape the global campaign. There is little or no transparency on vaccine pricing, either for use in home markets where the vaccine is being produced (e.g., the US and UK), or for international distribution under COVAX. There is little clarity on vaccine financing, with international commitments for vaccine funding for low-income countries remaining far below identified funding needs. For example, COVAX will currently only supply doses for 20 percent of the population of 92 eligible countries, with further distribution to be determined based on outstanding need.⁴⁷ These uncertainties were multiplied by the earlier US withdrawal from WHO and non-participation in COVAX in 2020.

We need open-source access to vaccine safety and efficacy data. There is an imminent need to support sustainable financing for additional vaccines as well as next generation vaccines directed against the new variants. Each of the major platforms now in phase 3 clinical trials – mRNA, non-replicating adenovirus, recombinant protein and particle, and whole inactivated virus – will require new support to produce either bivalent versions or boosters to accommodate rapid virus evolution.

The rapid introduction of new vaccines will raise countless research questions. These will include all aspects of the safety and immunogenicity of the

vaccines, the duration of protection, the standards for dosing, and differences according to demographic categories (age, gender, prior health conditions, race, ethnicity, etc.). "Big data" and other bioinformatics and immunomics platforms on the results of phase 3 trials and post-emergency release monitoring should be made available in open-access format to the community of scientists committed to COVID-19 research. In addition, ongoing and internationally coordinated virus genome monitoring must be in place to detect the emergence of new lineages potentially resistant to the current vaccines. New international R&D efforts should also include advancing next generation SARS-CoV-2 vaccines for the emerging variants, together with universal coronavirus vaccines in anticipation of further SARS-CoV-2 virus genome variation or the potential emergence of entirely new zoonotic coronaviruses with transmissibility to humans.

We urge the WHO and other UN agencies to consider mechanisms for counteracting a rising tide of disinformation from groups seeking to discredit the efficacy and safety of COVID-19 vaccines.⁴⁸ "Vaccine hesitancy" presents a major concern for a safe and effective COVID-19 vaccination campaign, as there has been a large drop in vaccine confidence since 2015 in some areas of the world, even if globally, confidence remains robust.⁴⁹ A special concern is the expansion of anti-vaccine activities in the US and some European nations, now linked to extremist political views that include protests against NPIs.⁵⁰ Still another, is evidence for state-led disinformation efforts around vaccines as a means to destabilize national health systems. Therefore, combating global anti-vaccine activities has become increasingly complex.

The COVID-19 vaccination campaign must draw from examples of successful vaccination programs that engage community decision-making networks through effective communication and public health messaging to build trust and increase vaccination rates.⁵¹ In parallel, inter-UN agency efforts must examine levers to quell state-led disinformation initiatives linked to vaccinations.

We urge all governments to work cohesively together under the WHO and COVAX aegis to bring up mass, safe, and effective worldwide vaccination at the earliest possible time. We hope for significant progress during 2021 but recognize that mass vaccination campaigns for COVID-19 will continue for years to come, with many challenges along the way.

COVID-19 vaccination campaigns should bolster, rather than divert attention and resources away from, ongoing vaccination efforts for other diseases like

measles and polio, which are in danger of re-emerging. COVID-19 vaccination campaigns should be additional and complementary to current vaccination campaigns for childhood diseases and should not exacerbate existing health inequalities.

RESPONDING TO THE WIDENING INEQUALITIES AND NEEDS OF SPECIAL POPULATIONS

Many population groups are facing special hardships.

The greatest hardships are falling on those living in poverty, who may find it difficult to maintain physical distancing guidelines due to living conditions (e.g., crowded housing, multigenerational homes), and less-than-ideal working conditions (e.g., essential jobs that are typically of low quality and paid poorly).⁵² Impoverished populations are also disproportionately affected by the job cuts caused by the necessary shutdown orders, thus magnifying already-existing inequalities, especially for the many who work in the care sector.⁵³ Social protection services must be extended to all people, starting during the pandemic and continuing after. In humanitarian contexts, cash support should be considered before in-kind assistance.

Inequalities between the rich and poor broaden where more people live close to the international poverty line. LMICs often do not have the resources, human or financial, or the infrastructure of HICs for PPE, testing equipment, and advanced health services to combat the spread and effects of COVID-19 and fulfill people's basic needs.⁵⁴ Once contracting the virus, those living in poverty have higher morbidity and mortality rates due to lack of access to health services.⁵⁵ People in LMICs (as well as poor and marginalized communities in HICs) are also at risk due to inadequate housing conditions and chronic shortages of access to clean water and decent sanitation and hygiene facilities,^{56,57} which can magnify the spread of COVID-19. The pandemic is also exacerbating water shortage issues in many places.⁵⁸

Steps must be taken to reduce the burden of the pandemic on households and to ensure continuity of basic services and needs, such as housing, food, water, electricity, and access to the Internet. Of particular concern is the worsening of an already desperate crisis of food insecurity and malnutrition among populations facing vulnerabilities, particularly those in LMICs, which are at higher risk of food scarcities,⁵⁹ although food insecurity is also a major concern in HICs. The COVID-19 pandemic has added to the more than 135 million people in 55 countries who are already facing

acute hunger.⁶⁰ Changes in food security are associated with unemployment and poverty. In LMICs, the sudden decrease in purchasing power and increasing consumer demand for food further exacerbates the severity of food insecurity.

COVID-19 has placed individuals with prior health conditions in high-risk groups for contracting the virus,⁶¹ and higher rates of poor health conditions are associated with socio-economic status.^{62,63} Nearly 90 percent of COVID-19 hospitalizations had one or more underlying health conditions, including chronic lung disease (primarily asthma, 34.6 percent), diabetes (28.3 percent), heart disease (27.8 percent), and hypertension (49.7 percent).⁶⁴ In addition, as resources shifted to caring for those infected with COVID-19, access to healthcare for non-COVID health issues, including essential services such as vaccinations,⁶⁵ sexual and reproductive health care, and mental health support, has decreased, raising concerns about a rise in non-COVID health problems. Countries must establish universal health coverage systems, including for primary health care, mental health support, and sexual and reproductive health services.

COVID-19 mortality and morbidity rise significantly with age. A recent study puts the infection fatality rate at ages 5-9 at .001 percent, rising to 8.29 percent in those aged 80 and over.⁶⁶ A significant share of all COVID-19 mortality has been in elder-care homes and nursing homes. Across OECD countries, around 90 percent of COVID-19 deaths occurred in people aged over 60.⁶⁷ In the United States, an astounding 36 percent of all COVID-19 deaths as of January 28, 2021 had occurred in long-term care facilities.^{68,69} There is a need for special protections of older populations, especially those living in congregate settings, as per guidelines for nursing homes and senior living facilities.⁷⁰ Countries should issue priority guidelines with specific measures for institutional settings to ensure health, safety, and well-being for older persons and persons with disabilities, and increase the resources of institutions to implement preventive measures.

Although young children are less affected by COVID-19 than older age cohorts, emerging data suggest that children's health may have been more affected than was assumed early in 2020. Recent analysis from 87 countries shows that children and adolescents account for 11 percent of reported COVID-19 infections.⁷¹ Children are also hard hit by the exacerbation of poverty, as they are already twice as likely to live in extreme poverty than adults, with recent data suggesting the gap is widening.⁷² More than 140 million additional children are expected to

fall into poverty as a result of COVID-19 by the end of 2020.⁷³ Children face threats to their short- and long-term well-being from interruption in essential services and increasing poverty and inequality related to the COVID-19 crisis. In 2020 alone, 195 countries have imposed school closures, affecting more than 1.3 billion children and youth,⁷⁴ and many of these schools are still uncertain about reopening or struggling to stay open. School-based services, such as school meals programs, provide one of the largest global safety nets, and it is estimated that 370 million children are missing school meals due to closures.⁷⁵ Efforts must be made to keep schools open so that they can provide these basic services and high-quality education, and all students must be ensured equal access to high-quality education regardless of socio-economic status.

Men endure higher fatality rates of COVID-19, particularly if they suffer from co-morbidities.⁷⁶ Meanwhile, the indirect effects of the virus have hit women hard, exacerbating pre-existing gender inequalities in both the economic and social sectors.⁷⁷ Almost 58 percent of employed women work in the informal economy with little or no social safety net and have relatively less job security than men.⁷⁸ They also earn less than men for equal work,⁷⁹ and have been among the first to lose their jobs and their earnings because of the pandemic.⁸⁰

The crisis has dramatically increased the burden of care on women, who make up 70 percent of the paid health workforce worldwide,⁸¹ and 90 percent of the long-term care workforce.⁸² Women's unpaid work in the home has increased due to school closures, as household isolation has shifted work from the paid economy to unpaid care for children and other family members. Women who hold mid- and high-level positions within organizations have also experienced this risk, with some having to quit their jobs to look after children and other family members.⁸³ Social protection programs for economic recovery must therefore be gender-responsive and protect women in both the formal and informal economy, as well as those who perform unpaid care work.

For a number of people, home is a place of violence and abuse.⁸⁴ Some women are experiencing increased domestic violence as stay-at-home measures confine families and cause rising tensions over security, health, and money concerns.⁸⁵ Labor laws that enable discrimination in pay; civil laws that restrict women's mobility, employment, and autonomy; and criminal laws that require a higher burden of proof for women are all regulations that contribute to the unequal situation women are facing. There is a need for more disaggregated data on violence exposure

among women, children, the elderly, and those with disabilities, and resources must not be devoted away from essential primary care and sexual and reproductive health services.

Members of some minority groups have faced discrimination, xenophobia, racism, and attacks for allegedly spreading the virus, as well as higher morbidity and mortality rates.^{86,87} In the US, for example, this has included an increase in hate crimes against Asian-Americans.⁸⁸ Globally, migrants and refugees are among those who have falsely been blamed and vilified for spreading the virus.^{89,90}

Indigenous peoples are overrepresented amongst the poorest segments of the population, are socially marginalized, and are mainly engaged in the informal economy with less access to health services, often living far from urban areas or in voluntary isolation. As of November 10, 2020, an estimated 238 Indigenous communities of the Amazon basin have been affected by COVID-19, with over 73,767 confirmed cases and 2,139 deaths. These numbers, which presumably underestimate the true spread of the virus, do not reflect the devastation of dozens of cultures through the high mortality of Indigenous elders,⁹¹ who hold vast traditional knowledge that is shared mostly orally.^{92,93}

Refugees, undocumented migrants, and Internally Displaced Persons (IDPs) are at particular risk from the COVID fallout, and data indicate that they are disproportionately affected by the pandemic. As one pertinent example, UNHCR data on school enrollment indicates that half of all refugee girls will not return when schools reopen.^{94,95} There is also a need to review nationality laws, as UNHCR estimates that around 3.9 million people in the world are stateless, an issue that particularly affects IDPs and refugees, depriving them of the possibility of exercising even the most basic rights.⁹⁶ Poor living and working conditions, increased stigma, barriers in accessing health information and care, border restrictions, and fear of deportation are among the many problems that increase the vulnerability of these populations.

Informal workers are often on the front line of exposure to infection, and typically lack access to social protections, including health care, safe places to isolate, and urgent income support when work is disrupted.⁹⁷

People with disabilities have experienced difficulties with taking steps necessary to protect themselves in addition to having pre-existing social inequalities that decrease their economic resilience during the

pandemic.⁹⁸ In particular, women with disabilities have been three times more affected by exclusion, violence, and discrimination during the pandemic.⁹⁹

SAFEGUARDING CIVIL LIBERTIES WHEN IMPLEMENTING NPIS

In Europe and the United States, objections have been raised by some parts of the population to the use of shutdowns and certain NPIS, such as restrictions on religious gatherings or isolation, on the grounds that these violate individual rights. In November 2020, for example, the US Supreme Court overturned limits on religious gatherings as a violation of freedom of religion under the US Constitution.¹⁰⁰

As strong proponents of NPIS, we believe that the criticisms fall wide of the mark. Personal freedom does not include the freedom to harm others.⁵ We fully agree that NPIS should be undertaken with all due respect for human rights. We note that many of the successful nations in the East Asian and Pacific region, including Australia, Japan, Korea, New Zealand, Fiji, the Cook Islands, and others, are multi-party democracies that have successfully implemented NPIS while protecting civil liberties.

Since the adoption of “quarantine” in 15th century Italy, communities and nations have rightly recognized that it is a matter of the common good to impose temporary restrictions on individual actions in the interest of suppressing an epidemic. Wearing face masks is not only a matter of personal protection but of protecting others. As the scientific literature shows that infections are also transmitted by asymptomatic individuals, it is reasonable to insist that all individuals wear face masks when in places that are conducive to viral transmission.

In practical terms, NPIS pose only limited and temporary restraints on daily life. The most severe measure – a shutdown – should last only a limited time, until much less intrusive measures are scaled up.¹⁰¹ The length of the shutdown depends on the severity of the epidemic and the speed at which the less-intrusive NPIS can be scaled up. The key to normalcy is to apply the NPIS assiduously so that the virus can be suppressed at the earliest possible moment, thereby allowing a

⁵We recall the maxim of the founder of modern Libertarianism, English philosopher John Stuart Mill. In *On Liberty*, Mill held that: “The sole end for which mankind is warranted, individually or collectively, in interfering with the liberty of action of any of their number, is self-protection. That the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others.”

restoration of normal life. In the interim, many activities can be shifted online. Such inconveniences are real, but pale in comparison with the mass suffering and loss of life caused by the continued transmission of the virus.

We certainly recognize that governments may and do wrongly infringe on individual rights in the name of the social good. While we do not characterize NPIS in this way, we emphasize that restrictions of the movement of people,¹⁰² restrictions of meetings, and restrictions of business opportunities should be scrutinized carefully with a proper balance of individual freedoms and the vital need to contain the pandemic.⁶ Vulnerable populations, including migrants and refugees, people with mental illnesses, and individuals living in appalling conditions or subject to domestic violence, may be at heightened risk due to restrictions of mobility. The COVID-19 pandemic must not be an occasion for the undue encroachment of government into personal lives and privacy, and restrictions in the name of epidemic control should be lifted as soon as possible.

STRENGTHENING HEALTH SYSTEMS INCLUDING MENTAL HEALTH SERVICES

The pandemic underscores the crucial importance of universal health coverage (SDG target 3.8) and the need for strong primary and community care and high-quality health services. Resilient health systems that are linked with social care systems offer substantial economic and social benefits by promoting healthier and more productive populations. COVID-19 has greatly increased the demand for healthcare services, both for those suffering from COVID-19 as well as from other conditions. We note the especially urgent need to scale up access to mental health services, which have long been under-resourced and difficult to access.

Within all countries, there are large numbers of people struggling with the aftermath of infections and deaths in the family. The confirmed global count is over

⁶ Pope Francis has recently put the ethical issue this way:

“Yet some groups protested, refusing to keep their distance, marching against travel restrictions — as if measures that governments must impose for the good of their people constitute some kind of political assault on autonomy or personal freedom! Looking to the common good is much more than the sum of what is good for individuals. It means having a regard for all citizens and seeking to respond effectively to the needs of the least fortunate.

It is all too easy for some to take an idea — in this case, for example, personal freedom — and turn it into an ideology, creating a prism through which they judge everything.” Francis P. Pope Francis: A Crisis Reveals What Is in Our Hearts. The New York Times. Nov 26, 2020.

100 million COVID-19 infections and more than 2.23 million COVID-19 deaths, as of February 1, 2021. The actual number of infections is higher in view of the unreported and untested cases. The actual number of deaths from the pandemic should also count the non-COVID-19 deaths that occurred because of overstretched health care centers, acute poverty, and other consequences of the pandemic. COVID-19 infections and death rates are unequally distributed among populations.

Some of those infected suffer from “long COVID” or “long-haul COVID,” the names given to the long-term sequelae of a COVID-19 infection.¹⁰³ An estimated 10-20 percent of those infected suffer symptoms lasting longer than a month, and some 2-3 percent have symptoms lasting longer than 3 months. Many organ systems may be involved, including the neurological system.¹⁰⁴ To date, evidence indicates that COVID-19 can have both mild (e.g., loss of smell (anosmia), loss of taste (ageusia), headaches, dizziness, confusion) and more severe neurological outcomes (e.g., cognitive impairments, seizures, delirium, psychosis, strokes). The long-term sequelae of the infection are both of medical concern and of social and economic concern due to their potential impact on health care and social care systems. Given the growing information and evidence of neurological symptoms, we suggest that these symptoms be systematically screened for and monitored to yield greater insight into their regularity and severity.

The pandemic has impacted several facets of mental health and psychological well-being. Data from large representative samples indicate that levels of depression, anxiety, self-harming behavior, and suicidal ideation appear to have increased since before the COVID-19 pandemic.¹⁰⁵ Some composite measures of psychological well-being and flourishing have also gone down.¹⁰⁶ Responses from a large, longitudinal panel in the UK show an increase in mental health distress from 2018-2019 to April 2020.¹⁰⁷ Similar findings of the deterioration of mental health and well-being have been found in other countries. The pandemic has maintained or exacerbated the impact of some (but not all) risk factors for greater mental distress, especially for women and younger individuals. The pandemic has also introduced new risk profiles, such as individuals with young children at home.¹⁰⁸

These findings underscore the importance of supporting mental health during the pandemic and beyond with the aim to reach “parity of esteem,” so that someone with mental health concerns has the equivalent access and support in evidence-based treatment as someone

with physical health concerns. Data indicate that this is far from the current reality.^{109,110} Given the increase in anxiety, depression, and distress observed during the pandemic, governments and organizations should make context-appropriate mental health resources, such as e-cognitive behavioral therapy,^{111,112} freely available and accessible to all within existing social care systems.¹¹³

In addition to these clear signs of rising mental illness and emotional stress, there has also been some evidence of resilience. In particular, life satisfaction surveys spanning multiple countries show that some countries are reporting lower mean-levels of life satisfaction in 2020 than in previous years,^{114,115} but many countries show no change or an increase.¹¹⁶ For instance, life evaluations collected from over 30,000 people in 34 countries in Europe before (September-December 2019) and during COVID-19 (July-August 2020) show few changes, with more being positive than negative.¹¹⁷ The source of this notable resilience requires further research. Similarly, some studies have found little evidence for a drastic decline in social connection, despite early fears that physical distancing and protective behaviours would result in widespread loneliness. Indeed, note that loneliness reported by a nationally representative sample of 1,468 Americans in April 2020 was 13.8 percent,¹¹⁸ only slightly (albeit significantly) higher than the 11 percent reported in a separate sample in April and May 2018.¹¹⁹ And longitudinal data collected from the same individuals (n=1,545 Americans) before and after the pandemic onset show no mean-level change in loneliness and an increase in social support.¹²⁰

RECOMMENDATIONS FOR SAFE WORKPLACES, OTHER INDOOR ENVIRONMENTS, AND AIR TRAVEL

To improve the safety of workplaces, air travel, and other indoor environments, exposure risk in each of these settings must be assessed and reduced, taking into account droplet transmission, aerosol transmission, and limited fomite transmission. A holistic risk reduction strategy is warranted in all settings to address these routes simultaneously.^{121,122} In some cases, when organizations have relied on single or limited control strategies, high-profile outbreaks have occurred.^{123,124}

One option for safe work is work-from-home where possible. We must recognize that such an option is not available for workers in many essential industries, such as on-site schools, healthcare, manufacturing, food

production, delivery, transportation, construction, and childcare, and may be less available to workers in LMICs than in HICs and some MICs. Indeed, it is these “frontline” or “essential” workers who often enable others to work from home. The unavailability of work-from-home options for many frontline service workers is a contributing factor to the disproportionate COVID-19 burden that members of historically marginalized groups and those of low socioeconomic status carry, as they are more likely to hold employment in public-facing job positions or engaged in the informal sector.¹²⁵ The risk of falling into poverty is also often greater for employees that are not in standard (i.e. permanent, full-time dependent) jobs and the self-employed.¹²⁶ In addition, it is of great importance to reduce the presence of potentially infectious individuals in the workplace. Workers need to be supported financially to enable them to quarantine or isolate as appropriate, which may be particularly burdensome for small employers. Government support for workplace testing and for payment of infected or exposed workers during necessary quarantine and isolation can be effective in reducing risks of workplace exposures.

The priority in those cases is to engineer a safer working environment. The concentration of respiratory aerosols can increase over time indoors unless they are removed through deposition, ventilation, or filtration. Many studies have shown that higher ventilation rates are associated with reductions in risk of respiratory infections.^{127,128} Most buildings with mechanical ventilation recirculate a portion of the indoor air. The extent to which the recirculated air is free of infectious aerosols relies on two factors: the efficiency of filtration on the recirculated air (dependent on particle size) and the volume of air passing through the filter. Most buildings use filters with a low particle capture efficiency for the size range of interest for infectious disease transmission, such as a minimum efficiency reporting value (MERV) 8 filter. Higher efficiency filters, such as MERV 13 filters, can capture approximately 80 percent of particles in the 1-10 micron size range, thereby increasing the overall volume of virus-free air delivered to a space, even if outdoor air ventilation rates are low.¹²⁹ In buildings without mechanical ventilation systems, opening windows can increase outdoor air ventilation rates. Portable air cleaners with HEPA filters, when sized correctly for the room, can also be used as a supplemental control strategy.

Administrative controls address the occupant behavior aspects of viral transmission, focusing on minimizing the intensity, frequency, and duration of the exposure to SARS-CoV-2 through modifications to work schedules and routines. These controls address

known risk factors for SARS-CoV-2 and other infectious agents, such as higher occupant density, close contact, and long duration of exposure.¹³⁰

In addition to these controls on the indoor environment, face masks can reduce the concentration of respiratory aerosols particles emitted (“source control”) and the concentration breathed in by the wearer, with the level of removal efficiency dependent on the materials used in the mask.^{131,132} Both the particle capture efficiency of the fabric and the fit of the mask also influence effectiveness. The proper methods and the benefits of face mask wearing should be clearly communicated to promote high compliance with masking guidelines. Even without full compliance, masking has been shown to reduce community transmission of COVID-19.¹³³ Masks with high filtration efficiencies (e.g., N95s, KF94s, KN95s) should be made readily available to essential workers, as they are for healthcare.

Disease transmission can occur on airplanes,¹³⁴ and several case studies specific to SARS-CoV-2 have been reported.^{135,136} However, the overall number of COVID-19 cases attributed to air travel is small relative to the number of travelers. Within the airplane, disease spread is very limited due to the environmental control systems onboard. Airplanes have very high air exchange rates, and all recirculated air is passed through high-efficiency particulate air (HEPA) filters, which capture a minimum of 99.97 percent of airborne particles and airflow around the plane is limited. As a result, when transmission occurs, it is generally limited to within one or two rows of an infectious person. However, airplane environmental controls only help reduce disease transmission risk when they are operating; risk may be higher on airplanes when environmental control systems are not operating, such as during boarding.^{137,138} Moreover, air travel always includes time spent in other environments beyond the airplane cabin, some of which may be higher risk. This includes time spent on public transportation, on security and check-in lines, in airport restaurants, at the gate, and during the boarding and disembarking processes. The entire door-to-door travel process should be evaluated for opportunities to reduce transmission risk. Most importantly, airplanes are vectors of disease transmission, efficiently transporting infected individuals across and within countries. Routine screening and testing of passengers is warranted.

ENSURING ACCESSIBLE K-12 EDUCATION

Children face particular vulnerabilities in this pandemic, with threats of increasing poverty, declining pediatric vaccine coverage, and related harms, exacerbated by

continuing school closures. Countries must implement policies that allow all children to learn regardless of economic status, including in-school, online and blended learning, and must ensure Internet access as needed for all children to receive schooling. Special efforts should be made to ensure the safety of schools and keep schools open, especially primary schools, which have generally been found to be low-transmission environments.

Throughout the progression of the COVID-19 pandemic, it has become increasingly clear that in-person schooling does not lead to substantial increases in community transmission of SARS-CoV-2, especially when effective risk reduction measures can be put in place in the schools.¹³⁹ The safety of in-person schooling is highest for primary school. Children aged 0-9 seem to be less susceptible than older children aged 10-19 and adults to becoming infected with COVID-19.¹⁴⁰ If younger children do become infected, they are also much less likely than adults to suffer severe outcomes and may be less likely to transmit the virus to other children and adults.¹⁴¹ New variants of the virus have not yet shown notable differences in infection rates among children (higher infection rates seem consistent among all age groups).¹⁴² Trends of the new variants must, however, be closely monitored to ensure that schools continue to remain a low-risk environment for virus spread. The education community must remain vigilant to the risks posed by the new variants to keep schooling open and safe.

To minimize the potential risk of in-school transmission for both children and adults, schools should implement a suite of control measures that include universal face mask wearing, enhanced ventilation and filtration, maintaining one-meter distancing between students where possible, maintaining two-meter distancing between adults where possible, and other control measures.¹⁴³ Implementing these strategies may be complicated in school districts of varying sizes and with varying amounts of resources. Schools may encounter logistical challenges and challenges of coordinating across schools, older facilities and deferred maintenance, few school nurses, budget constraints, and low mutual trust between families and school administrators while trying to implement risk reduction measures.

Strenuous efforts should be made to keep schools open, though the practicalities of doing so depend on the overall amount of community transmission of the virus and the ability to keep the school environment safe. For reasons mentioned above, primary schools are more readily reopened or kept open than secondary

schools. In cases where schools cannot safely be kept open, it is imperative to ensure that all children and teachers have the digital devices and access to the Internet necessary to participate in online education, as well as appropriate training for their use. In addition to better enabling tracking of student engagement, schools provide mental health support, food, support to parents, and many other services that are best provided when schools are open and in-person.

INVESTIGATING THE ORIGINS OF COVID-19, PANDEMIC PREPAREDNESS, AND ONE HEALTH

In order to prevent future pandemics, it is essential to understand the origins and emergence of COVID-19 and to undertake a One Health approach for preserving and enhancing ecosystem and human health.¹⁴⁴ The current pandemic is the latest in a series of recent emerging zoonotic diseases. Several have involved viruses with origins in bat populations, including Severe Acute Respiratory Syndrome (SARS-CoV), Middle-East Respiratory Syndrome (MERS-CoV), Ebola, and now COVID-19 (SARS-CoV-2).

Three objectives must be achieved to understand the origins of the pandemic. The first is to identify the most likely origin of SARS-CoV-2 and the pathway by which it emerged in people. We seek clarity on the animal species, location, and time at which the virus first infected people, and on whether an intermediate host was involved. Additionally, a number of studies reported the presence of SARS-CoV-2 earlier than December in China and prior to January in other countries, although it is unclear at this stage how rigorous these studies are.

The second objective is to assess the early spread of COVID-19 and to understand the reasons that control measures were unable to contain the initial outbreak. The first confirmed case of COVID-19 in people appears to have been in early December in Wuhan. The Wuhan and Hubei authorities were actively working to suppress a growing outbreak by mid-December, and the Federal CDC (China CDC) was involved at the end of December. Despite rapid identification of a causative agent and travel restrictions in the lead up to the Chinese New Year, the virus spread internationally. The reasons that this virus was able to spread so effectively are uncertain, and the trajectory of this outbreak differs significantly from SARS-CoV.

The third objective is to identify One Health solutions to future pandemic threats. All prior pandemics and

most known emerging diseases have originated in non-human animals, usually wildlife, and have emerged due to environmental and socioeconomic changes, such as land use change, agricultural expansion, and the wildlife trade. These drivers bring people, livestock, and wildlife into closer contact across large swathes of the planet and are the factors behind the emergence of HIV/AIDS, Ebola, SARS, Nipah virus, and likely COVID-19. The COVID-19 pandemic has also involved farmed animals, with outbreaks of COVID-19 in mink farms in Europe and the US.¹⁴⁵ This virally mediated connection among the environment, animals, and people is a One Health problem that underpins pandemic risk, and we must identify One Health approaches to controlling future pandemics.

PROMOTING TRANSFORMATIVE INVESTMENTS FOR AN INCLUSIVE GREEN AND DIGITAL SOCIETY

The COVID-19 pandemic prompted an economic recession in 2020, and 2020 was the worst year for economic growth since World War II.¹⁴⁶ All countries need to build back better;¹⁴⁷ however, investment trends remain misaligned with the world's future needs. The recovery period offers the world an opportunity to decisively shift away from fossil fuels towards an energy system based on clean and distributed renewable energy. While providing immediate support to meet social needs, governments should spur recovery through climate-aligned transformative investment that is focused on accelerating the transition to a job-based green and digital economy and inclusive society.

The pandemic has accelerated the onset of the digital age, making universal access to broadband services especially urgent. Digital access is vital for individuals to access information, social protection, health care, education, and other vital services. Yet nearly half of the world's population is still unconnected.¹⁴⁸

We strongly support the Roadmap for Digital Cooperation of UN Secretary-General Antonio Guterres, and underscore its call for digital access for all.¹⁴⁹ We also support the UN Broadband Commission's recent Manifesto on the Global Goal of Universal Connectivity.¹⁵⁰

Three main reasons should encourage policymakers to use COVID-19 as a springboard to accelerate the inclusive, green and digital transformation. First, there is a need to boost economic activity and employment and address social inequities.^{151,152} Second, there is a

need to reduce the risks of extreme weather events and poverty for hundreds of millions of people, as these challenges will escalate after the pandemic ends due to the impacts of climate change. And third, there is a need to reduce the likelihood of future pandemics, as emerging zoonotic diseases such as COVID-19 are driven by unsustainable environmental practices.¹⁵³

Simply reviving the existing 'brown' economy will exacerbate irreversible climate change risks and heighten economic and social risks.¹⁵⁴ Based on a robust analysis of previous efforts to "green" the economic recovery during the 2008–2009 Great Recession, we know that five policies have the potential to generate substantial economic and climate impacts, in particular: (i) clean physical infrastructure in the form of renewable energy assets, storage (including hydrogen), grid modernization and carbon capture and storage, (ii) building efficiency retrofits, (iii) investment in education and training, (iv) natural capital investment, and (v) clean R&D.¹⁵⁵ We also know that the public sector must take the lead if these actions are to be implemented on time and to scale, and they must be coordinated at the international level to be fully effective.¹⁵⁶

Recent simulations of green recovery plans worldwide confirm that a green economic stimulus is more growth-enhancing than a 'return-to-normal' stimulus that would merely boost the current unsustainable consumption and production patterns.^{157,158} Green recovery packages have multiple benefits, including reduced air pollution and improved health status, increased well-being, job creation, revitalization and growth of economies, and enhanced energy access and supply.^{159,160} Investing in climate mitigation and adaptation will also benefit the most vulnerable populations, which often bear the brunt of climate change externalities.

It is therefore urgent that HICs make pledges and commitments to support LMICs with climate financing, including the \$100 billion USD per year pledged by HICs and the full replenishment of the Green Climate Fund.

Recent commitments by more than 110 countries to reach net-zero emissions by 2050 provides momentum for accelerated and coordinated actions,¹⁶¹ and countries should do so to meet NDCs under the Paris Climate Agreement.¹⁶² The European Green Deal, adopted in 2019, aims for net-zero greenhouse gas emissions by mid-century. At the 2020 UN General Assembly, China committed to carbon neutrality before 2060, followed by Japan and the Republic of

Korea's pledges to carbon neutrality by mid-century. The current presidential administration in the United States has also pledged to achieve carbon neutrality by 2050. Canada proposed the Pact for a Green New Deal in May 2019.^{163,164} India has started to discuss its own plan for achieving climate neutrality. Other countries, including Chile, Costa Rica, and South Africa have also committed to net-zero emissions by 2050. Additionally, cities play a crucial role in achieving zero emission goals. The C40 Cities Climate Leadership Group, which includes 90 of the world's most populated cities, is driving urban action towards zero emission while increasing wellbeing and development.¹⁶⁵

The current financial commitments for a green and digital recovery are insufficient, including in most G20 countries.^{166,167} One exception is the EU, where the European Green Deal harbors a higher level of ambition and direction and where efforts have been made to align investment frameworks for a green recovery, but there remain questions about the overall funding and effective implementation of the plan.

LMICs and some EMs will need support not only to address the immediate consequences of the pandemic, but also to invest in a sustainable, inclusive, and resilient recovery. EMs that are home to ecosystems of global significance, such as the Amazon or the Congo Basin, should have access to grants for their recovery plans, provided that they do not use those resources for activities such as mining, oil exploration, or unsustainable agriculture business practices.

2021 will be a crucial year for global diplomacy, with four major environmental conferences, including the World Ocean Summit (Lisbon, April), the Convention on Biological Diversity (Kunming, May), the World Food Systems Summit (New York, September), and COP 26 (Glasgow, November). The involvement of parliaments in these multilateral processes will be especially relevant as they play an essential role in implementation at the national level through budget allocation, representation of their constituencies, government oversight, and, in certain countries, the ratification of international agreements. Taken together and supported by other key high-level meetings (United Nations General Assembly, G20, High-Level Political Forum, etc.), these environmental summits can make 2021 the "super year for nature and climate,"¹⁶⁸ and can set the foundation for long-term international cooperation and increased action to overcome the implementation deficit of multilateral environmental agreements and promote an inclusive, green and digital recovery from the COVID-19 pandemic.

TABLE 1. NEW CASES BY REGION AND QUARTER (2020 & 2021)¹

Region	Population	Percent of world total	Q2 (2020)			Q3 (2020)			Q4 (2020)			Q1 (2021)		
			New cases (total)	New cases (percent of world total)	New cases per day per million	New cases (total)	New cases (percent of world total)	New cases per day per million	New cases (total)	New cases (percent of world total)	New cases per day per million	New cases (total)	New cases (percent of world total)	New cases per day per million
East Asia Pacific	2,360,000,000	30.4%	167,730	1.7%	0.8	637,621	2.7%	2.9	1,035,223	2.1%	4.8	702,952	3.6%	9.3
China	1,440,000,000	18.6%	2,506	0.0%	0.0	5,760	0.0%	0.0	5,418	0.0%	0.0	4,233	0.0%	0.1
East Asia Pacific (minus China)	921,000,000	11.9%	165,224	1.7%	2.0	631,861	2.7%	7.5	1,029,805	2.1%	12.2	698,719	3.5%	23.7
Europe	747,000,000	9.6%	1,942,155	20.2%	28.6	2,672,364	11.3%	38.9	18,700,000	38.4%	272.2	6,564,578	33.2%	274.7
Latin America and the Caribbean	653,000,000	8.4%	2,597,051	27.0%	43.7	6,796,820	28.8%	113.2	6,272,436	12.9%	104.4	3,398,535	17.2%	162.7
Middle East and North Africa	525,000,000	6.8%	851,826	8.9%	17.8	1,417,634	6.0%	29.4	3,369,083	6.9%	69.8	1,057,684	5.4%	63.0
Northern America	369,000,000	4.8%	2,549,516	26.5%	75.9	4,646,801	19.7%	136.9	13,300,000	27.3%	390.5	6,480,905	32.8%	549.0
Central and Southern Asia	2,010,000,000	25.9%	1,216,123	12.6%	6.7	6,567,119	27.9%	35.5	5,398,947	11.1%	29.2	899,811	4.6%	14.0
Sub-Saharan Africa	1,090,000,000	14.0%	299,256	3.1%	3.0	838,190	3.6%	8.3	681,707	1.4%	6.8	661,120	3.3%	18.9
World	7,760,000,000		9,623,657		13,628154	23,576,549		33.0	48,757,386		68.3	19,765,585		79.6

Q2 (2020) APRIL 1 2020 – JUNE 30 2020
 Q3 (2020) JULY 1 2020 – SEPT 30 2020
 Q4 (2020) OCT 1 2020 – DECEMBER 31 2020
 Q1 (2021) JANUARY 1 2020 – FEB 1 2020

¹ A map of these regions can be found here: <https://covid19commission.org/regional-map>.

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