

Centre for the New Economy and Society



# Building Back Broader: Policy Pathways for an Economic Transformation

WHITE PAPER

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This paper is the outcome of a set of international, multistakeholder dialogues organized by the World Economic Forum's Centre for the New Economy and Society. The dialogues engaged the Centre's six Global Future Councils to identify the most urgent economic and social challenges as the world emerges from the COVID-19 crisis and explored a range of response options to build back on a much broader, more inclusive basis.

As a key output of this process, this report draws upon discussion contributions by leaders and experts who engaged in dialogues between October 2020 and May 2021. It also includes the latest thinking from international organizations, academic researchers, think tanks, businesses and other stakeholders. The paper is intended to be a resource for governments, business and other stakeholders interested in furthering economic and social progress.

This report is published by the World Economic Forum as a contribution to a project, insight area or interaction. The findings, interpretations and conclusions expressed herein are a result of a collaborative process facilitated and endorsed by the World Economic Forum but whose results do not necessarily represent the views of the World Economic Forum, nor the entirety of its Members, Partners or other stakeholders.

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# Executive summary

The challenges and disruptions faced by societies and the global economy today require an economic transformation of unprecedented depth and scale.

The highly asymmetric impact of the pandemic has reinforced historical inequalities within and between countries and is now giving rise to a highly divergent recovery. Technological change has accelerated through the crisis, contributing to additional labour market polarization. Furthermore, climate change and its mitigation, if badly managed, could exacerbate economic and social divisions. At the same time, long-term growth prospects remain subdued, following pre-crisis trends. In addition to these known, longer-term dynamics, future shocks will arise from frontier risks with unknown likelihoods and impacts for which many governments and societies are not currently well prepared.

Public and private actors are challenged to rapidly address these longer-term dynamics while simultaneously building preparedness for future shocks. National economies will need nothing short of a new social contract, with redesigned systems to ensure equality of opportunity, distributional justice and intergenerational equity.

This policy brief covers vital aspects of what a new social contract should embrace in relation to fiscal and monetary policy, jobs and wages, education and skills, equity and social justice, new markets and frontier risks. Across these six areas, it emphasizes avenues that will support the creation of more inclusive economic and social outcomes, offsetting the current dynamic of diverging, K-shaped recoveries. For each, it presents a set of cutting-edge pathways for reflection and action by public and private decision-makers.

The paper considers how economic emergency response mechanisms can be made more effective

and tax systems fairer, while simultaneously proposing a set of targeted measures to increase opportunities and resilience for historically disadvantaged groups. It sketches avenues for how innovation-driven emergence of new sectors along with a progressive transformation of skills, jobs and labour markets could be the beginning of achieving a new quality of growth. In addition to offering pathways for addressing known challenges, it provides entry points for all stakeholders to become more resilient to unknown future shocks.

Chapter 1 on fiscal and monetary policy proposes avenues for governments to support fairer economy-wide outcomes at the macro level through effective emergency measures, stimulus spending, an overhaul of tax systems and a new division of labour between fiscal and monetary measures.

Chapter 2 on jobs and wages sets out mechanisms for shaping fairer, more inclusive and more resilient labour markets by using opportunities to create high-quality jobs in new sectors and transforming jobs in traditional sectors. It suggests pathways for improving wages through reskilling and upskilling, for upgrading labour standards and for rethinking social protection.

Chapter 3 on education and skills discusses cutting-edge approaches for teaching and embedding the skills required in the new economy and for measuring firm-level and economy-wide progress in their acquisition. It also considers avenues for making skilling opportunities widely accessible in order to create better labour market outcomes for all.

Chapter 4 on equity and social justice explores targeted interventions to create equality of opportunity for historically disadvantaged groups;



it proposes avenues to shape a care economy that gives today's unremunerated carers a choice over how to allocate their time, and identifies legal reforms, investment needs and channels through which business commitments can contribute to closing opportunity gaps.

Chapter 5 on new markets explores the levers at our disposal to set a new direction for growth by encouraging the creation and expansion of new sectors. To this end, it considers a combination of patient investment in mission-driven research as well as avenues for scaling new products, fostering demand and rethinking intellectual property (IP) regimes. It also calls for a new appreciation of true value creation over current accounting value.

Chapter 6 on frontier risks considers risk pathologies behind poor risk responses and offers pathways towards greater resilience for businesses, governments and societies. Recognizing that attention and resources are focused on managing COVID-19 and recovery efforts, this piece spotlights risks that may not be on immediate radars but could be the source of the next global crisis. Frontier risks require a more agile and systematic approach to risk management, and the chapter considers how risk identification, communication, organization and regulation can be improved to this end.

Progress across these six areas holds the potential for achieving greater resilience and realizing gains in economic prosperity that are more evenly distributed. Importantly, the areas are closely interrelated and success in one of the six areas is dependent on and will indeed amplify success in others. For example, the creation of new markets will bring greater inclusion and shared prosperity only if all workers can acquire the right skills to take up newly created jobs, regardless of their background. It should be noted, however, that the pathways proposed are often context-specific and will need to be adapted depending on government capacity or the overall institutional environment.

The policy brief draws upon the insights of pre-eminent thought leaders in six Global Future Councils affiliated with the Centre for the New Economy and Society, which engaged in dialogues on the six topics between October 2020 and May 2021.

The work of the Centre will continue to create insights, action frameworks and leadership alliances that convert emerging ideas into action to build prosperous, inclusive, resilient and equitable economies.





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# Rethinking fiscal and monetary policy for the new economy





The pandemic-induced lockdowns and the global recession of 2020 that followed have created a highly uncertain global outlook. Globalization is stalling, social cohesion is being eroded by unrest and political polarization, and the still-unfolding economic crisis is threatening the livelihoods of those at the lower end of the income spectrum. As existing temporary support measures begin to expire in several countries, it will be of paramount importance to put in place the structural reforms that will help to build back not only better but also broader.

Economies were already facing several major global challenges before the pandemic: global inequalities (within and across countries), deflationary pressures, as well as climate change and environmental degradation. There is nothing inevitable about these developments: they are the by-product of decades of focus on maximization of profit and the pursuit of economic growth without a commensurate focus on equity, inclusion and the environment.

The depth of the economic shock triggered by the pandemic has exacerbated the need for effective, proportionate and timely fiscal and monetary support to pave the way towards more inclusive and greener socioeconomic systems while ensuring fiscal sustainability. The current conditions have prompted policy innovations and experiments around the world. Now is the time to prepare for the next phase of the post-pandemic world. Policy-makers are challenged to recalibrate their priorities and restructure the ways in which they support the economy, creating the right environment to shape fairer, more inclusive and sustainable economies and societies.

This brief represents the latest thinking on pathways to achieve those goals, based on consultations with leaders from government, business, academia and civil society in the World Economic Forum's Global Future Council on the New Agenda for Fiscal and Monetary Policy.

## 1.1 Laying the foundations of a new inclusive economy

### 1.1.1 Reinforce the use of automatic stabilizers and safety nets

Rising inequality was already a major social and economic challenge before the pandemic. One of the defining features of the transformation that economies are experiencing is its asymmetric nature, disproportionately affecting already disadvantaged populations. Some of the countries hardest hit by the pandemic were already facing the greatest inequalities. People in lower-income work and in precarious jobs have borne the brunt of pandemic-related slowdowns, and racial, gender and intergenerational inequalities have been exacerbated in many countries. Most households with limited resources are not equipped to respond to economic shocks, thus amplifying the adverse effects of the crisis.

Providing adequate support to vulnerable households and workers to absorb shocks will be an essential step towards creating an economy that is more inclusive and will help to restore demand. Unemployment insurance can play a crucial role in facilitating a more efficient job search and smoothing consumption declines during unemployment spells. It may not be a viable solution in countries with large informal sectors, however, so lessons need to be learned from the experience of rapid deployment of cash support, thus creating an institutional design that would be able to deploy an income support programme quickly and safely in the face of systemic shocks. Non-contributory social safety nets such as cash transfers can provide income support for the most vulnerable and the unemployed who do not have access to unemployment benefits.

From a macro perspective, social insurance and automatic stabilizers that affect inequality can have a substantial effect on aggregate consumption volatility. The automaticity of benefits partly determines how swiftly they can be deployed without discretionary government action to respond to shocks and stabilize the economy.<sup>1</sup>

Countries around the world have adopted a range of measures to support the economy, and to top up existing social protection measures, extend benefits and increase their reach to broader swathes of the population than ever before. But the approaches have been necessarily ad hoc, and attention now needs to be directed to what to keep and how to change. In many countries, low coverage of existing social insurance systems has prevented the provision of lifelines to households in a timely manner. Targeted cash transfer programmes tend to have the largest effect of all social assistance programmes in reducing poverty and can improve human capital accumulation and help households to smooth income shocks, reducing future inequality.<sup>2</sup>

Enhancing the responsiveness and timeliness of a fiscal response through automatic stabilizers, at the same time as ensuring that support programmes are tailored to target the companies and households most in need, will be crucial to bolster the recovery and build resilience against future shocks.



### 1.1.2 Invest in inclusive growth multipliers within and across countries

Social safety nets and automatic stabilizers have a crucial role to play in buffering the initial impact of shocks but will have to be complemented with more far-reaching structural reforms that improve equality of opportunity. Importantly, such reforms will need to include widening participation in labour markets on fairer terms and access to education and training for the skills emerging as core in the new economy; subsequent chapters of this paper propose a concrete set of avenues on these two dimensions.<sup>3</sup> Enhancing universal healthcare coverage and broadening technology access are equally important in this respect. While relief efforts were critical in the initial stages of the pandemic and may need to be continued for some time, it will be important for governments to guard sufficient fiscal space for these deeper types of transformation.

Significant additional and longer-term financial support will be needed for low- and middle-income countries to overcome the economic and social effects of the pandemic. Beyond the immediate impact on GDP, the pandemic has had dire consequences for labour market participation and educational achievement across economies. A recent analysis performed in Latin American countries suggests the likelihood of today's students completing secondary education in the region may drop from 61% to 46%, a low level of educational attainment not seen since the 1960s.<sup>4</sup> Setting a new education and skills agenda will be critical to improving people's livelihoods in addition to overall economic development.<sup>5</sup>

Many developing economies were already facing financing constraints and elevated debt levels before the pandemic. Having had to prioritize their spending on the immediate health crisis, governments were left with limited resources for adequate direct transfers to the most vulnerable households and support to the most affected industries. Even fewer resources are now available for investing in the new markets that will serve as their future sources of growth. The potential tightening of financial conditions and the uncertain nature of the recovery puts these economies at risk of worsening debt overhangs, increasing debt servicing costs and deterioration of their credit ratings. Emerging and developing economies will need continued support through international grants and concessional financing, as well as the creation of an enhanced multilateral framework for potential sovereign debt restructuring for the most vulnerable economies.

It is not only possible to make economies and societies more equitable and resilient without compromising on economic performance, but the future of growth is dependent on adequate investments in human capital and broadening market access. Improving digital access, enhancing high-quality education and building lifelong learning markets will be three fundamental investments to reverse the damage induced by the pandemic and to lay the foundations of a new economy in advanced and developing countries.<sup>6</sup>

### 1.1.3 Embed environmental sustainability in fiscal and monetary support

Despite a temporary reduction in global carbon emissions by 4% to 7% in 2020 compared to 2019,<sup>7</sup> resulting from lockdown measures and reduced international travel and trade, much remains to be done to reverse the global trend. According to recent IMF estimates, even in the scenario of a prolonged recession resulting from the pandemic, greenhouse gas (GHG) emissions are still projected to rise by about 20% by 2030.<sup>8</sup> When looking at existing fiscal support packages<sup>9</sup> announced globally since the beginning of the pandemic, only a limited share of these measures was allocated to climate-positive measures. The "net climate impact" of these measures remains negative in both advanced and developing economies.<sup>10</sup>

Stimulus programmes should not only encourage green growth but also reduce long-term support to carbon-intensive industries by promoting green growth and accelerating the decarbonization

process through market-based incentives. However, the long-term use of monetary policies labelled as unconventional before the pandemic could also be used to accelerate the transition of our economies towards more sustainable growth. Despite significant efforts made in a number of economies, the net contribution to environmental sustainability of existing fiscal support measures remains negative in an overwhelming majority of countries, often due to the support for carbon-heavy industries during the lockdown phase of the pandemic.

Greening the recovery must become a central dimension of both fiscal and monetary policy if operational targets on climate change are to be reached by 2030. Measures such as tax incentives and investments in low-carbon infrastructure, for instance, building and energy efficiency but also support for green R&D, should be encouraged to promote innovation and investment in climate-smart technologies.<sup>11</sup> Furthermore, supporting the growth of

the green economy can act as a catalyst to support job creation, as these industries are typically more labour-intensive than fossil fuel energy, transportation or heavy manufacturing.<sup>12</sup> Several economies have already implemented or are scheduled to implement carbon pricing initiatives; however, according to the latest estimates, these initiatives would represent only 22.3% of global GHGs.<sup>13</sup> It will be crucial to create new multilateral frameworks that support the adoption of proactive tools such as notional emissions trading systems (ETS) and carbon taxes to accelerate the adoption of low-carbon initiatives, raise funds and provide the right incentives for green growth.

Businesses, workers and households will need to be supported through this transition to a low-carbon future by ensuring just transition mechanisms are put in place. These measures should be crafted through social dialogue and consultation with all relevant stakeholders. The current change in fiscal and monetary policy must be perceived as an opportunity to embrace and accelerate the pace of transition towards a more environmentally sustainable economic future.

## 1.2 Creating progressive, efficient and fairer taxation mechanisms

### 1.2.1 Expand the tax base and shift the tax burden

Progressive taxation will be an essential mechanism to compensate for the uneven recovery already under way, but also to provide higher revenue mobilization (especially in countries with lower tax capacity) and contribute to financing social spending and structural reform.<sup>14</sup>

There is a need to redesign tax systems to achieve more efficient taxation of capital and multinationals while also improving global transparency. Designing more progressive taxation mechanisms that shift the tax burden from the bottom to the top will also be crucial in the foreseeable future.

A number of policies could be considered to improve progressivity. These include increasing top marginal income tax rates that have seen a decline in recent decades,<sup>15</sup> and reforming tax deductions that predominantly benefit higher incomes (e.g. mortgage interest deductions). Increasing progressivity at the top of the income distribution could entail raising tax rates on higher income and addressing loopholes in the taxation of capital income (such as interest, dividends and capital gains). Increasing reliance on inheritance/gift taxes and property taxation could also be considered. Both the International Monetary Fund (IMF) and the United Nations (UN) Secretary-General have recommended a focus on a “solidarity tax”,<sup>16</sup> in which revenue-raising is targeted on elements such as wealth taxes on the most affluent and excess profits taxes on those that have prospered during the pandemic. Where low- and middle-income

economies are also considering the introduction of value-added taxes (VAT) to raise revenues from domestic consumption, it is important to recognize the likely distributional consequences and to ensure that progressive VAT systems are implemented. Despite the critical importance of broadening the national tax base, economies must also ensure that public services are effective enough to counterbalance the potential regressive distributional impact.<sup>17</sup> Where public spending may be too limited to have an impact, any introduction or expansion of VAT should be treated with caution.

Furthermore, accelerating digital transformation creates opportunities for revenue mobilization as well as challenges; multinationals with limited or no physical presence in the markets in which they operate, as well as automation and rising capital income share, affect income distribution. It has also become increasingly evident that the digital economy will require more agile taxation tools. However, the consequences of implementing a “digital only” tax have to be carefully assessed. Looking more closely at existing proposals, the implementation of such taxes can be complex if the delimiting criterion is for a company to derive profits from sales on digital platforms. Furthermore, policy-makers should be wary of using taxation to solve a market concentration issue, and it may be detrimental to solving profit-shifting initiatives in other industries.



## 1.2.2 Transform the global corporate tax architecture

Taxation systems must be redesigned efficiently to tax capital and multinationals. In an era of rising inequality and pandemic-induced disruption, there is increased need to reform international taxation by adopting new tax regimes that involve taxing excess profits of multinationals at higher rates. Taxing such profits at excess rates could help mitigate some of the spending demands currently placed on governments, and also contribute to restoring a fairer and more progressive global tax system.

There is increased potential for an international agreement on a globally enforced minimum tax rate. According to the latest estimates from Tax Justice Network, an estimated \$427 billion in tax is lost every year to international corporate tax fraud and private tax evasion.<sup>18</sup> When it comes to corporate taxation, solutions need to consider the increasing complexity of the international financial and tax architecture, the growth in intangible assets and the digital economy's rise providing increased flexibility for multinational companies to allocate their profits to low-tax jurisdictions.

The historical lack of multilateral cooperation and international tax agreements is among the issues that the Organisation for Economic Co-operation and Development (OECD)'s base erosion and profit shifting (BEPS) initiative aims to tackle, making profit-shifting harder to achieve and less attractive to multinational enterprises (MNEs). The current OECD proposal is split into two pillars: Pillar 1 would assess the profits of MNEs at a global level and compute the share of global activities in terms of sales and/or employment in each country. Pillar 2, on the other hand, looks at introducing a global minimum corporate tax rate in order to disincentivise tax arbitrage between different jurisdictions. It remains to be seen to what extent tax revenue gains from this ambitious proposal would be shared with low- and middle-income countries.

A recently published alternative proposal to the current OECD BEPS initiative aims to enforce a minimum effective tax rate (METR).<sup>19</sup> This follows a similar approach in design to the OECD proposals, but with a different implementation mechanism. Where the OECD proposal distinguishes between the taxing rights of the multinational's headquarters country and the host countries, the METR would reallocate undertaxed profits proportionally to countries according to their share of the multinational's real economic activity, based on sales and employment in each country. This proposal would result in a sizable shift of tax revenues, from tax havens to countries where the underlying economic activity takes place.

At the 21% rate proposed by the Biden administration, modelling suggests that the OECD approach would raise some \$540 billion in additional revenues annually, while the METR approach is projected to raise \$640 billion.<sup>20</sup> OECD countries would gain somewhat under the METR, but lower-income countries would gain significantly more, with the result that their corporate income tax revenues would typically grow by at least 30%, similar to what OECD countries would obtain.

The UN FACTI panel (the High Level Panel on International Financial Accountability, Transparency and Integrity for Achieving the 2030 Agenda) has recommended that negotiations begin on a UN tax convention to establish the basis for such arrangements. A UN tax convention could also set inclusive, ambitious standards for tax transparency and cooperation, which – coupled with a global minimum corporate tax rate – could potentially mark the end of the international race to the bottom.<sup>21</sup>



## 1.3 Rethinking the division of labour between fiscal and monetary policy

### 1.3.1 Redefine the roles of and frontier between fiscal and monetary policy

The current economic downturn raises important questions about the division of labour between monetary and fiscal policies. A fundamental rethink of the scope and roles of fiscal and monetary policy might be required, enhancing the coordination between different tools and policies during recessions as well as recoveries. Although the current macroeconomic framework relies primarily on central banks and monetary policies for taming business cycles, the effective lower bound problem is eminent. This implies that, where fiscal space is available, fiscal policy will need to play a greater role in supporting the economy. Furthermore, while current monetary policy tools might be effective at maintaining liquidity, they might not encourage the structural transformation towards fairer, more equitable and sustainable economies.

The new conventional wisdom in these unconventional times seems to be that advanced economies can take advantage of today's favourable financing conditions to borrow and spend relatively freely in order to support their economy.<sup>22</sup> However, when economies have higher debt levels, small increases in interest rates can

have a lasting impact on their fiscal sustainability, while also mechanically reducing the fiscal leeway to respond to future crises. Furthermore, the combined effect of asset purchases and low/negative interest rates could entail negative medium- to long-term externalities, potentially threatening global financial stability, fuelling asset bubbles and increasing market concentration in certain sectors.<sup>23</sup>

During the first phase of the pandemic it was necessary to act fast to provide liquidity, limit economic scarring and support the most vulnerable.<sup>24</sup> We must now ensure that any further spending is geared towards policies that have high fiscal multipliers. Economies should focus on programmes that increase their future growth potential, investing in improving the capabilities of its people through education, physical and digital infrastructure and innovation. Despite the crucial importance of swift fiscal and monetary policies, the recovery phase of the global pandemic must be a call to action for policy-makers to face the magnitude of the profound structural reforms required to build more resilient, inclusive and sustainable economies.



## Bibliography

- Alberola, E., Y. Arslan, G. Cheng and R. Moessner, “The Fiscal Response to the Covid-19 Crisis in Advanced and Emerging Market Economies”, BIS Bulletin No. 23, Bank for International Settlements, June 2020: <https://www.bis.org/publ/bisbull23.htm> (link as of 7 May 2021).
- Blanchard, Olivier J., and Lawrence H. Summers, “Automatic Stabilizers in a Low-Rate Environment”, AEA Papers and Proceedings, 110: 125–30, 2020.
- Boushey, H., R. Nunn and J. Shambaugh, *Recession Ready: Fiscal Policies to Stabilize the US Economy*, May 2019: [https://www.hamiltonproject.org/assets/files/AutomaticStabilizers\\_FullBook\\_web\\_20190508.pdf](https://www.hamiltonproject.org/assets/files/AutomaticStabilizers_FullBook_web_20190508.pdf) (link as of 11 May 2021).
- Brunnermeier, M., J.-P. Landau, “Central Banks and Climate Change”, Voxeu, January 2020: <https://voxeu.org/article/central-banks-and-climate-change> (link as of 7 May 2021).
- Cavallino, P. and F. De Fiore, “Central Banks’ Response to COVID-19 in Advanced Economies”, BIS Bulletin No. 21, Bank for International Settlements, June 2020: <https://www.bis.org/publ/bisbull21.htm> (link as of 7 May 2021).
- Cobham, A., J. Garcia-Bernardo, P. Janský, T. Faccio, J. Kadet and S. Picciotto, *A Practical Proposal to End Corporate Tax Abuse: METR, a Minimum Effective Tax Rate for Multinationals*, IES Working Papers, August 2021: [https://ideas.repec.org/p/fau/wpaper/wp2021\\_08.html](https://ideas.repec.org/p/fau/wpaper/wp2021_08.html) (link as of 7 May 2021).
- Cobham, A., J. Garcia-Bernardo, M. Palansky and M. Bou Mansour, *The State of Tax Justice 2020*, Tax Justice Network, November 2020.
- Alberola, E., Y. Arslan, G. Cheng and R. Moessner, “The Fiscal Response to the Covid-19 Crisis in Advanced and Emerging Market Economies”, BIS Bulletin No. 23, Bank for International Settlements, June 2020: <https://www.bis.org/publ/bisbull23.htm> (link as of 7 May 2021).
- Blanchard, Olivier J., and Lawrence H. Summers, “Automatic Stabilizers in a Low-Rate Environment”, AEA Papers and Proceedings, 110: 125–30, 2020.
- Boushey, H., R. Nunn and J. Shambaugh, *Recession Ready: Fiscal Policies to Stabilize the US Economy*, May 2019: [https://www.hamiltonproject.org/assets/files/AutomaticStabilizers\\_FullBook\\_web\\_20190508.pdf](https://www.hamiltonproject.org/assets/files/AutomaticStabilizers_FullBook_web_20190508.pdf) (link as of 11 May 2021).
- Brunnermeier, M., J.-P. Landau, “Central Banks and Climate Change”, Voxeu, January 2020: <https://voxeu.org/article/central-banks-and-climate-change> (link as of 7 May 2021).
- Cavallino, P. and F. De Fiore, “Central Banks’ Response to COVID-19 in Advanced Economies”, BIS Bulletin No. 21, Bank for International Settlements, June 2020: <https://www.bis.org/publ/bisbull21.htm> (link as of 7 May 2021).
- Cobham, A., J. Garcia-Bernardo, P. Janský, T. Faccio, J. Kadet and S. Picciotto, *A Practical Proposal to End Corporate Tax Abuse: METR, a Minimum Effective Tax Rate for Multinationals*, IES Working Papers, August 2021: [https://ideas.repec.org/p/fau/wpaper/wp2021\\_08.html](https://ideas.repec.org/p/fau/wpaper/wp2021_08.html) (link as of 7 May 2021).
- Cobham, A., J. Garcia-Bernardo, M. Palansky and M. Bou Mansour, *The State of Tax Justice 2020*, Tax Justice Network, November 2020.
- Dabla-Norris, E., J. Daniel, M. Nozaki, C. Alonso et al., “Fiscal Policies to Address Climate Change in Asia and the Pacific”, IMF Working Paper, March 2021: <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2021/03/24/Fiscal-Policies-to-Address-Climate-Change-in-Asia-and-the-Pacific-Opportunities-and-49896> (link as of 7 May 2021).
- G30 Working Group, “Reviving and Restructuring the Corporate Sector Post-Covid: Designing Public Policy Interventions”, February 2021.
- Gentilini, U., M. Almenfi, I. Orton and P. Dale, “Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures”, 10 July 2020 Update, Open Knowledge Repository, World Bank, 2020.

International Monetary Fund, *Fiscal Monitor: A Fair Shot*, IMF, April 2021.

International Monetary Fund, *Global Financial Stability Report: Bridge to Recovery*, October 2020.

International Monetary Fund, *Managing Divergent Recoveries*, April 2021

Kindermann, F., and D. Krueger, “High Marginal Tax Rates on the Top 1 Percent? Lessons from a Life-Cycle Model with Idiosyncratic Income Risk”, *American Economic Journal: Macroeconomics* (forthcoming).

Le Quéré, C., R.B. Jackson, M.W. Jones et al., “Temporary Reduction in Daily Global CO2 Emissions During the COVID-19 Forced Confinement”, *Nature Climate Change* 10: 647–53, 2020: <https://doi.org/10.1038/s41558-020-0797-x> (link as of 7 May 2021).

Lustig, N., and G. Inchauste, *The Distributional Impact of Taxes and Transfers: Evidence from Eight Developing Countries*, World Bank, 2017.

Lustig, N., G. Neidhöfer and M. Tommasi, “Back to the 1960s? Education May Be Latin America’s Most Lasting Scar from COVID-19”, *Americas Quarterly*, December 2020.

Lustig, N., G. Neidhöfer and M. Tommasi, *Lockdown Consequences: Prognosis of the Longer-Run Persistence of COVID-19 in Latin America*, CEQ Institute Working Paper 99, December 2020.

Picciotto, S., J. Kadet, A. Cobham, J. Garcia-Bernardo, P. Janský and T. Faccio, “For a Better GLOBE: A Minimum Effective Tax Rate for Multinationals”, *Tax Notes International* 101(7): 863–7.

Rees, D., “What Comes Next? Recovery from an Uneven Recession”, *BIS Bulletin* No. 33, Bank for International Settlements, December 2020: <https://www.bis.org/publ/bisbull33.pdf> (link as of 7 May 2021).

UN FACTI Panel, “FACTI Panel Report”, New York: United Nations, Financial Accountability Transparency and Accountability, February 2021: <https://www.factipanel.org/reports> (link as of 7 May 2021).

United Nations Development Programme, “Sovereign Debt Vulnerabilities in Developing Economies: Which Countries Are Vulnerable and How Much Debt Is at Risk?”, January 2021.

Vivid Economics, *Greenness of Stimulus Index*, February 2021 update.

World Bank, *Carbon Pricing Dashboard*, 2020 update.

World Bank, *Global Economic Prospects, Unconventional Policies, Unconventional Times*, Chapter 4, January 2021.

World Economic Forum, *Chief Economists Outlook*, Page 10, January 2021: [http://www3.weforum.org/docs/WEF\\_Chief\\_Economists\\_Outlook\\_2021.pdf](http://www3.weforum.org/docs/WEF_Chief_Economists_Outlook_2021.pdf) (link as of 7 May 2021).

World Economic Forum, *Dashboard for a New Economy: Towards a New Compass for the Post-COVID Recovery*, October 2020: <https://www.weforum.org/reports/dashboard-for-a-new-economy-towards-a-new-compass-for-the-post-covid-recovery> (link as of 7 May 2021).

Zucman, G., and E. Saez, “A Wealth Tax on Corporations Stock”, University of California, Berkeley, April 2021: <https://gabriel-zucman.eu/files/SaezZucman2021EP.pdf> (link as of 7 May 2021).



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## Shaping a new future of work and wages





The “double disruption” of the COVID-19 pandemic and accelerated automation has destroyed jobs, deepened inequalities and ushered in the future of work. The International Labour Organization (ILO) estimates that 114 million jobs were lost globally in 2020.<sup>25</sup> Although employment has started to rebound, job protection remains important to avoid spikes in unemployment as the drawn-out nature of the crisis forces more firms to restructure or close. There is also an urgent need to encourage job creation, especially for youth and other vulnerable groups – quality jobs, with decent wages and working conditions. In addition, wages have been under pressure because of the pandemic, gaps in social protection have come into focus and the challenges of new ways of working for well-being have become apparent. Finally, there is a potential third disruption underway in many sectors, as industries shift away from carbon, changing the nature of required tasks, skills and jobs.

Addressing the disruption to jobs, wages and work requires effective collaboration among all levels of government, employers, workers, labour unions, education and training providers, workforce technology companies, employment agencies and foundations. Business leaders and investors need to pay closer attention to the longer-term dividends of investing in the workforce.

Collaborative, large-scale action can ensure economic dynamism and build a vibrant and sustainable ecosystem with an employable and productive workforce in good-quality jobs paying decent wages. This brief represents the latest thinking on pathways to achieve those goals, based on consultation with leaders from government, business and civil society in the Global Future Council on Shaping the Future of Work, Wages and Job Creation.

## 2.1 Creating jobs and maintaining employment

The economic contraction due to the pandemic has reduced the rate of growth in the jobs of tomorrow. We estimate that, by 2025, some 97 million new jobs will emerge globally, while 85 million will be displaced due to the new division of labour between humans and machines.<sup>26</sup> There is a need to support the transition of workers into job opportunities that are both socially and environmentally sustainable. It will also be important to ensure that jobs destroyed are not replaced by others of lower quality or wages.

Some emerging roles can already be identified. A quarterly Jobs of the Future Index by the Cognizant Center for the Future of Work tracks 50 digitally enabled “jobs of the future”.<sup>27</sup> However, it is difficult to fully envisage the jobs that new technologies will create; a significant share of jobs will likely be in wholly new occupations. Maintaining mobility and flexibility while investing in training and continuously updating skills curricula will help workers adapt and close emerging skills gaps. The collaboration

of governments, companies and civil society in regional and sectoral clusters will be necessary to identify and support opportunities for job creation and employment protection.

In the event of temporary shocks, such as COVID-19, governments can support the retention of staff by businesses through wage compensation and tax or payment deferrals. The COVID-19 crisis has seen unprecedented use of job-retention schemes covering close to 60 million workers across OECD countries.<sup>28</sup> Flexibility is an important component of such schemes: the United Kingdom has adapted its initial binary furlough regime to something more similar to Germany's Kurzarbeit unemployment insurance policy, where the proportion of state support can vary, giving companies the option to reduce people's hours as an alternative to fully furloughing them. Employers get to keep an experienced workforce and employees get to keep firm-specific human capital.

### 2.1.1 Invest in new economy sectors and emerging roles

“New economy” sectors with promising job creation potential include the care and sustainable economies, infrastructure and sustainable agriculture. Investing in the care economy not only directly creates jobs but also removes barriers to women working. In the sustainable economy, jobs that help preserve or restore the environment – whether in traditional sectors such as manufacturing or in emerging green sectors – modify production and lower energy use to achieve the 2C climate change target could create 18 million jobs globally<sup>29</sup> (e.g. engineers of vehicle-to-grid systems, sustainability consultants). Infrastructure investment offers both short-term direct job creation

and longer-term indirect job creation. Within the United States, investing \$1 billion annually in public transportation could create 49,700 jobs and \$5 billion in GDP.<sup>30</sup> Agriculture already accounts for around 1 billion jobs worldwide, and around 3% of global GDP, and global food production will need to rise by 70% by 2050 to feed the expected world population.<sup>31</sup>

There are also emerging roles growing in demand in other sectors transitioning to automation and sustainability. Some extend across industries, such as data analysts and scientists, artificial intelligence (AI) and machine learning specialists, robotics

engineers and software and application developers. Some are emerging within specific industries, such as materials engineers in the automotive sector, e-commerce specialists in the consumer sector, and renewable energy engineers in the energy sector. Others reflect the importance of human interaction in the new economy, such as roles in marketing, sales and content production.<sup>32</sup>

Strategies for operationalizing this pathway include:

- **Public investment, direction, coordination and incentives.** Governments can undertake direct public job creation and strengthen public investment in new economy sectors, especially labour-intensive sectors such as care and infrastructure (both physical and digital). Incentives for job creation include tax breaks for investing in people. The current US administration's \$2 trillion infrastructure and jobs plan under President Biden shows the level of ambition required (government).
- **Net-zero employment policies.** Both Unilever and Danone have committed to reskilling people to equip them to evolve with their companies into new roles, or, if no suitable role exists, at least to provide the necessary skills for suitable roles elsewhere. Governments need to ensure that public investments crowd-in rather than crowd-out such private investments and should collaborate with business to scale up net-zero

employment policies to sector level (business, government).

- **Job sharing.** Job sharing can also help increase employment. Employees often need flexibility at certain transition points in life, and job sharing allows for continuity. The platform Roleshare matches up professionals looking to work part time so they can co-apply for full-time jobs. Companies retain talent, achieve higher well-being and productivity rates and access a larger talent pool when hiring (business).
- **Evolving data infrastructure for labour.** Effective job-creation strategies require dynamic mapping of opportunities available to displaced workers. Workforce technology companies using advanced data and AI capabilities matched with user-friendly interfaces have an important role to play in job matching and assessing career transition pathways – although biases in AI against women and people of colour need addressing. Governments can support this by strengthening public data, including by developing national skills databases. In developing countries, even basic labour market data tends to be fragmented, with major gaps. Ethiopia's Job Creation Commission has created a Labour Market Information System to provide comprehensive labour market data and offer digital solutions in areas such as finding talent markets (business, government, civil society).

South Korea's New Deal is a set of projects supporting structural transformation focused on the digital economy and green economy. It includes: equipping workers with skills that complement new technologies through adult learning/retraining policies; educating 300,000 workers to specialize in AI, software and green technologies by 2025; improving an online platform that provides information on career development; providing support for vulnerable groups (including the less educated, workers in small firms, temporary workers, the unemployed); and enhancing social protection.

## 2.1.2 Foster youth employment

The youth population has been the hardest hit by the impact of the pandemic on employment across the globe, adding to the challenges they already face on entering the workforce.<sup>33</sup> Alongside addressing the pandemic's impact on the employment of other vulnerable groups, encouraging youth employment has again become an urgent priority. An important challenge is to develop skills and work experience so that young people can get onto the jobs ladder and do not suffer permanent damage to their employment prospects.

Strategies include:

- **Expanding apprenticeship programmes.** The OECD has found that apprenticeships are a powerful means of educating and training young people.<sup>34</sup> They should be balanced with ongoing academic education to sustain and develop basic skills, and linked to post-

secondary opportunities, including routes to higher education. There is a need to address the under-representation in apprenticeship programmes of women, who otherwise risk being funnelled instead into short-term and non-qualification-based internships. Zurich Insurance's apprenticeship programmes include "earn while you learn" opportunities to provide a debt-free pathway to a career. In Spain, the company developed around 300 hours of insurance content and offered public-administration-approved dual vocational training. Having more sectoral partners to offer entry-level roles to participants has a meaningful impact on employment. Such programmes could be replicated across countries and industries through public-private cooperation. South Korea's government subsidized apprenticeships for about 10,000 young workers in 2021 (business, government).



- **Providing skills to young people.** There is a need to ensure that skilling reaches unemployed young people to bridge the skills gap to employment opportunities. Private-sector-led initiatives should be seen as part of businesses' social responsibility and will help companies

ensure a supply of talent with the skills they need. Unilever's LevelUp initiative is equipping 1.5 million young people in South Africa (where about 60% of youth are unemployed) over the next five years with the skills needed for the future of work (government, business, civil society).

### 2.1.3 Support workers to build their own business (entrepreneurship)

Small and medium enterprises (SMEs) play a crucial role in a dynamic labour market, creating some 70–80% of jobs globally, but have suffered seriously from the COVID crisis given a lack of large cash reserves. Supporting small-business development and creating entrepreneurial ecosystems should be a core part of job creation strategies.

Strategies include:

- **Strengthening financial instruments, business development training and data ecosystems for SMEs.** For businesses in survival mode due to the pandemic, financial instruments might stave off bankruptcy. For others, access to finance is important for growth and job creation. Technical and data assistance and policy unlocks are also needed. Governments and business should collaborate to strengthen the environment for start-ups, and

build ecosystems to collect and share data about what small businesses need (government, business).

- **Enabling e-commerce in rural areas.** Governments can support job creation in rural areas by investing in information and communications technology (ICT) infrastructure. By providing access to a wider market, e-commerce can make the manufacture of niche products in remote areas a viable business opportunity. The World Bank and Alibaba have examined how supporting local businesses to use e-commerce is creating jobs and raising household incomes in rural China. The number of Taobao Villages – villages with a total annual e-commerce transaction volume of 10 million yuan (\$1.5 million) and at least 100 active online shops – increased from 20 in 2013 to 4,310 in 2019 (government, business).<sup>35</sup>

### 2.1.4 Support workers through job and career transitions

Longer working lives and increasing technological impact will entail more job transitions. Within companies, transitions can be smoothed by internal training and mentoring. However, many transitions take place across companies and there is very limited support for such moves. Reskilling is critical for many transitions; indeed, around half of all employees will need reskilling over the next five years.<sup>36</sup> But reskilling is better established for high-skilled jobs than for the much larger number of lower-skilled jobs – the most susceptible to automation. The massive expansion of online learning during the pandemic offers a potential solution. There has been a fourfold increase in the number of people looking to learn online through their own initiative, a fivefold increase in employer provision of online learning opportunities and a ninefold enrolment increase in online training through government programmes.<sup>37</sup>

Strategies include:

- **Public programmes and incentives.** Governments must improve their support of reskilling for at-risk or displaced workers. Only 21% of businesses report being able to use public funds to help employees' reskilling and upskilling.<sup>38</sup> Support could include incentives for companies to provide training, individual training

accounts, conditionality of unemployment benefits on training, and extending funding from traditional education to online learning. Career changes take time and require extended support. For example, Singapore provides a stipend of 1,200 SGD (\$900) for unemployed people during retaining programmes that last nine months, with the last three months spent as trainees (government).

- **Private-sector-led reskilling.** Leading companies have experimented with a range of approaches to reskilling, but most firms are not doing enough. Volkswagen has created a retraining programme that allows production workers to become software developers. Unilever and Walmart have collaborated to offer new career paths based on workers' interests and skills, supported by Accenture, Skyhive and the World Economic Forum.<sup>39</sup> The Royal DSM NL Sustainable Employability programme brings a holistic approach to mental and physical health, motivation and performance that combines coaching, health advice and skills/development opportunities. Reskilling can also be encouraged by public/private certification of reskilling training, including micro-credentials, with employers signalling the market value of online credentials through their hiring practices (business).

## 2.2 Improving wages

The COVID-19 crisis has put serious downward pressure on wages<sup>40</sup> on top of a prior prolonged misalignment of wage and productivity growth and a rise in income inequality. There is a need for a

renewed focus on raising wages, including for front-line workers, to address poverty and inequality and encourage economic dynamism.

### 2.2.1 Provide minimum and living wages

Minimum wages in developed countries increased from 35% of the average wage in 2000 to 41% in 2019.<sup>41</sup> Research suggests that previous concerns among economists that such policies would have adverse effects on employment have not been realized.<sup>42</sup> It is important to set a base for wages that enables people to live with dignity and provide for a family, including education and healthcare. The ILO has robust definitions of minimum wages,<sup>43</sup> and the Global Living Wage Coalition estimates realistic living wage levels. Universal basic income has been much discussed in light of the risk to employment from automation, but evidence of its effectiveness is less established than for minimum/living wages and it poses greater funding challenges.

Strategies include:

- **Effective minimum and living wage policies.** Where effective minimum wage thresholds

already exist, which is the case in many developed economies, the aim should be to ensure living wages. The UK has set a target to achieve a living wage by 2024 of two-thirds of the median wage. In non-OECD economies, the focus should arguably be on implementing minimum wages as a first step (including addressing the large informal economy) (government).

- **Living wage commitments.** Businesses can commit not only to paying fair living wages to their own employees but also to ensuring that their suppliers follow this norm. For example, up to 65 million people, mostly women, work in clothing factories globally. Clothing retailer H&M has a fair living wage strategy that it is working to extend to all of its suppliers (business).

### 2.2.2 Help workers increase their wages through “escalator jobs” and upskilling

An important route to increasing wages is for people to improve their skills – either raising their value within their current roles or enabling them to transition to higher-skilled, better-paid jobs. Many people gain new skills from on-the-job experience. Around half of young workers are able to move from their first job into better-paid jobs within five years.<sup>44</sup> However, the extent to which jobs develop skills varies considerably. Jobs providing pathways to better-paid roles include customer service, sales, computer support, vocational nursing, welding and machining.<sup>45</sup> Such roles help to develop “foundational” human skills such as listening, communication, empathy, judgement and decision-making, which have sustained value and unlock the potential of technical skills. Additional skills training also makes a crucial difference and should be provided at scale to people in low-wage roles.

Strategies include:

- **Identify and support escalator jobs.** Governments and businesses should focus on identifying trajectories from lower-paid to better-paid jobs and invest in “escalator” jobs.<sup>46</sup> Finding ways to offer credentials for on-the-job experience would support transitions (government, business, civil society).
- **Provide targeted training subsidies and upskilling.** Governments can map skills availability and needs in their labour markets, assess where investment in upskilling should be targeted and provide incentives. Companies can encourage upskilling by making a direct link with remuneration. They should also adopt methods of employee accounting that recognize investment in their people as contributing to the value of the business (government, business, civil society).<sup>47</sup>

ManpowerGroup’s MyPath® programme helps progress talent from declining industries to growth sectors by curating career pathways in growth sectors such as IT, finance, advanced manufacturing and logistics. The programme has also upskilled more than 2,700 recruiters as talent agents – experts in assessment, coaching and data-driven recruitment.

## 2.3 Developing new models for social protection

The pandemic has revealed major gaps in social protection systems, including insurance and access to healthcare, notably in relation to non-standard employment and the informal economy. This calls

for developing new permanent models of social protection for non-standard employment and the informal economy that provide security and support resilience.

### 2.3.1. Create new models of social protection for non-standard employment

Non-standard employment has grown rapidly in recent years and this trend is likely to continue. Some 41% of companies expect to expand their use of contractors for task-specialized work over the next five years.<sup>48</sup> People in alternative work arrangements typically lack the safety net of salaried employees and often do not enjoy benefits such as paid holidays, sick pay, unemployment insurance and pensions – or may not be able to access them in practice. They may also face issues in terms of transferring benefits when moving between such forms of employment.

A crucial part of the solution is correct classification – where people are effectively employees they should be recognized as such. For genuinely independent or dependent contractors, there is a need to create new models of social contract that ensure security. Solutions should be the subject of dialogue between governments, business and workers' representatives – and business should accept worker organizations among people in non-standard employment.

Strategies include:

- **Provide innovative insurance solutions.** Platform companies have been starting to develop insurance solutions. Grab, a ride-hailing and delivery platform, provides income-loss insurance to its drivers in Singapore, funded by micro-payments. Governments could support benefits portability or permanently extend insurance to non-standard forms of employment – as some countries did temporarily during the pandemic. South Korea plans to expand coverage of employment insurance to its full spectrum of jobs by 2025, including dependent self-employment (one main platform) and freelancers (government, business, civil society).
- **Develop non-standard employment models that combine flexibility and security.** Companies are experimenting with talent marketplace models in which people do not have a fixed role but rather work on assignments. Unilever's U-Work model seeks to combine the flexibility of a contractor with security and benefits more like those of an employee; it includes a retainer but allows people to choose when to work (business, government).

### 2.3.2 Develop social security for the informal sector

The informal sector accounts for 89% of jobs in Africa, 66% in the Middle East and North Africa (MENA) and 53% in Latin America.<sup>49</sup> Extending social protection to people working in the informal economy would help encourage resilient and productive informal sectors that place workers on a sustainable path to better livelihoods and workforce development. Most social registries have limited coverage, focusing on the extreme poor in rural areas. Methods are also needed to reach the “missing middle” who form the backbone of most African economies but often lack regular incomes or savings.

Strategies include:

- **Improve social registries.** Governments should strengthen social registries, extend coverage, link them with other databases and develop robust ID systems to facilitate access. Mobile technologies can deliver payments. Turkey provides an example of the widespread use of

an identification and integrated social protection management system, based on a nationwide registry (government).

- **Provide informal sector social insurance schemes.** Savings accounts for the informal sector can be designed to be scalable (to ensure viability), efficient (since small savings are involved), voluntary (mimicking bank accounts) and flexible (given lack of regular income). Governments could provide fiscal incentives (e.g. initial deposit contributions) and they can be integrated or bundled with other services, such as health insurance. Rwanda is a good example of progress on providing social insurance for the informal sector. Since its launch in December 2018, the Ejo Heza programme has expanded to 11% of the working-age population in less than three years. The country has also innovated in automated programme enrolment and interoperability of ID and social protection data (government, business).



## 2.4 Setting new standards for work

### 2.4.1 Ensure decent work

There is a need to promote decent work in the full post-pandemic landscape of in-person, hybrid and virtual work, covering both employees and contingent workers. In the context of accelerating automation, ensuring that work is meaningful, purposeful and dignified while providing opportunities for personal development will both unlock human potential and support successful technology adoption.

Strategies include:

- **Ensure responsible automation.** The success of technology adoption depends on organizations holistically reviewing their entire value chain, processes, tasks, jobs and skills to understand the impact of technology on each of these components. This will enable them to equip employees with new skill sets to transition effectively into the newly digitized environment (government, business, civil society).
- **Provide flexible working options.** COVID-19 has accelerated changes in how work is performed, particularly where and when it occurs. Working time has become more flexible, but the boundaries between work and private time have been eroded. Work locations have also become more flexible, with many higher-skilled workers set to benefit from “hybrid work”

arrangements combining in-office and remote work. Flexible working practices should support both well-being and productivity. One critical question is how much autonomy people have to set their schedules. It will also be important to ensure that new working arrangements are equitable, e.g. remote workers are not disadvantaged in terms of career progression. Flexible working options will need to be supported by peripheral services (e.g. stable, high-speed internet; childcare; workspaces) (business, government).

- **Promote well-being at work.** There is a growing consensus on the positive impact that well-being has on productivity and engagement. Supporting well-being encompasses job design, space planning, leadership and flexibility. Companies should put in place programmes that can be customized to the needs of each employee and use data, including from employee surveys and self-reporting tools, to support programme design and provide a comprehensive picture of workforce health and well-being (business, government, civil society).

The World Economic Forum report *Resetting the Future of Work Agenda* presents examples of companies’ implementation of these strategies.

### 2.4.2 Reclassify what is considered ‘work’

Traditionally, “work” has denoted the fulfilment of tasks that create value (yield a product or service that can be sold) and for which a worker receives pay. Yet an enormous amount of value is contributed to society “for free”; for instance, as unpaid care tasks, volunteering work and – increasingly important in the digital age – through content and data contributions to crowd-sourced initiatives such as Wikipedia, open-source software and social media. A recent study estimates that, if consumer benefits from Facebook had been taken into account, US GDP growth would have been up to 0.11 percentage points higher.<sup>50</sup>

Strategies include:

- **Provide subsidies or income for care tasks and volunteering.** Acknowledging the myriad ways in which people provide value to society through unpaid tasks and services could form the basis of increased social welfare payments, subsidies or guaranteed minimum income. This would enable people to dedicate their time and skills to where they are valued most, whether in paid employment or at home

and their community. In the Netherlands, for instance, people who care for family members can request compensation for their time and expenses, while the Medicaid Self-Directed Care programme enables people to hire family members as caregivers in certain US states (government).

- **Treat “data as labour”.** Digital technology has enabled technology firms to benefit greatly from the data and content provided by users of their products. The current system effectively treats data as capital, with a few large companies that own and benefit from user data. Moving to a system in which data is treated as labour, and users are compensated for providing data,<sup>51</sup> could improve the quality of the data provided, which in turn could increase productivity by improving the digital technologies (AI algorithms, social media platforms, etc.) that use this data as input.<sup>52</sup> Paying for data would also help to counter the income inequality that has been exacerbated by automation and digitization (government, business, civil society).<sup>53</sup>

## Bibliography

Accenture, Unilever, Walmart, SkyHive and the World Economic Forum, Future Skills Pilot Report: Thinking Outside the Box to Reimagine Talent Mobility, 2020: <https://www.accenture.com/acnmedia/PDF-149/Accenture-Future-Skills-Case-Study.pdf> (link as of 7 May 2021).

Ahlfeldt, G., D. Roth and T. Seidel, "The Regional Effects of Germany's National Minimum Wage", Economics Letters, 172, 2018.

Altman, E.J., J. Schwartz, D. Kiron, R. Jones and D. Kearns-Manolatos, "Workforce Ecosystems: A New Strategic Approach to the Future of Work", MIT Sloan Management Review and Deloitte, April 2021, <https://sloanreview.mit.edu/workforce2021> (link as of 14 May 2021).

Arrieta-Ibarra, I., L. Goff, D. Jiménez-Hernández, J. Lanier and E. G. Weyl, "Should We Treat Data as Labor? Moving Beyond 'Free'", in AEA Papers and Proceedings, 108, 2018.

Brynjolfsson, E., A. Collis, W.E. Diewert, F. Eggers and K. J. Fox, "GDP-B: Accounting for the Value of New and Free Goods in the Digital Economy", National Bureau of Economic Research, no. w25695, 2019.

Cengiz, D., A. Dube, A. Lindner and B. Zipperer, "The Effect of Minimum Wages on Low-Wage Jobs: Evidence from the United States Using a Bunching Estimator", Quarterly Journal of Economics, 134(3), 2019.

Cognizant Center for the Future of Work, Cognizant Jobs of the Future Index, 2021: <https://www.cognizant.com/jobs-of-the-future-index> (link as of 7 May 2021).

Economist, The, The Future of Work, 10 April 2021: <https://www.economist.com/special-report/2021-04-10> (link as of 7 May 2021).

Gratton, L., "An Emerging Landscape of Skills for All", MIT Sloan, 8 March 2021: <https://sloanreview.mit.edu/article/an-emerging-landscape-of-skills-for-all/> (link as of 7 May 2021).

International Labour Organization, ILO Monitor: COVID-19 and the World of Work, 7th edition, 2021: [https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS\\_767028/lang--en/index.htm](https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS_767028/lang--en/index.htm) (link as of 7 May 2021).

International Labour Organization, Global Wage Report 2020–21: Wages and Minimum Wages in the Time of COVID-19, 2020: <https://www.ilo.org/global/research/global-reports/global-wage-report/2020/lang--en/index.htm> (link as of 7 May 2021).

International Labour Organization, World Employment and Social Outlook 2018: Greening with Jobs, 2018: <https://www.ilo.org/global/research/global-reports/weso/greening-with-jobs/lang--en/index.htm> (link as of 7 May 2021).

International Labour Organization, Minimum Wage Policy Guide: [https://www.ilo.org/wcmsp5/groups/public/---ed\\_protect/---protrav/---travail/documents/genericdocument/wcms\\_508526.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---travail/documents/genericdocument/wcms_508526.pdf) (link as of 7 May 2021).

International Trade Union Confederation, Discussion paper, Creating Jobs: What Can Governments Do?, 2021.

Organisation for Economic Co-operation and Development (OECD), Turning Hope into Reality: OECD Economic Outlook, December 2020, 2020: <https://www.oecd.org/employment-outlook/2020/> (link as of 7 May 2021).

Organisation for Economic Co-operation and Development (OECD), OECD Education Working Papers No.153, Striking the Right Balance: Costs and Benefits of Apprenticeship, 2017: [https://www.oecd-ilibrary.org/education/striking-the-right-balance\\_995fff01-en](https://www.oecd-ilibrary.org/education/striking-the-right-balance_995fff01-en) (link as of 7 May 2021).

Opportunity@Work and Accenture, Reach for the STARS, 2020: <https://opportunityatwork.org/wp-content/uploads/2020/03/Opportunity-At-Work-Report-Reach-for-the-STARs-FINAL.pdf> (link as of 7 May 2021).

Rutkowski, M., Social Insurance/Savings for the Informal Sector to Build Resilience, World Bank presentation 2021.

World Bank, E-Commerce Participation and Household Income Growth in Taobao Villages, 2019: <http://documents1.worldbank.org/curated/en/839451555093213522/pdf/E-Commerce-Participation-and-Household-Income-Growth-in-Taobao-Villages.pdf> (link as of 7 May 2021).

World Economic Forum, Human Capital as an Asset, 2020a: <https://www.weforum.org/reports/human-capital-as-an-asset-an-accounting-framework-to-reset-the-value-of-talent-in-the-new-world-of-work> (link as of 7 May 2021).

World Economic Forum, The Future of Jobs Report, 2020b: <https://www.weforum.org/reports/the-future-of-jobs-report-2020> (link as of 7 May 2021).

World Economic Forum, Resetting the Future of Work Agenda, 2020c: <https://www.weforum.org/whitepapers/resetting-the-future-of-work-agenda-disruption-and-renewal-in-a-post-covid-world> (link as of 7 May 2021).

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# Shaping a new future of education and skills



A thriving post-COVID-19 economy will require more than just a return to business-as-usual: it will require new markets for economic growth; investment in job creation in growing and new economy sectors; a renewed dedication to people and planet; and a reinvigorated commitment to ensuring all individuals have the skills to access opportunities created under the new post-COVID-19 economy. Defining and investing in skills for the new economy will be critical to ensure an equitable global economic recovery and transformation.

The COVID-19 pandemic has had a particularly dramatic effect on education and skills systems, highlighting existing gaps in learning needs and presenting new opportunities to reassess priorities on this agenda. While COVID-19 accelerated the automation of certain processes and tasks, it also placed a new premium on uniquely human-centric skills that cannot be easily automated, and increased the urgency to improve access to the skills to operate in an increasingly automated world.

Basic digital literacy, for example, became a necessity for remote learning and work, while a deeper level of digital mastery was needed to develop technologies for economies to operate during the pandemic. Innovation and creativity became highly valued as countries raced to find new solutions in a rapidly changing context. Global citizenship and civic responsibility were prioritized as COVID-19 continued to unveil existing inequities; and interpersonal and intrapersonal skills became critical in the context of growing mental health challenges and a renewed need for human connection in a socially distanced world.

As many sectors previously responsible for high levels of employment became disrupted, new sectors – such as the green, care, infrastructure and digital economies – have emerged as drivers of future employment. Even in a pre-pandemic context, these growing sectors were set to contribute 6.1 million new jobs by 2023 – a trend that COVID-19 has accelerated.<sup>54</sup> These sectors

similarly require a new set of skills for entry. Access to the new economy labour market largely depends on the policies adopted to support the development of these new skills.

Setting a new education and skills agenda will also be critical for economic development. Prioritizing new economy skills – innovation and creativity; global citizenship and civic responsibility; interpersonal and intrapersonal skills; and digital skills – will enable businesses to deploy the technology to help them flourish. For governments, investment in new economy skills will ensure economies have the relevant workforce to attract new business. For individuals, these skills can enable greater access to employment within emerging sectors or equip them with the tools needed to engage in entrepreneurship as a pathway to social mobility.





Finally, a thriving global economy is one in which all individuals can access opportunities to improve their livelihoods. There is now a unique window to focus on equity in working to this new agenda and ensure these skills are accessible to all, including people with inequitable access to markets, decent jobs and capital.

This brief represents the latest thinking on developing, measuring and mainstreaming new economy skills, informed by a consultation of the Global Future Council on the New Agenda for Education and Skills.

### **New economy skills**

New economy skills are competencies required to participate in the post-COVID-19 economy. While not necessarily “new” in nature, their growing relevance in the context of the impending economic transformation make them a priority for gaining access to jobs in high-growth sectors; prioritizing people and planet; and enabling more equitable and cohesive societies. Definitions can be found in Figure 1, which builds on the World Economic Forum’s Global Skills Taxonomy.<sup>55</sup>

FIGURE 1 | New economy skills

			
<b>Innovation and creativity</b>	<b>Global citizenship and civic responsibility</b>	<b>Digital</b>	<b>Interpersonal and intrapersonal</b>
<p>Thinking of novel ideas, improvements and solutions by combining ideas or information and making connections between different fields and perspectives. Includes skills such as:</p> <ul style="list-style-type: none"> <li>– Critical thinking</li> <li>– Analytical thinking</li> <li>– Creative thinking</li> <li>– Systems thinking</li> </ul>	<p>Making decisions and creating appropriate and sustainable solutions based on cross-cultural and geopolitical awareness, a differentiated notion between local and global contexts and an understanding of the human impact on the environment and society. Includes skills such as:</p> <ul style="list-style-type: none"> <li>– Social-cultural awareness</li> <li>– Technological awareness</li> <li>– Environmental awareness</li> </ul>	<p>Understanding and applying ever-evolving digital technology tools, systems and software responsibly, ethically, creatively and inclusively across work processes and activities to solve problems, analyse and interpret data and communicate effectively. Includes skills such as:</p> <ul style="list-style-type: none"> <li>– Technology design and programming</li> <li>– Technology use, monitoring and control</li> </ul>	<p>Managing emotion and motivation and applying emotional intelligence to collaborate effectively with others and achieve both personal and communal goals. Includes skills such as:</p> <ul style="list-style-type: none"> <li>– Active listening, communication and information exchange</li> <li>– Leadership and social influence</li> <li>– Self-management</li> </ul>

How can educators, business and government ensure that everyone has access to skills for economic transformation and recovery? Efforts thus far have mainly focused on continuing learning by transitioning old models to online formats. While these immediate measures were urgently needed to prevent further widening of education and skills gaps, long-term and systemic investment in new economy skills will be needed.

#### Policy pathways

This brief presents three intersecting pathways to ensure that all individuals have access to the skills needed to thrive in the new economy:

- **Developing new economy skills:** Providing the opportunities for individuals to acquire the skills to thrive in the post-COVID-19 economic transformation.
- **Measuring new economy skills:** Creating systems for tracking new economy skills development and understanding where gaps continue to persist across industries, geographies and diverse groups; using data for informed decision-making.

- **Mainstreaming new economy skills:** Promoting a skills-based labour market that values new economy skills.

These pathways – which propose both wholly new approaches and innovations in existing practices – are informed by proven experiments from around the world that could serve as models for replication and scaling, and call for joint action between government, businesses and educators to realize the potential of these proposals.



## 3.1 Developing new economy skills

### 3.1.1 Provide adequate education workforce training and development to support new economy skills development

A survey of industry employers shows that the core set of skills required for employment in the education sector is set to change by 41% by 2025.<sup>56</sup> Another study shows that wide-scale investment in upskilling the education sector alone could add 5.6% (nearly \$400 billion) to global GDP.<sup>57</sup> Return on investment in teacher training is multiplied if focused on supporting the education workforce to support new economy skills development for the next generation of talent.

Strategies for operationalizing this pathway include:

- **Assess skills gaps in the education workforce** to support robust workforce planning within this sector (government).

- **Collaborate to provide opportunities for educators to observe how skills are deployed in work contexts.** Such opportunities would enable teachers to create learning environments that more closely mirror the future of work (business, government, educators).
- **Create teacher-owned lifelong learning, training and development accounts,** along with a centralized database of diverse opportunities for teacher development (government).

Amazon Future Engineer aims to inspire students from under-represented communities to engage in computer science and coding. Teachers receive professional development for computer science education. All educators in the programme are eligible for the Amazon Future Engineer Teacher of the Year Award and have access to AWS Educate resources. The programme also enables Amazon employees to enter classrooms to discuss what it's like to work in the tech industry.

### 3.1.2 Integrate new economy skills into education and training curricula across all subjects through innovative pedagogies

New economy skills are cross-functional and could be integrated in curricula across all subjects and levels of learning. Innovative pedagogies, including blended (technology and in-person), experiential (including project and inquiry-based) and multiliteracies (incorporating language and culture) learning, can support new economy skills development.<sup>58</sup>

Using technology in a blended format to support foundational writing and maths skills, for example, could develop basic digital literacy skills.<sup>59</sup>

Incorporating computational thinking – such as using open-ended problems and design thinking – can promote innovation and creativity; while experiential learning experiences can introduce social-cultural and environmental awareness.

Strategies for operationalizing this pathway include:

- **Include innovative pedagogies in national curricula guidelines** (including for vocational and university education), with resources on how to use those pedagogies across subjects (government, educators).
- **Design workplace learning that uses innovative pedagogies** (business).
- **Invest in teacher training dedicated to the use of innovative pedagogies** (government).

Education for Sharing (E4S) works with classroom teachers during school hours to teach global citizenship and civic responsibility through gamification. Through physically engaging games, children discuss topics such as e-rights, climate change and gender equality. Children develop interpersonal skills as they collaborate on key challenges. The programme trains classroom teachers in the methodology to enable them to carry sessions beyond the partnership with E4S. The programme operates in several countries, including Mexico, Guatemala and the Dominican Republic, and has demonstrated improvements in supporting more than 1.3 million children in terms of gender parity.

### 3.1.3 Provide work-based learning opportunities

Work-based learning provides students with opportunities to engage in experiences they would encounter in the workplace. These include apprenticeships, internships and on-the-job training, providing future talent with the skills needed to transition into the workforce and helping employers reduce the skills mismatch. Apprenticeships, for example, have been shown to increase access to higher wages, decrease periods of unemployment before labour market entry and enable graduates to remain in their jobs longer than individuals with no apprenticeship training.<sup>60</sup> Targeted work-based learning programmes can also help employers build a more diverse pipeline of future talent.

Strategies for operationalizing this pathway include:

- **Create and formalize work-based learning.** Government subsidies can facilitate and encourage the creation of these opportunities (business, government, educators).
- **Require work-based learning in national curricula** (government).
- **Co-design work-based learning assessments** to support skills development aligned to labour market needs (business, government, educators).

In Switzerland, 70% of young people participate in the national vocational education and training system, which connects learners with apprenticeships for both white- and blue-collar jobs. Swiss industries and the State Secretariat for Education, Research and Innovation co-create the curricula, assessments and qualifications framework,<sup>61</sup> and apprenticeship programme availability is determined by real labour market needs. Students engage in apprenticeship work three to four days per week, and classroom instruction for the remainder of the school week.

### 3.1.4 Align educators and business on skills pathways

A recent survey found that just 4% of trustees in US colleges and universities have a strong understanding of what employers look for in job candidates.<sup>62</sup> Such differences in standards for job-readiness lead to gaps between the supply and demand of talent.

Stronger alignment between employers and educators on a common language for skills could create greater labour market efficiency by enabling educators to target employment-relevant skills. In fact, a survey of 2,000 businesses in Finland found that 56% are in active or occasional cooperation with educational institutions, citing their need to find new talent with relevant skills as the key motive.

Alignment on skills pathways is particularly important during transitions between primary, secondary, higher education and the workforce.

Strategies for operationalizing this pathway include:

- **Adopt a common categorization of skills and definitions based on labour market needs.** Include mechanisms for consistently updating that taxonomy. Many frameworks already exist, including the [Global Skills Taxonomy](#) (business, government, educators).
- **Align on proficiency standards for priority skills** at the country and industry level (business, government).
- **Map potential learning solutions per priority skill** based on proficiency standards (business, government).

The P-TECH model, developed by IBM, engages more than 600 large, medium and small companies across sectors in the design of skills-based and workplace-based curricula for more than 220 schools in 28 countries. Industry partners lead a skills-mapping exercise to identify skills required for entry-level jobs. Six-year workplace learning curricula are developed based on the skills mapping and include direct exposure to the workplace via job shadowing, paid internships, apprenticeships and worksite visits.<sup>63</sup>

The National University of Singapore (NUS) offers a free mobile application in partnership with JobTech that provides career goal-setting, job recommendations and suggestions for relevant courses to close skills gaps. The AI-driven app uses labour market insights to help students identify high-demand skills and relevant NUS courses to develop those skills.

## 3.2 Measuring new economy skills

### 3.2.1 Shift assessment from fact recall to skills application and potential

Traditional approaches to skills assessment have failed to keep pace with changing labour market needs. Within primary and secondary education, assessments too often focus on recollection of facts and knowledge, rather than the ability to apply learning to new contexts. In the workforce, proxies are used to assess competencies, including traditional degrees and résumés/CVs. These proxies, however, do not always provide a full assessment of an individual's skill set nor their potential to acquire new skills to remain agile in a changing working environment.

New approaches for skills measurement could be used to more accurately assess progress towards closing gaps in new economy skills. Advancements in AI and other big data approaches can support new measurement mechanisms and assess learners based on a combination of skills, competencies and potential. For example, Blackstone has partnered with Pymetrics, a talent-matching platform that leverages behavioural data and AI to measure soft skills, in order to increase

gender, ethnic and socioeconomic diversity across its campus hiring programmes and better understand the soft skills associated with success in numerous roles. Furthermore, closer collaboration between the public and private sectors on assessment design could ensure learners are evaluated based on the skills and practices that will make them successful in the workplace.

Strategies for operationalizing this pathway include:

- **Provide educators with specific work samples and challenges** to be solved as projects for training and learning (business).
- **Incorporate self- and peer-assessment into national assessment strategies** (government, educators).
- **Use behavioural data to measure cognitive, social and emotional traits** (government, business, educators).<sup>64</sup>

Law firm Womble Bond Dickinson (WBD) partnered with the AI platform Pymetrics to measure potential among incoming trainees. Pymetrics invited high-performing employees across the company to complete behavioural-based exercises to identify cognitive, emotional and social attributes that can predict a candidate's fit to the traineeship. During the hiring process, candidates played the Pymetrics exercises through the platform, and a personalized report was created for each candidate. Recruiters received a recommendation score based on how closely the applicant's attributes matched the success profile. Through this partnership, 24% of final offers were made to non-traditional candidates, and 99% of trainees completed the programme.



### 3.2.2 Integrate learning data into workforce strategy planning and reporting

Skills assessment and data have very little meaning if not used to support decision-making. Employers and governments have a vital role to play in ensuring data is used to inform talent management and country-level efforts to close skills gaps.

Mechanisms should be created to accurately report on and use data to match people to jobs and learning opportunities and support skills planning.

Strategies for operationalizing this pathway include:

- **Create more robust new economy skills metrics** under the existing environmental, social and governance (ESG) framework.

These should include measures of employers' contributions to closing gaps in new economy skills, within and outside their organizations (business).

- **Build the business case for new economy skills development** by calculating the value-add of these skills to business outcomes. This effort could be spearheaded by a chief skills officer position (business).
- **Incorporate progress towards closing new economy skills gaps** at the country level in reporting macroeconomic targets (government).<sup>65</sup>

The New Zealand government is developing indicators to measure progress against different aspects of well-being in order to paint a more holistic view of the country's economic and social development. A set of metrics to measure progress on education and skills, with a specific focus on the attainment of New Economy competencies such as creative thinking and interpersonal skills, is currently being developed. These indicators will influence the country's budget decision-making process.

### 3.2.3 Create mechanisms for assessing the quality of curricula design

In addition to assessing individual learners, mechanisms must be created to evaluate the relevance of curricula design. Strengthening feedback mechanisms between learning supply and demand could help educators better align curriculum development to labour market needs and ensure curricula adequately prepare learners for the future of work. Such a system should consider: engagement metrics, e.g. completion of learning and learner satisfaction; and learner outcomes, e.g. access to the labour market, access to higher wages and preparedness for the workplace. A mechanism of this kind for evaluating curricular design will require direct input from the private sector.

Strategies for operationalizing this pathway include:

- **Provide feedback on employee performance to education providers** to adjust workplace training curricula (e.g. track metrics related to wages and job progression after completing certain courses) (government).
- **Create longitudinal data systems at the country or state level for each student** to assess whether curricula have accurately prepared students for future learning years and labour market entry (government).
- **Connect and exchange on what works well for preparing learners for work** (business, government, educators).

In Finland, the Finnish Education Evaluation Centre (FINEEC) is an independent agency that evaluates education. It evaluates the operations of education providers from early childhood education to higher education through systemic and thematic evaluations, learning outcome evaluations and field-specific evaluations. FINEEC has executed longitudinal evaluations of learning outcomes, evaluations on the implementation of national core curricula and an evaluation on the working life relevance of degrees in four fields of higher education.

### 3.2.4 Measure gaps and inequities on the attainment of these skills

Tracking the development and deployment of new economy skills across traditionally under-represented groups, including women, individuals with disabilities and those from ethnic, racial and religious minority groups, can support an equitable economic recovery. Having this data can empower stakeholders to think critically about targeted efforts needed to ensure equal access to new opportunities created in the post-COVID-19 economy.

Strategies for operationalizing this pathway include:

- **Create skills passports** at the company or country level that include demographic data

to track new economy skills across under-represented groups (business, government).

- **Measure engagement in new economy skills learning opportunities across demographic groups.** Use this data to identify and solve for potential barriers to access (business, government, educators).
- **Track the number of individuals across demographic groups who enter jobs powered by new economy skills** to understand if the skills are deployed equitably (business, government).

Recent research by the online learning platform Coursera found that women learners registered on the platform have historically enrolled in fewer STEM courses than men. However, amid the pandemic, there are early signals that this trend is turning as women enrolled in more STEM courses globally in 2020 than in 2018 and 2019. Furthermore, current skills proficiency scores of all learners on Coursera indicate that typical women learners have a higher skill proficiency than men in core skills such as writing and problem solving, as well as technical skills such as computer programming and HTML and CSS.

## 3.3 Mainstreaming new economy skills

### 3.3.1 Signal demand for new economy skills

Showing demand for new economy skills can encourage individuals to engage in learning these competencies. Business and government can play a critical role in signalling and articulating that these skills are valued and that engaging in new economy skills development will have concrete economic and social benefits.

Potential strategies for operationalizing this pathway include:

- **Invest in new economy skills development** through internally facing learning and development strategies and externally facing

corporate social responsibility initiatives (business).

- **Create mechanisms for skills-based talent management** that emphasize new economy skills, such as highlighting these skills in job descriptions and hiring practices, and recognizing new economy skills when considering promotions and progression (business).
- **Articulate and communicate skills for future employability** through company and national campaigns (business, government).

Singapore launched its programme promoting Critical Core Skills (CCS) that workplaces deem essential, including thinking critically and interacting with others.<sup>66</sup> Definitions were developed for each skill, along with a mapping of learning options connected to them. National campaigns to promote learning these skills led to more than 36,000 individuals engaging in digital skills-related courses in 2020. Two industry studies are conducted on a yearly basis to monitor the level of skills usage by industry sectors across the economy.

### 3.3.2 Develop and recognize alternative pathways to jobs

Many mechanisms for developing new economy skills, including online learning and short-cycle credentialling, have emerged in response to the growing demand for learning and reskilling. These mechanisms promise to democratize learning, increase access to a broader set of individuals and provide rapid solutions to learning needs. Yet these pathways are not always recognized by employers, which places the burden of risk on individuals as they decide whether to invest in these alternative pathways.

To encourage individuals to engage in lifelong learning of new economy skills and take advantage of new learning solutions, alternative learning pathways must be recognized by governments and employers.

Strategies for operationalizing this pathway include:

- **Where applicable, consider candidates with skills-based certifications**, especially for those engaging in mid-career transitions (business).
- **Include skills certifications and microcredentialling** in national qualifications frameworks (government).
- **Collaborate with non-traditional learning providers** to deliver rapid learning solutions at scale (educators).

Several companies, including Google and Apple, have removed degree requirements from their hiring requirements, instead applying a new premium on hands-on experience, technical training and skills matching. This approach has expanded the potential talent pool for these companies, while also providing non-traditional candidates new entry points to the labour market.<sup>67</sup>

Generation is an organization that works directly with employers to recruit, train and place non-traditional candidates in entry-level, middle-skill roles in a range of sectors and professions. Learners engage in 4–12-week bootcamp-like courses aligned to the needs of employers, who in turn recognize this alternative pathway to learning in their recruiting. In Kenya, for example, 83% of graduates were employed within 90 days of completing the programme, and over 81% remain in the same job six months after placement.

### 3.3.3 Invest in targeted skills development and deployment for groups with inequitable access to learning and jobs

To support equitable development and deployment of new economy skills, traditionally disadvantaged groups and those disproportionately affected by the COVID-19 pandemic must be targeted for skills development. Taking the following measures could provide greater access to learning new economy skills among groups that may not be able to engage in formal learning: encourage learners of all backgrounds to engage in learning new economy skills; and remove social and economic barriers for under-represented groups entering the labour market.

Strategies for operationalizing this pathway include:

- **Invest in solutions that democratize learning for groups with inequitable access**, such as online and short-cycle learning. Consideration should be given to ensure everyone has access to the appropriate physical and digital
- **Adapt learning solutions for sociocultural relevance and individual learner needs**, including adaptations for language, culture, learning modalities and ability. Consideration should be given to both content (e.g. who is being represented in the learning materials?) and delivery (what would make learning most effective for this specific learner?) (business, educators, government).
- **Use alternative skills measures**, including “potential” and soft skills, in hiring and progression. Taking this more holistic approach could enable greater access to jobs for traditionally under-represented groups (business).

iamtheCODE is an African-led movement that aims to enable 1 million young women to become coders by 2030. Through a combination of digital bootcamps, mentoring activities, digital clubs and hackathons, and in collaboration with private-sector leaders and mentors from companies such as Unilever and Salesforce, young women and girls in Africa gain exposure to potential careers in digital fields.



## Bibliography

Association of American Colleges and Universities, “Trustees Think Graduates Aren’t Prepared for Work. They Should Talk to Their Provosts”, 2020: <https://www.aacu.org/aacu-news/newsletter/trustees-think-graduates-arent-prepared-work-they-should-talk-their-provosts> (link as of 7 May 2021).

IBM, “P-TECH”, 2021: <https://www.ibm.org/initiatives/p-tech> (link as of 18/5/21).

Istance, D., and Paniagua, A., Learning to Leapfrog: Innovative Pedagogies to Transform Education, The Brookings Institution Center for Universal Education, 2019: <https://www.brookings.edu/wp-content/uploads/2019/09/Learning-to-Leapfrog-InnovativePedagogiestoTransformEducation-Web.pdf> (link as of 7 May 2021).

Leibowitz, D., “You Don’t Need College Anymore, Says Google”, Medium, 29 July 2020: <https://medium.com/provocate/you-dont-need-college-anymore-says-google-102d4beec668> (link as of 7 May 2021).

National Center on Education and the Economy, Gold Standard: The Swiss Vocational Education and Training System, 2015: <http://ncee.org/wp-content/uploads/2018/09/SWISSVETSep2018web.pdf> (link as of 7 May 2021).

Polli, F., S. Kassir, J. Dolphin, L. Baker and J. Gabrieli, “Cognitive Science as a New People Science for the Future of Work”, MIT Work of the Future, 2021: <https://workofthefuture.mit.edu/research-post/cognitive-science-as-a-new-people-science-for-the-future-of-work/> (link as of 7 May 2021).

Samek, M., S. Comi, F. Origo, N. Torchio, S. Speckesser and J. Montalt, The Effectiveness and Costs-Benefits of Apprenticeships: Results of the Quantitative Analysis, The European Commission, 2013: <https://www.employment-studies.co.uk/resource/effectiveness-and-costs-benefits-apprenticeships-results-quantitative-analysis> (link as of 7 May 2021).

SkillsFuture, “What Are Critical Core Skills?”, 2021: <https://www.skillsfuture.gov.sg/skills-framework/criticalcoreskills> (link as of 7 May 2021).

World Economic Forum, Building a Common Language for Skills: A Global Taxonomy, 2021a: <https://www.weforum.org/reports/building-a-common-language-for-skills-at-work-a-global-taxonomy> (link as of 7 May 2021).

World Economic Forum, Upskilling for Shared Prosperity, 2021b: <https://www.weforum.org/reports/upskilling-for-shared-prosperity> (link as of 7 May 2021).

World Economic Forum, Dashboard for a New Economy: Towards a New Compass for the Post-COVID Recovery, 2020a: <https://www.weforum.org/reports/dashboard-for-a-new-economy-towards-a-new-compass-for-the-post-covid-recovery> (link as of 7 May 2021).

World Economic Forum, The Future of Jobs Report 2020, 2020b: <https://www.weforum.org/reports/the-future-of-jobs-report-2020> (link as of 7 May 2021).

World Economic Forum, Jobs of Tomorrow: Mapping Opportunity in the New Economy, 2020c: <https://www.weforum.org/reports/jobs-of-tomorrow-mapping-opportunity-in-the-new-economy> (link as of 7 May 2021).

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4

## Embedding equity and social justice into the new economy





The COVID-19 pandemic has exacerbated pre-existing inequalities globally but also heightened visibility of deep-rooted structural and social inequities. From systemic oppression of people of colour<sup>68</sup> to notable regressions in gender equality<sup>69</sup> to a growing backlash against the protection of human rights of LGBTI people<sup>70</sup> or lockdown measures that had discriminatory impact on people with disabilities,<sup>71</sup> the past months have presented an urgent need to address social injustice and dismantle systems of inequity. Mobilization and momentum for change is mounting: notably, the social unrest following the killing of George Floyd at the hands of police officers on 25 May 2020 in Minneapolis caused a surge in equity and justice activism across the world. In the time between Floyd's murder and the end of October 2020, about one-third of Fortune 1000 companies responded by making a public statement on racial equity, and the private sector pledged a total of \$66 billion towards racial justice initiatives. However, organizations and institutions have been repeatedly reckoning with the gap between intentions and progress, and building systems that are truly more equitable and just.

The pandemic recovery of our economies and societies provides an unprecedented opportunity to build new equitable systems that honour the dignity and equality of every human being. This policy brief is a call to action to hardwire equity and social justice into our new economies and societies for a more just and resilient future.

## Policy pathways

This brief represents the latest thinking on realizing equity and social justice, informed by a broad consultation of the Global Future Council on the New Agenda for Equity and Social Justice. It presents four intersecting pathways, detailed in the following pages, and advocates for viewing all policy decisions through an equity and social justice lens. There are clear complementarities across the pathways that, when taken together, have the potential to achieve greater and even more significant impact. The pathways outline strategies for business and government, yet realizing equity and social justice requires the involvement of everyone. Examples are highlighted throughout and should be carefully considered when implemented in any new context.

Collectively, the pathways are aimed at benefitting all people – of all ages, generations, gender identities and expressions, sexual orientations, abilities and levels of health, races, ethnicities, all types of indigenous identities, castes, nationalities and national origins, immigration status, religions and socioeconomic status – and skewed towards benefitting people disproportionately hit by the pandemic such as women, LGBTI people, under-represented racial and ethnic groups and people with disabilities as well as those at greater risk of exclusion or disadvantage in the labour market. The pathways also aim to address all labour arrangements as well as acknowledging that many people live at the intersection of multiple communities and identities.

## 4.1 Taking care of care inclusively

Globally, the COVID-19 pandemic has created a global care crisis. National responses to support people with caring responsibilities have been inadequate. This failure has led to women disproportionately dropping out of the labour market, a social care shortage and growing

incidences of violence in care, including towards care workers and people in care. To address this crisis for people of all ages, abilities and in all caring responsibilities, realizing care-conducive work policies and investing in care infrastructure and services is critical to build equitable systems.

### 4.1.1 Enacting care-conducive work policies for all people with caring responsibilities

Disruptions caused by COVID-19 present a new opportunity to offer work policies that accommodate people with caring responsibilities. More inclusive work policies can contribute to equalizing care work and the domestic division of labour, and aid people in becoming aware of their rights to flexible working. Such policies can also offer companies access to a wider pool of global talent, as well as enabling firms to retain the top talent, reduce hiring costs, increase employee loyalty and boost long-term productivity. Ultimately, everyone could benefit through widening access to jobs previously unavailable on a part-time or flexible basis.

Strategies include:

- **Building flexibility into all work arrangements.** Enable teleworking, condensed weeks, time-banking, expanded work sharing, flexible start/finish times and the conversion of high-quality full-time jobs into part-time jobs. Businesses can also increase awareness of employee rights to these arrangements (business).
- **Adopting more inclusive work leave policies.** Go beyond current government regulations and offer inclusive types of leave policies such as maternity, paternity and parental leave and allow

for these policies to be inclusive of all categories of workers such as part-timers and full-timers (business).

- **Ensuring equal incentives for all people to take on unpaid care work.** Put in place legislation and regulation supporting companies to enact inclusive work policies; for example, by creating proper incentives for parental leave, bailout funds, particularly for smaller businesses, or “use-it or lose-it” leave incentives for fathers and other gender-equitable parental leave policies (government).

In the operationalization, it is important to ensure that work policies do not reinforce or widen gender disparities, stereotypes or biases and that flexible work arrangements do not inhibit access to future development opportunities (such as skills upgrading and career advancement).

Further development is needed to equalize care work in terms of its value to business and GDP and find new ways to challenge the notion of “productivity” for care jobs.

Insurer Zurich made [flexible working the norm](#) by offering all vacancies as part-time, full-time, job sharing or flexible working, resulting in applications doubling, [one-third more women securing senior roles](#) and a rise in “belonging” among part-time employees. In 2016, Maersk launched a [global parental leave policy and return to work programme](#) offering “phased reintegration” and a guaranteed leave minimum, all aimed at a retention rate of 90%. [Sweden’s parental leave policy](#) entitles parents to 480 days of paid parental leave, mandatorily shared, with each parent having an exclusive right to 90 of those days. As a result, the rate of men taking paternity leave is close to 90%.

#### 4.1.2 Investing in high-quality and accessible care infrastructure and services for all ages and abilities

Countries have neglected investments in care infrastructure before and during the pandemic, failing the people who support and rely on it. Failure to invest has led to a lack of available, quality, affordable care, as well as care worker shortages, poorer working conditions for carers and growing incidents of violence by people in care, family members and care staff. There is widespread agreement on the need for reform beyond piecemeal solutions and short-term cash injections as well as to invest in infrastructure to improve coverage, quality, accessibility and affordability of care services for all ages and abilities.

Strategies include:

- **Increasing overall investment in the care sector,** including health, education and social care, as well as investing in infrastructure to reduce barriers to participation in the workforce. This includes incentivization and access to capital for companies to invest in care infrastructure (government, business).

- **Rewarding carers well and fairly,** for example by providing social security for all carers, formal contracts, minimum pay and increased wages (government, business).
- **Funding free or subsidized high-quality childcare,** including nutrition, as an essential part of fiscal stimulus packages and that meet the needs of working people (government).
- **Setting target metrics** on the number of care facilities and the proximity of care facilities to work and home, and measuring productivity outputs of care infrastructure enhancements, as well as the overall well-being of people in care, family members and care staff (government).

Further development is needed to estimate the economic value of care, place a higher value on care work, and create a regulatory framework for private-sector childcare facilities.

## 4.2 Changing systems through inclusive laws, regulations and policies

The ongoing discrimination against and systemic exclusion of specific groups weakens economic systems, fuels violence and limits economic opportunity. To increase economic participation and drive positive culture change, governments and businesses can enact inclusive non-discrimination policies to ensure protection for these groups

collectively and at scale. Legal structures can ensure inclusive and productive communities, new global economic partnerships and a just new economy. There is also a need for legislation to enable an inclusive digital agenda that ensures everyone will benefit from ongoing technological advancements.

### 4.2.1 Enacting non-discrimination laws so that everyone can contribute to the economy

The ILO has enacted a range of conventions to eliminate discrimination from all aspects of work so that everyone can contribute to the economy. Ratified by the vast majority of countries, the conventions serve as the basis for national legislations on equal treatment, pay and opportunities in the workplace. Yet a large number of countries still have to enact laws and policies that – for example – protect sexual orientation and gender identity at the national level.

Strategies include:

- **Enforcing strong non-discrimination protections** for specific groups (e.g. accessibility for people with disabilities, LGBTI inclusion, gender discrimination in commercial law). Businesses can prohibit and prevent harassment and discrimination, especially where local laws are inadequate (government, business).
- **Enacting laws that seek to ensure equal treatment, pay and opportunities** (e.g. targeted measures, numeric targets) that permit members of discriminated and stigmatized

groups to be included and compete on equal footing. To motivate companies to enact such policies, this strategy needs to balance sanctions and incentives (government).

- **Repealing laws and policies that are aimed at discriminating** or by design have a discriminatory impact on specific groups (government).
- **Establishing ways for people alleging discrimination/harassment to seek redress**, without fear of retaliation or confidentiality breach (government and business).
- **Increasing the visibility of diverse leaders as role models**, particularly those with multiple marginalized identities, through laws and regulations (government).

Further development is needed on the economic case for enacting strong non-discrimination protections, on finding ways to address people not self-identifying with specific groups, and on navigating countries with different laws and regulations regarding discrimination.

A new California law requires publicly held corporate boards to include (or expand diversity to) under-represented people, with fines and ramifications to reputation if not upheld.<sup>72</sup> The [Australian government](#)<sup>73</sup> published a report about the causal relationship between an increase in the number of women in important decision-making positions and subsequent improvements in company profitability, performance and productivity. The report states that a 10% increase in representation of female top-tier managers led to a 6.6% increase in the market value of companies. The [Equal Pay International Coalition](#) (EPIC) is a multistakeholder initiative contributing to Sustainable Development Goal (SDG) 8.5 (equal pay between men and women for work of equal value) across all countries and sectors and led by ILO, UN Women and the OECD.

## 4.2.2 Creating an inclusive digital agenda through legislation

The accelerated use of Fourth Industrial Revolution technologies such as AI brings the potential to improve the quality of life for populations around the world if implemented, regulated and managed in a just and accessible way. Otherwise, implementing these tools without due consideration risks a range of unintended consequences, including greater inequality and further marginalization of under-represented voices in decision-making. An inclusive digital agenda can be realized through legislation as well as a commitment to responsible innovation and universal design that benefits everyone.

Strategies include:

- **Designing new global standards and policies for digital inclusion** (not self-regulation) that ensure productivity increases for all and monitor compliance of organizations against auditing frameworks for AI and other technological solutions (government).
- **Embedding equity, accessibility and the insights of diverse people into the design and development process** and using

the whole spectrum of human needs as the benchmark for digitalization processes (government, business).

- **Adopting new technologies in HR and business strategies to mitigate bias and counteract exclusion.** This requires auditing all new technology programmes and innovations using a diversity, equity and inclusion (DE&I) lens, training decision-makers and senior leaders in approaches to mitigating discrimination risk, and – prior to adopting new technologies in any aspect of business – devising an approach to tech bias and discrimination mitigation (business).
- **Providing access to technologies, literacy and digital skills to all** (government, business).

More efforts need to be made to monitor digital systems for new and old biases and other unintended consequences on marginalized groups.

[IBM Smarter Workforce Institute](#) offers insights on the role that AI can play in mitigating bias to enhance DE&I, including recommendations for adopting AI into HR practices. The [Algorithmic Justice League](#) provides research on the social implications and harms of AI, and advocates for equitable and accountable AI.

## 4.3 Investing in groups excluded from access to markets, decent jobs and capital

The COVID-19 pandemic has exacerbated many of the structural inequities that exclude people from access to markets, decent jobs and capital. Investing in human development for the lifetime of workers, equitable fiscal stimulus packages and new financing mechanisms can

secure jobs, incomes and industries as well as offer professionals new ways to invest for fairer outcomes such as even-handed labour force practices. Equitable access to the economy can have significant long-term benefits for everyone.

### 4.3.1 Investing in human capital development through job access, skills and professional growth opportunities

The composition of the economy is changing, labour markets are undergoing fundamental transformations and new job roles are emerging, shifting the skills businesses need to innovate and grow. While these shifts hold the promise of more rather than less work for people, there are significant gaps already evident in many of these growing fields for under-represented groups such as women. Amid this rapidly changing environment, investing in the lifelong employability of all workers ensures social welfare but is also critical for

business by addressing the skills gap and building a resilient labour force.

Strategies include:

- **Investing in education, skills, training and professional development opportunities** and measuring effectiveness of opportunities by tracking their impact on people over time, such as success in securing and holding jobs (government, business).



- **Addressing gaps in “school to work transitions”** in economies with a high proportion of youth and rising secondary education completion rates, especially for under-represented communities and girls globally (government, business).
  - **Supporting the retention of an ageing workforce** through reskilling, upskilling and lifelong learning programmes as well as new entrants into the workforce (business).
  - **Running programmes to influence career aspirations for young people**, as well as prepare them to fill anticipated future skills shortages (government, business).
- In the operationalization of this pathway, businesses and government need to take a systemic approach to provide equitable access as well as addressing “quick wins” such as removing the college degree barrier and understanding the structural barriers to equal job access.

[OneTen](#) is a coalition of executives committed to upskilling, hiring and promoting 1 million Black Americans in the next 10 years. To provide leadership skills and experience in young talent and support work readiness, the Adecco Group created the [CEO for One Month](#) initiative, which offers the opportunity to become the group’s global chief executive officer for one month, under the direct supervision of the Adecco Group CEO.

### 4.3.2 Gender-responsive fiscal stimulus packages

COVID-19 has had a cataclysmic impact on the livelihoods of women, who have experienced job, wage and productivity losses as well as heavier non-work duties than male counterparts.<sup>74</sup> In December 2020, women on net suffered 156,000 job losses in the United States, while men on net gained 16,000 jobs,<sup>75</sup> with the greatest loss felt by women of colour working in retail, hospitality and other “essential” service industries. Further stimulus packages can assist women in re-entering and staying in the workforce.

Strategies include:

- **Devising and adopting fiscal stimulus packages** that secure women’s incomes, support industries in which women are over-represented, equally distribute social security
- **Committing to use a gender lens in fiscal policy** and presenting the impact of investments on all structurally excluded groups. Businesses can adopt gender-responsive employee welfare measures (government).
- **Using services and technologies to strengthen women’s access to productive resources** (e.g. finance, digital, financial literacy) and enable public-private collaboration to create digitalized asset records to strengthen security of ownership of productive resources (government, business).

benefits and enhance a gender-responsive policy environment for good work. Businesses can support public authorities; for example, by facilitating digital cash transfers for social security (government).

The UN Women briefing [“Leaving No One Behind” in Action](#) identifies business and government actions to advance women’s economic empowerment. [SheTrades](#) aims to [connect 1 million female entrepreneurs to the market by 2020](#) through a coalition of supply chain experts.

### 4.3.3 Meeting anti-exploitation impact targets through new approaches

About 25 million people are trapped in modern slavery, forced labour and human trafficking in workplaces globally.<sup>76</sup> Capital markets encourage companies to reduce labour costs, yet norms against coercion in supply chains and workplaces are poorly enforced. Victims experience reduced health outcomes and poverty, felt intergenerationally. Ending modern slavery is critical to realizing the UN SDGs and ensuring enslaved people are granted their freedom and dignity.<sup>77</sup> New approaches such as sustainability linked financing

offer ways to promote equity and social justice, using capital markets to reward firms that manage the labour force equitably and penalizing those that rely on exploitative labour practices.

Strategies include:

- **Encouraging cooperation among capital markets, regulators and lead firms in value-chains** to tie financing to performance against anti-exploitation targets as well as

counteract investor approaches that go against systemic outcomes. Here, incorporation of anti-exploitation objectives into sustainability reporting, disclosure and benchmarks will be critical (government, business).

- **Rewarding uptake of defined anti-exploitation practices** in supply-chain and operations management to protect and support the economic agency of people who have been enslaved (government, business).<sup>78</sup>

- **Meeting anti-exploitation impact targets** through linking supply-chain, trade and development financing (business).

Further development is needed to establish “social” standards and metrics for anti-exploitation as part of an ESG framework for companies to measure progress on anti-exploitation. More data and empirical evidence are needed about the social impact and benefits of anti-exploitation for shareholders and capital markets.

[Investors Against Slavery and Trafficking Asia-Pacific](#) represents more than 30 investors [promoting effective action among investee companies](#) in the region to find, fix and prevent modern slavery and labour exploitation in value chains. The World Bank recently [issued “SDG bonds” linking returns](#) to an equity index that tracks company performance against the SDGs. The [Sustainability Accounting Standards Board \(SASB\)](#) is currently reviewing how forced labour affecting financial materiality should be included in its Human Capital Management Framework.

## 4.4 Business advocacy and activism for equity and social justice

Businesses have a pivotal role to play in advocating for positive societal reform, prioritizing the interests of historically disadvantaged groups and influencing decisions within political, economic and social

spheres. Governments can amplify the impact of business activism by setting standards, holding businesses accountable and disseminating effective examples.

### 4.4.1 Harnessing employer data disclosure to promote pay equity at scale

Under-represented minority groups in the labour market have historically faced pay discrimination. Globally, organizations are moving towards publicly disclosing pay data by gender, race and ethnicity. Recently, there has been some regression, such as in 2019 when the US Equal Employment Opportunity Commission announced that companies were no longer required to report pay data, due to limited ability to process and enforce the rules. However, renewed energy in regards to this effort can help reveal hidden pay inequities in the labour market and hold employers publicly accountable to paying equitably.

Strategies include:

- **Adopting pay transparency policies and publicly disclosing anonymized pay data** by categories such as gender, race, ethnicity and ability, revealing hidden pay inequities

and holding employers publicly accountable (government, business).

- **Using publicly disclosed anonymized pay data** to promote equal pay as well as further pay auditing (business).
- **Setting standards for data analysis and disclosure for anonymized pay data**, including how to conduct pay audits and assess bias by establishing standards for statistical methodology (government, business).

In the operationalization of this pathway, businesses and governments need to ensure that pay data is subject to basic privacy protections that avoid personally identifying information and that people are protected from negative, unintended consequences of data disclosure.

In 2020, Glassdoor committed to “[transparency to drive racial equity](#)”, publicly releasing its annual pay gap audit publicly and senior executive salaries. Glassdoor’s actions are illuminating how pay transparency can create institutional incentives to combat unexplained pay gaps. [Transparent California](#) publicly discloses all employee pay data, offering a searchable public pay and pension database.

#### 4.4.2 Widespread corporate accountability and responsibility to equity and social justice through inclusive metrics and reporting

Globally, 90% of companies claim to prioritize diversity, yet companies are falling short on making progress towards creating a more equitable work environment for their employees. This policy is aimed at establishing clear goals, targets and metrics to tangibly measure corporate progress towards diversity, equity and inclusion (DE&I). Companies can counter a siloed approach to DE&I consolidated under the human resources function and move towards an integrated approach across all business functions to support corporate cultural change.

Strategies include:

- **Devising a holistic, intersectional and corporate-wide approach** to diversity, equity and inclusion that continually reviews and responds to systemic inequities within existing policies and procedures and across all organizational functions (business).
- **Aligning metrics and reporting structures to standardize and benchmark DE&I efforts across businesses and global indexes** (business).

- **Establishing a plan that prioritizes DE&I goals**, enables accountability and assesses the extent to which specified DE&I goals have been achieved (business).
- **Encouraging employee resource groups to mobilize and advocate** for their interests, metrics and inclusive policies, creating representation, incentives and further momentum (business).
- **Creating a universally inclusive corporate cultural framework** with a focus on inclusive metrics, reporting and accessibility as well as guidance on avoiding risks (business).

Further development is needed to protect individuals from the unintended or negative consequences of data disclosure and to find new ways to counter government frameworks that hinder the ability of companies to measure workforce diversity.

Maersk engages employees through inclusion networks and focus. In March 2021, it ran an inclusion survey to help capture diversity metrics and shape the company's diversity and inclusion strategy.

#### 4.4.3 Promoting diversity through external communications and supportive business functions such as procurement

Businesses can play an active role in promoting diversity, eliminating stereotypes and biases, and in building and restoring public trust by leveraging key business functions to empower marginalized identity groups. External communication through advertising and media have the potential to shape, change and influence culture and society. Communication platforms can perpetuate discrimination and inequalities as well as influence the (self-)perception of marginalized groups. Businesses can use their communication platforms and other supportive business functions throughout the value chain to actively promote a more inclusive society.

Strategies include:

- **Eliminating harmful stereotypes and biases across all advertising and communications content** by ensuring everyone is included, equally represented and portrayed in a just and authentic way (business).

- **Leveraging brand value to influence and support suppliers** to create change at scale (business).
- **Transforming business functions throughout the value chain, such as procurement**, to ensure equal representation of, and management by, under-represented groups (business).
- **Advocating for other businesses to adopt inclusive procurement strategies and commit to supplier diversity** (business).

In the operationalization of this pathway, businesses can devise standard guidelines, metrics and key performance indicators (KPIs) for measurement and accountability, business-wide training for eliminating harmful stereotypes/biases and driving "inclusive procurement", including setting lofty targets for suppliers.

[UN Women's Unstereotype Alliance](#) offers resources on eliminating harmful gender-based stereotypes in all media and advertising. [Unilever's Unstereotype Initiative](#) (2016) has unstereotyped 94% of its advertising output, leading to a 28% uplift in purchase intention, 35% increase in ad enjoyment, 30% increase in credibility and 17% increase in relevance. [Brooke Bond Red Label](#) tea in India has been breaking religious divisions through advertising.

## Bibliography

Aspan, M., "Women Accounted for 100% of the 140,000 Jobs Shed by the US Economy in December", Fortune, 8 January 2021: <https://fortune.com/2021/01/08/covid-job-losses-women-december-us-unemployment-rate/> (link as of 10 May 2021).

Cain Miller, C. "Mothers Are Regaining Jobs, Even While Shouldering Pandemic Burdens at Home", New York Times, 4 March 2021: <https://www.nytimes.com/2021/03/04/upshot/mothers-jobs-pandemic.html> (link as of 10 May 2021).

Cassells, R. and A. Duncan, "Gender Equity Insights 2020: Delivering the Business Outcomes", BCEC|WGEA Gender Equity Series, issue #5, 2020.

James Cockayne, "Developing Freedom: The Sustainable Development Case for Ending Modern Slavery, Forced Labour and Human Trafficking", United Nations University: New York, 2021: <http://www.developingfreedom.org/> (link as of 28/5/21).

European Commission against Racism and Intolerance (ECRI), 2020 Annual Report, 2021.

International Labour Organization, Ending Forced Labour by 2030, 2018.

Madgavkar, A., O. White, M. Krishnan, D. Mahajan and X. Azcue, COVID-19 and Gender Equality: Countering the Regressive Effects, McKinsey, 2020.

Shakespeare, T., F. Ndagire and Queen E. Seketi, "Triple Jeopardy: Disabled People and the COVID-19 Pandemic", The Lancet, 16 March 2021.

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5

# Shaping new markets to drive economic transformation



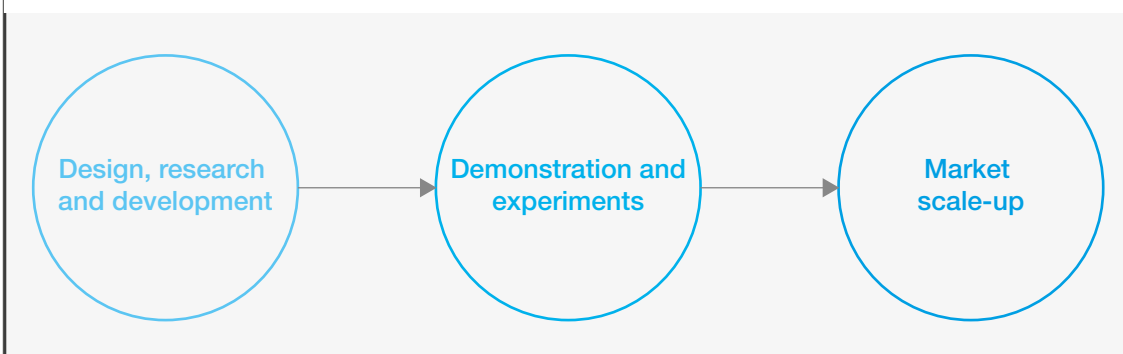
The challenges and disruptions that we face today require an economic transformation of a depth and scale that current generations have not witnessed before. Governments will need to play a driving role in orienting markets towards this transformation. The goal in several industries is to develop and mainstream a new set of products, services and business models that provide solutions to the problems that our societies face today,<sup>79</sup> and to create new market structures that distribute the economic value created by doing so more fairly among workers and companies, income levels and geographical divides, and advanced and developing economies. Levelling the playing field or fixing market failures will not be enough to realize the type of change required.

The response to the COVID-19 pandemic represents one of the pivotal moments in history when radical change is possible. Societies have been forced to question existing paradigms and the public sector has had to provide widespread support and make significant decisions about the future of economies. We had similar moments in the past, when governments were able to lay new foundations for long-term, shared prosperity. After the Second World War, a set of profound socio-institutional and technological transformations led to what has been defined as the “golden age of capitalism”.<sup>80</sup>

This time a green and equitable economy will need to be built in which everyone has an opportunity to thrive. It’s a transformation that calls into question the core of how value is produced and technologies, business models and market mechanisms are adopted. Global economic cooperation will have to accelerate research and innovation and recognize it as one of the most important global public goods for the coming decades, complemented by a set of new institutions and social norms in relation to taxation, work, education and welfare, which are discussed in the other sections of this brief.

Economic transformation will depend on creating a number of new, inclusive and sustainable markets.<sup>81</sup> The development of new niches into scaled markets passes through three main phases: 1) design, research and development; 2) demonstration and experiments; and 3) market scale-up. The design, research and development phase can be focused on creating new institutional and societal models as much as new products, technologies and business models.<sup>82</sup> This process must be cyclical and generative, with demonstrations and markets feeding back to further design and development for healthy evolution of the ecosystem.

FIGURE 2 Main phases of development of new niches into scaled markets



This brief represents the latest thinking on pathways to achieve these objectives, based on consultations with leaders from governments, business and civil society in the Global Future Council on the New Agenda for Economic Growth and Recovery. It first presents six pathways to accelerate the different phases of market creation, and then identifies three key success factors that are likely to determine the capacity of different countries to advance through these pathways. These elements present feedback loops and are in a systemic relationship with each other, with progress on the pathways reinforcing existing success factors.

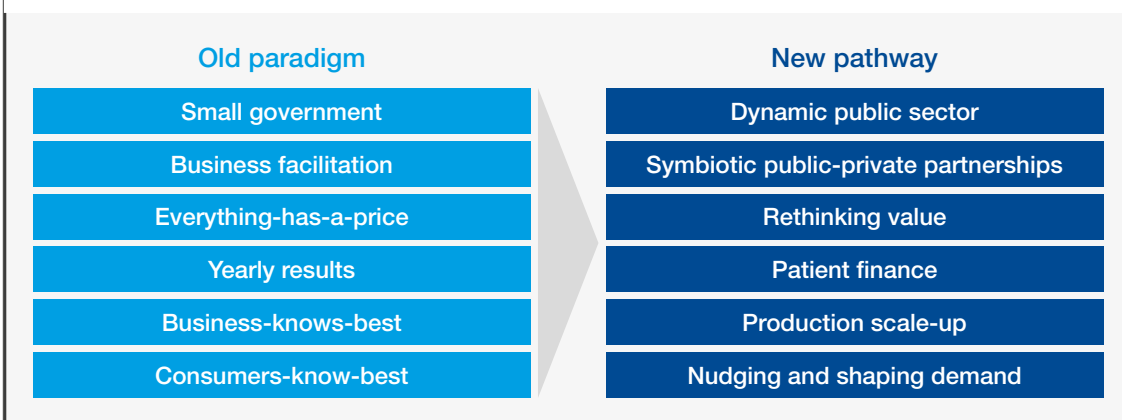
#### Pathways to market creation

Outlined below are six key pathways of action for policy-makers, businesses and civil society to proactively create new markets. Together, they group a total of 26 strategies for change and constitute a significant shift in narrative and

approach to economic policy and business strategy. Each of these strategies entails a deep and broad transformation of both public- and private-sector actors, as well as of the relationships between them. The objective of this chapter is to provide an overview of the different conditions necessary for a new approach to market creation, and of how they move away from the old paradigm. For additional details, we refer to previous publications of the World Economic Forum<sup>83</sup> and the references cited throughout the text.



FIGURE 3 Overall shift in narrative and approach to economic policy and business strategy



## 5.1 Investing within public administrations to develop dynamic capabilities and capacity

Over the past few decades, many advanced economies have progressively disinvested in the capabilities of their public sector. The COVID-19 pandemic has demonstrated the capacity of governments to respond to crisis and take timely decisions, while understanding the details of complex contracts and the systemic implications of their choices. A market-shaping role for government policy requires capabilities within the public sector. In most countries, the debate about the role of government in the economy remains focused on “how big” it should be, rather than “how bold”. There needs to be a change in the approach, where public officers are encouraged to experiment and take risks and be entrepreneurial, allowing for failures and seizing the rewards of successes. There needs to be a new narrative on the role of the public sector, away from that of “burdensome bureaucracy” to one of “market co-creator”. This will in turn make public employment more attractive to the right type of talent.<sup>84</sup>

Creating a new paradigm for the public sector will involve the following strategies:

- **Encouraging a new approach to public administration** based on experimentation and learning-by-doing (government).
- **Establishing new norms of sharing rewards and develop skills in the public sector** in terms of portfolio setting and risk taking, coherently and with an approach to public investment as the investment of first resort (government).
- **Designing new metrics to evaluate public investments** that capture the dynamic spillovers that occur with bold policies, which are hard to capture with static cost-benefit and net present value analysis (government).
- **Limiting the outsourcing of key capabilities** and ramp up investment within the public sector to enable it to become more capable and develop “absorptive capacity” (government).

The success of Operation Warp Speed in developing and producing COVID-19 vaccines was largely due to the capacity of a number of federal agencies in the US to coordinate quickly, build on the recent breakthroughs in mRNA technology and act as an investor of first resort, with a budget of \$10 billion. The Government of Australia has recently developed a new methodology to produce more holistic regulatory impact statements that take into account the overall impact of regulation on businesses, communities and individuals beyond the traditional cost-benefit analysis.<sup>85</sup>



## 5.2 Building symbiotic public-private partnerships

Only the combined efforts of the public and private sectors will be able to transform techno-economic paradigms and bring better and broader growth. Yet public-private partnerships around innovation and market-creation have often been too unbalanced, and the benefits of successful projects have not been fairly distributed within the population.<sup>86</sup>

New models for IP governance should be a core component of more symbiotic public-private partnerships. IP protection is not a “right” but rather the result of a “contract” whereby the government grants monopoly power in exchange for transparency and diffusion of knowledge. The COVID-19 crisis has shown the drawbacks of current IP regimes and the need to rebalance the conditions under which patents are granted, particularly when they are the result of publicly funded research programmes.

The need to safeguard competition should be a major concern when reforming IP contracts or intervening in the market for intellectual property. There are potential trade-offs between competition and scale: markets with higher investment needs (e.g. semi-conductors) tend to concentrate more, but these same markets are also the ones in which government intervention might be most important at the creation stage.

Five main strategies to more balanced partnerships for market creation have been identified:

- **Introducing conditionalities for public investments, subsidies, guarantees and bailouts** to shift practices and behaviours within companies towards lower carbon emissions, better working conditions and fewer share buybacks (government, business).<sup>87</sup>
- **Establishing a new legal blueprint for patents and other IP** that better balances private incentives and public interest for transparency and diffusion of knowledge (government).
- **Rebalancing risks and rewards** in specific cases where the government provides support for research, e.g. through equity stakes or golden shares of IP rights (government, business).
- **Developing initiatives that can diffuse knowledge and IP** necessary to address specific challenges, through pools, pledges or mandatory licensing (government, business).
- **Increasing scrutiny of anti-competitive practices**, most notably patent trolls, through dedicated legislation and changes in the breadth of coverage granted to IP (government).

The European Union through the European Innovation Council Accelerator has awarded equity and quasi-equity investments (blended with grants) to start-up companies in exchange for ownership stakes of between 10% and 25%. Government equity stakes could provide a more symbiotic model of partnership, but they could also promote anti-competitive regulations by public actors to protect the value of their assets. Equity stakes should follow a portfolio approach, choosing a wide range of options and dynamically entering and exiting successful ones.

Germany has used conditionalities on grants and loans by the KfW (Kreditanstalt für Wiederaufbau) to drive the green transition of its steel industry towards hydrogen and other low-carbon technologies. Similarly, Denmark and Austria have attached conditionality clauses to some of the fiscal support provided during the COVID-19 pandemic.

The World Health Organization (WHO) proposed in May 2020 a pool of patents and other IP rights relevant to the production of protective materials, COVID-19 drugs and vaccines, but this was unfortunately not endorsed by most advanced countries and the pharmaceutical industry.

## 5.3 Rethinking value

There is a growing tension between techno-economic systems – the way economic value is produced and the incentives that shape markets – and institutions, and the formal and informal rules and beliefs shared in communities. Innovation in governance has been slower than innovation in technology and business models.

Over the past two decades, there has been significant experimentation in hybrid organizational approaches that blend profit-seeking and impact activities. Some of these have been crystallized in new governance structures that few countries have formalized in their legal frameworks as “Benefit Corporations”.

Yet the way economic value is measured – through national and corporate accounting frameworks, public registries, etc. – has been called into question far less. Today, these institutions are unable to account for hybrid organizational models, but also for new types of assets and broader societal priorities beyond GDP.<sup>88</sup> For example, the standard System of National Accounts provides poor results when used to measure the value of workforce formation, e-healthcare or pollution. Public registries assess the rents generated by property and other traditional assets, but have developed nothing comparable that can track and value accumulation of data or AI codes.<sup>89</sup>

Finally, the development of some digital technologies and business models has contributed to polarization, misinformation and an increase in depression, anxiety and other mental disorders, potentially tearing apart our communities. The evolution of techno-economic systems needs to be redirected according to a common set of values.

Three main strategies have been identified to address these challenges and realign societal principles and economic value:

- **Scaling hybrid methodologies for innovation** – such as social impact ventures – that better align economic and societal value, embedding a different approach to governance and transparency (business).
- **Adapting the measurement and accounting frameworks used to account for economic value** – at both the micro and macro levels – in order to assign a proper value to parts of the economy in which prices do not fully reflect their economic and societal contribution (government, business).
- **Piloting new solutions and public-private governance models** to embed societal values in the development of new technologies and business models (government, business).

Among hybrid methodologies for innovation is the B-corporation: more than 3,500 certified B-corps have been established since the creation of the B-Lab in 2006. Zebras Unite has started a movement of companies that invest in markets generally overlooked by venture capital. These have adopted a social impact lens and focus on generating financial sustainability.

The Value Balancing Alliance has developed an innovative methodology to disclose the impacts of businesses on society, applying a rigorous impact measurement and valuation framework.<sup>90</sup> The Adecco Group has put forward a proposal to restructure accounting frameworks and allow companies to capitalize, as assets, the investment they make in retraining their employees.<sup>91</sup> In France, the government and the national accounting authority have piloted a regulation that allows companies to amortize, under specific conditions, part of their training expenses.<sup>92</sup> In Singapore, the Infocomm Media Development Authority (IMDA) has developed guidelines to assess the monetary value of data held by companies.<sup>93</sup>

In Taiwan, China, a consensus-making platform has been developed by g0v – a decentralized civic tech community – and later incorporated into the country’s governance structure as the cornerstone of the national e-democracy system. This platform is built on a concept of AI that emphasizes human cooperation while allowing for differences. Learnings from this experience could be incorporated into other business-led platforms.<sup>94</sup> In Estonia, X-road – the data exchange layer developed by the Information System Authority and powering the country’s e-government system – has been developed by making use of mathematical certainty-reliant technologies to enhance both the sovereignty of the state and the personal autonomy of individuals, who are able to own and control their data at all times.<sup>95</sup> A similar approach has been followed by DECODE, in Barcelona. Some of these governance principles could be adopted to create data markets and formalize the growing number of data unions and data pools powered by blockchain and other types of protocols.<sup>96</sup>

## 5.4 Increasing patient investment in mission-driven research

The economic transformation of today builds on the scientific and technological developments of 15 years ago. Only a patient approach to innovation financing can deliver a continuous pipeline of new discoveries that can shape tomorrow's markets in the direction that we need, protecting people and the planet.<sup>97</sup> In recent years, many governments have set up new vehicles to provide patient investment for innovation and technology transfer, partially in response to the increasing global competition for technology.

The following strategies can help inspire more patient finance for innovation:

- **Setting up dedicated vehicles through public funding**, such as national investment banks or innovation funds specialized in the provision of long-term funding (10-plus years) (government).
- **Creating urgency on missions of vital importance in the long term**, starting with ensuring all actors agree on the statement of a problem, highlighting the fundamental threat it might pose to society and developing a clear plan (government, business, civil society).
- **Rewiring private investments**, building on the growing success of ESG and embedding “patience” much more strongly in the incentive mechanisms that drive the decisions of funds and investors, throughout the full spectrum that includes venture capitalists and philanthropists (business).
- **Strengthening available metrics**, including adding qualitative dimensions (e.g. the time horizon of R&D projects) to existing indicators in ESG standards and national statistics (government, business).

In most emerging economies, national development banks and sovereign wealth funds have continued playing the role of long-term investors in new markets of strategic importance, although only a few of them have been successful.<sup>98</sup> The Brazilian development bank, BNDES, has made a positive contribution, creating markets for a number of green technologies in Brazil. The Scottish National Investment Bank has recently been launched to provide long-term funding for the transformation of Scotland's economy. The Italian government has launched a national fund for innovation (Fondo Nazionale Innovazione) and a new agency for technology transfer (Fondazione ENEA Tech), while the new British Advanced Research Projects Agency (BARPA) is set to launch by the end of the year, all inspired by similar agencies in the United States.

A number of private initiatives have also channelled long-term investment into blue-sky innovation: Google X and Embraer X (corporate-led), Gates Ventures and Breakthrough Energy (spurred by philanthropists and private investors). Innovation prizes – among the most successful tools for solution-oriented R&D – have been regularly sponsored by organizations such as Xprize.

Finally, the Long-Term Stock Exchange was launched in September 2020 to fund companies whose governance favours long-term decision-making; for example, granting increased voting rights to long-term shareholders. Among investors, some family offices have been among the early adopters of this approach.

## 5.5 Scaling up the production of goods, services and technologies of tomorrow

While we need to provide for a long-term pipeline of R&D, there is a tremendous opportunity to accelerate the uptake across different contexts, sectors and geographies of products and technologies that are already mature.

Across all sectors, we see declining competition levels that might prevent the incumbents from effectively positioning themselves in the most promising new markets. It is important to look at

the political economy behind the choice of the innovation pathways: while government support is vital, it is too often co-opted to serve incumbent sectors. For example, the development of cutting-edge software applications for multimodal mobility might be just as impactful on pollution and quality of life as the development of electric and autonomous vehicles, but there is disproportionate support for the latter. Similarly, the farming industry remains heavily subsidized in most advanced economies,

but very little support has been given to alternative meat production in spite of increasing research pointing to its broader costs benefits to food systems.<sup>99</sup>

There is a toolkit of potential interventions to trigger economies of scale in the production of new solutions, facilitate new entries into the market and accelerate learning curves and price improvements. Public-sector capacity and “embeddedness” in target markets is vital to identify the right actors and solutions, get them on board and create confidence and collaborations.<sup>100</sup> Significant benefits can also come from the revamp of existing business models.

As global solutions need to be adapted and contextualized to local markets, experimentation is vital in order to identify and scale sustainable projects. Governments should focus on creating “demonstrators” that are accessible in many countries so that consumers can see, feel and touch the products and customize them. In countries with low R&D, social innovation can be used to source new, problem-led experiments from social enterprises and communities rather than following a top-down approach.

The following strategies can accelerate the creation of key products and technologies for the future:

- **Strengthen supply through subsidies, capital grants, government loans and other tools** that can help new entrants and trigger economies of scale (government).
- **Target specific market niches that can help address future challenges**, especially those that do not get attention from current investors and industries (government, business).
- **Shift government support** from incumbent players and sectors to new entrants (government).
- **Encourage partnerships among businesses**, including SMEs, to create alignment on common production and innovation challenges, pool knowledge and diffuse benefits (business).
- **Use demonstration effects** through pilots and prototypes that can inspire local producers and help localize global solutions (government, business).

In recent years, the European Union has launched a number of flagship public-private initiatives to scale up productions of strategic importance for the continent. The European Battery Alliance and the European Hydrogen Alliance are taking a holistic approach to the development of internal productive capacity, including grants and other forms of investment into specific projects, upskilling and reskilling workers and support for continuous innovation.

In Singapore, the Future Economy Council has convened seven industry-led Alliances for Action that work in partnership with the government to seize future growth opportunities for the country. Through a number of engagement sessions, these groups are exploring, prototyping and executing ideas over short sprints.

## 5.6 Nudging and shaping demand

The creation of new markets often requires a parallel approach on supply and demand. New products might struggle to find a space in the market even when they present superior characteristics, especially if they represent a new paradigm in terms of complementary know-how, infrastructure and other sunk costs.

Governments can support demand for key products, but transformative change often requires a change in behaviour by entire communities, and a coordinated shift by actors, regimes and institutions.

Five main strategies should be considered when supporting demand for a new market:

- **Change relative prices** through taxes, subsidies or other forms of economic incentives (government).
- **Ensure initial market demand** through public procurement, public works or other forms of direct public spending (government).
- **Align leading stakeholders, most importantly governments**, in regards to politically feasible solutions that are a win-win within the broader ecosystem (government, business).
- **Work with communities to co-shape the broader techno-economic system** that influences their behaviours, preferences and perceptions (government, business, civil society).
- **Establish clear KPIs and rigorous assessment** of the relative performance of goods and services brought to the market (government, business).



Most governments have tools in place to nudge consumers towards one set of products and away from another. For example, generous incentives exist for green products together with heavy taxes and warning labels on dangerous ones. In Australia, the government has recently introduced a warning label for pregnant women on alcoholic beverages.

The response to COVID-19 has highlighted the potential of experimental and pre-commercial procurement to de-risk and accelerate the development of new products.<sup>101</sup> This was undertaken in the past as well, e.g. through the advance market commitment that helped develop pneumococcal vaccines after 2010.<sup>102</sup>

### Success factors

Creating new markets builds on existing resources and capacity. While all countries should adopt a market-shaping approach and work on the pathways outlined so far, there are critical factors that might determine the success of their efforts and exacerbate existing gaps and divergences.

The availability of public- and private-sector funds is a leading constraint for many countries that cannot rely on a deep and efficient domestic financial sector and have limited access to international capital markets. Financing conditions currently appear extremely favourable for most advanced economies, which are experimenting with a set of unprecedented fiscal and monetary measures to face the challenges of COVID-19. This is not the case in low-income economies, where fiscal support in response to the pandemic has so far amounted to 2% of GDP, compared to 24% in advanced economies.<sup>103</sup> Most of the available financing in low-income economies will be used for emergency relief, with virtually no space left for long-term recovery and transformation of the economy.

The existing quality of regulatory frameworks, social capital and other formal and informal

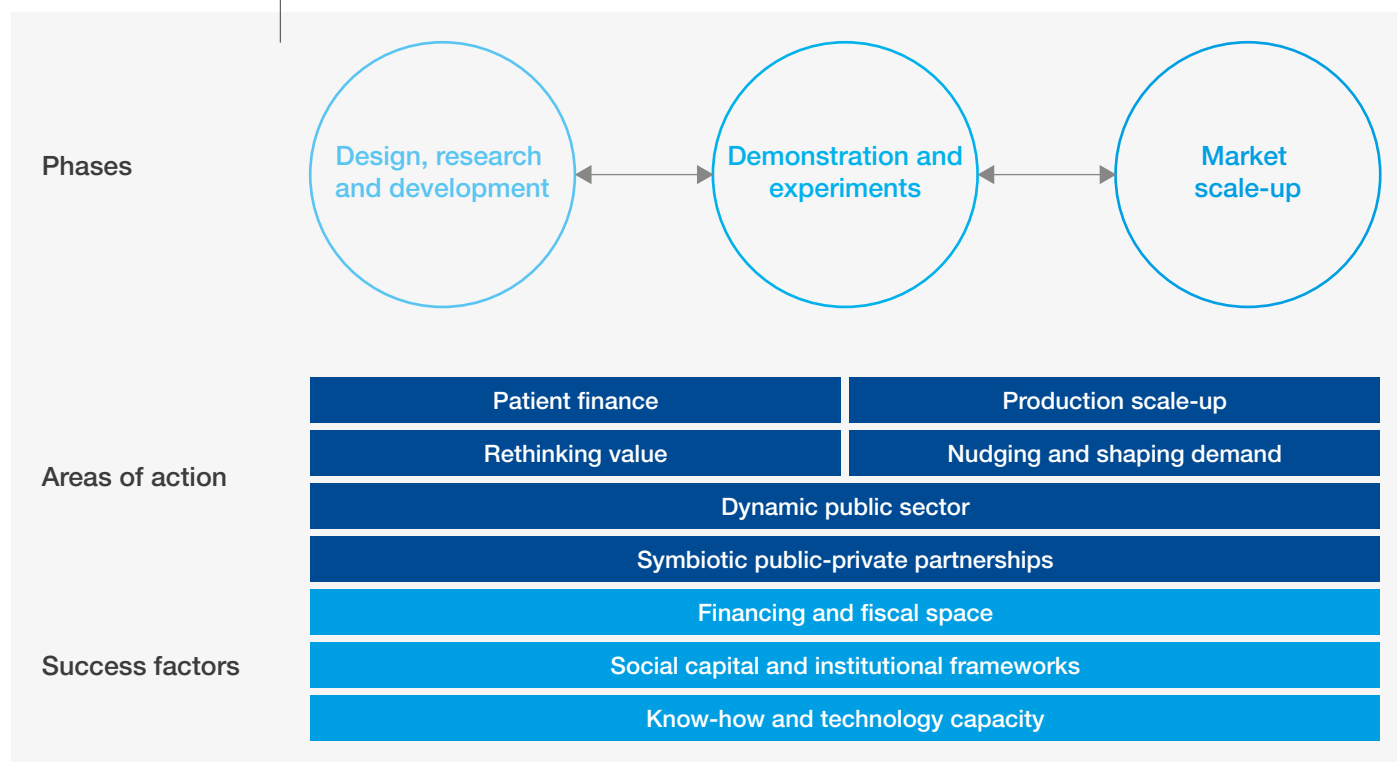
institutions (at the macro, micro and meso levels) can accelerate or derail market co-creation. Public-sector capture by incumbents and groups of interest is a key risk, as are other forms of collusion and anti-competitive practices. The quality of public- and private- sector governance and the existence of a lively network of meso institutions help to create the necessary trust and alignment of stakeholders to work on a common vision. A modern system of welfare can help people to develop, experiment, transition and participate in the transformation.<sup>104</sup> Civil society and academia must also play an active role in creating new narratives and choosing the most relevant innovation paths.

Finally, market creation builds on existing know-how and technical capacity, including the workforce, systems of production and technology deployed throughout the economy. Analysing the knowledge embedded in the economy can help identify constraints but also highlight opportunities for leapfrogging into new niches that have not been prioritized so far. Every new experiment – even the ones that fail – creates new know-how and awareness about the map of opportunities that a country can pursue.

Economic transformation will require a creative effort to bring forward new products, services and business models that better align with the objectives we have as a society. These new markets involve a mix of technological and socio-institutional innovation and often lead to new paradigms. Long-term investment in research and development will be necessary but not sufficient, as new and improved products will not be automatically adopted by the market even after they

are developed. Governments will be responsible for taking risks, making choices and orienting the transition from one system to another and across as many sectors and actors as possible. To achieve this goal, it will be important to put the direction of growth – and not just its level – at the centre of policy-making and framings within the ministries of finance and other leading stakeholders. This chapter provides a list of potential pathways and success factors critical to achieve this transformation.

FIGURE 4: Summary of phases, pathways and success factors of long-term market creation



## References

Adecco Group, Bridging the Skills Gap: Rethinking Workforce Investment, 2020.

Begovic, M., R. Kattel, M. Mazzucato and G. Quaggiotto and M. Begovic, “COVID-19 and the Need for Dynamic State Capabilities: An International Comparison”, UNDP-UCL Development Futures Series Working Papers, 2021.

Commonwealth of Australia, Department of the Prime Minister and Cabinet, The Australian Government Guide to Regulatory Impact Analysis, 2020.

Cottam, H., Welfare 5.0: Why We Need a Social Revolution and How to Make it Happen, UCL Institute for Innovation and Public Purpose, Policy Report, 2020.

Coyle, D., GDP: A Short but Affectionate History, Princeton University Press, 2014.

Eenmaa, H., “Sovereignty and Autonomy via Mathematics”, Stanford Journal of Blockchain Law & Policy, 4(1): 79–101, 2021.

Food System Impact Valuation Initiative (FoodSIVI), Valuing the Impact of Food: Towards Practical and Comparable Monetary Valuation of Food System Impacts, 2020.

Geels, F., “From Sectoral Systems of Innovation to Socio-technical Systems: Insights about Dynamics and Change from Sociology and Institutional Theory”, Research Policy, 33(6–7): 897–920, 2004.

Geels, F., and J. Schot, “Typology of Sociotechnical Transition Pathways”, Research Policy, 36(3): 399–417, 2007.

Georgieva, K., “The Great Divergence: A Fork in the Road for the Global Economy”, IMFBlog, 24 February 2021: <https://blogs.imf.org/2021/02/24/the-great-divergence-a-fork-in-the-road-for-the-global-economy/> (link as of 10 May 2021).

Goldin, I., Rescue: From Global Crisis to a Better World, Hachette, 2021.

Haskel, J., and S. Westlake, Capitalism without Capital: The Rise of the Intangible Economy, Princeton University Press, 2017.

Infocomm and Media Development Authority (IMDA) and Personal Data Protection Commission (PDPC), Guide to Data Valuation for Data Sharing, 2019.

Kremer, M., J. Levin and C.M. Snyder, Advance Market Commitments: Insights from Theory and Experience, NBER Working Paper 26775, 2020.

Institute for Innovation and Public Purpose, “Stakeholder Capitalism during and after COVID-19”, UCL IIPP COVID-19 Briefing Papers 01, 2020.

Laplane, A., and M. Mazzucato, “Socializing the Risks and Rewards of Public Investments: Economic, Policy, and Legal issues”, Research Policy: X, 2, 2020; Marglin, S.A., and J.B. Schor, The Golden Age of Capitalism: Reinterpreting the Postwar Experience, Oxford University Press, 1992.

Mazzucato, M., Mission Economy: A Moonshot Guide to Changing Capitalism, Penguin, 2021.

Mazzucato, M., “Mission Oriented Innovation Policy: Challenges and Opportunities”, Industrial and Corporate Change, 27(5): 803–815, 2018.

Mazzucato, M., The Value of Everything: Making and Taking in the Global Economy, Allen Lane, 2018.

Mazzucato, M., The Entrepreneurial State: Debunking the Public vs Private Myths in Risk and Innovation, Anthem Press, 2013.

Mazzucato, M., and C.C.R. Penna, “Beyond Market Failures: The Market Creating and Shaping Roles of State Investment Banks”, Journal of Economic Policy Reform, 19(4): 305–326, 2016.

Mazzucato, M., R. Kattel and J. Ryan-Collins, “Challenge-Driven Innovation Policy: Towards a New Policy Toolkit”, Journal of Industry, Competition and Trade, 20: 421–437, 2019.

Posner, E., and G. Weyl, *Radical Markets: Uprooting Capitalism and Democracy for a Just Society*, Princeton University Press, 2018.

RadicalxChange, Taiwan: *Grassroots Digital Democracy that Works*, 2021.

RethinkX, *Rethinking Food and Agriculture 2020–2030: The Second Domestication of Plants and Animals, the Disruption of the Cow, and the Collapse of Industrial Livestock Farming*, 2019.

Rockefeller Foundation, *One for All: An Action Plan for Financing Global Vaccination and Sustainable Growth*, 2021.

Rodrik, D., *Normalizing Industrial Policy*, The World Bank Commission on Growth and Development Working Paper 3, 2008.

Sampat, B.N., and K.C. Shadlen, “The COVID-19 Innovation System”, *Health Affairs*, 40(3): 400–9, 2021.

Value Balancing Alliance, *Methodology: Impact Statement General Paper version 0.1*, 2021.

World Economic Forum, *Human Capital as an Asset: An Accounting Framework to Reset the Value of Talent in the New World of Work*, 2020a.

World Economic Forum, *Markets of Tomorrow: Pathways to a New Economy*, 2020b.

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6

# Preparing for frontier risks in the new economy



Leaders in the public and private sectors manage a multitude of risks. Among these are high-likelihood, high-impact threats that don't come out of the blue but instead follow a series of indications and evidence that such an event was on the horizon, such as the 2008 financial crisis (these have been called "grey rhinos" because of their scale and probability).<sup>105</sup>

At the other end of the predictability spectrum are so-called "black swan" risks,<sup>106</sup> which are characterized by their extreme rarity, severe impact

and improbability, such as the use of civilian aircraft in the 9/11 terrorist attacks.

Recognizing that attention and resources are focused on managing immediate crises, this chapter spotlights a unique kind of risk alongside the predicted and the almost-impossible-to-predict: "frontier risks" – risks that emerge at a frontier as technologies surface or human and societal forces shift. These risks are characterized by their unknown likelihood, unknown impacts or both.<sup>107</sup>

TABLE 1 **Frontier risks**

	Low impact	High impact	Unknown impact
Low likelihood	<ul style="list-style-type: none"> <li>– Minor manufacturing error</li> </ul>	<ul style="list-style-type: none"> <li>– 9/11 use of civilian aircraft</li> <li>– Supervolcanic eruptions</li> </ul>	<b>Frontier</b> <ul style="list-style-type: none"> <li>– Democratic backslide</li> <li>– Militarization of space</li> </ul>
High likelihood	<ul style="list-style-type: none"> <li>– Global warming by .01C</li> <li>– Minor road/transport accidents</li> </ul>	<ul style="list-style-type: none"> <li>– 2008 financial crisis</li> <li>– Global warming by 3C</li> <li>– Growing inequality</li> </ul>	<b>Frontier</b> <ul style="list-style-type: none"> <li>– Genetic engineering enhancement</li> <li>– AI weaponry</li> <li>– Extreme citizen unrest</li> </ul>
Unknown likelihood	<b>Frontier</b> <ul style="list-style-type: none"> <li>– Isolated data theft</li> </ul>	<b>Frontier</b> <ul style="list-style-type: none"> <li>– Bioweapons</li> <li>– Human-engineered pandemic</li> </ul>	<b>Frontier</b> <ul style="list-style-type: none"> <li>– Permafrost methane release</li> <li>– AI superintelligence</li> </ul>

There are at least four critical realms in which humans are advancing and for which there is more limited understanding of whether, when and how specific risks could emerge:

- Advancing into new territorial and geographic frontiers, e.g. through space exploration.
- Breaching ecological and environmental boundaries, e.g. through geoengineering.
- Expanding frontiers in human communication, e.g. through social networks and AI.
- Reaching a new human-technology frontier, e.g. through genetic enhancement.

Additionally, in many cases, potential risks will lie at the intersection of frontiers (e.g. risks emerging from brain-computer interface technologies). Frontier risks could manifest as an extreme version of a known risk, or as a completely new phenomenon, and its emergence could be rapid, gradual or non-linear.<sup>108</sup>

Examples of frontier risks could include fallout from militarization of outer space or unforeseen damage from AI weaponry, risks that would carry harms if manifested but for which the likelihood is unknown

today (see Table 1). Breaching ecological frontiers could also bring about risks: for example, a rapid, massive methane release if permafrost melts quickly – an "unknown unknown". New frontiers in human communication channels could engender risks with unknown characteristics as well; for example, if democracy breaks down within a country or political identity crises intensify because of social networks. New technological frontiers such as nanotechnology may exacerbate existing or carry novel risks, too.

While decision-makers must confront the risks of all categories, frontier risks require exploration for three reasons: 1) the early-warning signs are often subtle and difficult to detect; 2) these risks are less likely to be understood beyond a niche group of experts; and 3) their uncertainty means they could manifest at any point, and with any magnitude. Before exploring pathways to better preparedness, however, it is important to consider why decision-makers so often fail to prepare for these risks. Armed with this understanding, the chapter then postulates pathways towards better resilience. It represents the latest thinking based on consultation with leaders from government, business and civil society in the Global Future Council on Frontier Risks.



### Frontier risk pathologies

Failure to understand and effectively build resilience against frontier risks is the result of certain “pathologies” – from human neurobiology and psychology to societal norms to institutional architecture – that can lead to paralysis or errors in judgement in the face of uncertainty. Each of the pathologies listed below could represent an entire field of study and such a treatment is not attempted here. Rather, the purpose is to touch upon the various ways in which phenomena such as frontier risks are underappreciated by individuals, governments, organizations and societies alike.

- The human brain is powerful, but it is subject to many forms of systematic error in judgement – **or cognitive biases** – when processing information.<sup>109</sup> Some errors that are particularly problematic when confronting uncertainty include: information overload, failure to notice subtle changes in the environment, future devaluing (“the present is more important than the future”), bystander effect (“someone else will deal with this”) and ambiguity biases.<sup>110</sup>
- **Misinformation or disinformation**, spread through social networks, can fill in information gaps, ultimately swaying individuals and groups into believing or acting upon false information.<sup>111</sup>
- **Vague warnings** within dense and noisy information sets make deciding upon action challenging, particularly when there are divergent understandings about predictions, probabilities or time frames.<sup>112</sup>
- **Diffuse accountability** in government, organizations or societies may leave risk(y) management decisions unaddressed.<sup>113</sup>
- **Fragmentation** between risk experts, the scientific community and decision-makers can lead to isolated policy choices.
- **Political cycles** often reward funding immediate priorities, which can impede resourcing for longer-term, less-certain risk preparedness.
- The **cost of action** (which may not be fully representative in any case) is often weighed against the **risk of doing nothing**.
- For some, there may exist fear of addressing future crises because of **obligations** – financial, legal or otherwise – that arise once risks are acknowledged.
- **Information gaps** may exist where there is a lack of intelligence on certain types of risk scenarios.
- Certain **societies or belief systems** may reinforce a disregard for frontier risks or fail to build resilient systems to face them, whereas others embrace a “fail forward” culture.
- **Lack of public trust** in public and private institutions that warn of frontier risks can exacerbate head-in-the-sand approaches to potential future challenges.





### Confronting frontier risks

This section offers decision-makers pathways that can help them confront frontier risks better. In some cases, there are opportunities to hedge against frontier risks; in others, it may only be possible

to mitigate exposure. Some pathways flow from lessons learned in responding to more traditional risks, such as the COVID-19 pandemic, and others offer novel opportunities to explore the goal of more resilient societies.

## 6.1 Identifying and prioritizing frontier risks

While identifying and prioritizing is a challenge for all risks, it is particularly difficult for frontier risks because the early-warning signs are often subtle and ambiguous. This makes interpretive, or sense-making processes, more complex than in situations

that are more representative of the status quo. Compounding the problem is the simultaneous momentum to push towards or beyond a frontier that could blind (consciously or unconsciously) decision-makers from perceiving a risk.

### 6.1.1 Use horizon-scanning tools and institutions to expand the risk universe

Most individuals do not regularly observe the world around them, which makes it hard to notice subtle signs that signal shifts. Similarly, the more obscure a risk or the more distant someone is from a situation, the harder it is to pay attention to it. These barriers can be even higher in groups, such as in government institutions or businesses, where individual biases may be magnified. More regular frontier risk assessment that uses horizon scanning could help make identification more robust. Strategies to employ might be:

- **Leverage existing lists of risks as starting points**, e.g. public national risk registers or lists developed by business or civil society organizations (business, civil society).

- **Use methodologies such as Delphi groups** (which convene expert panels to consult on a particular issue or offer future scenario possibilities) and crowdsourcing and radar plots, which provide useful tools in threat conception where there may exist uncertainty (government, business, civil society).
- **Explore organizations that focus on risks with uncertain characteristics**, such as the Centre for the Study of Existential Risk, the Future of Humanity and the Centre for the Future of Intelligence; experts or outputs from these groups could help illuminate the contours of these risks for all sectors (government, business, civil society).

The Centre for the Study of Existential Risk submitted recommendations to the UK House of Lords on foresight and horizon-scanning methods for managing unknown, long-term and emerging risks.<sup>114</sup>

The CRO Forum, a consortium of chief risk officers from large multinational insurance companies, provides another effective methodology: it runs an Emerging Risk Initiative that gathers and develops insights into new or developing risks in addition to existing risks. Risks identified in the most recent Emerging Risk Radar include “new frontiers for resource extraction”, “plastics and microplastics” and “synthetic biology”.<sup>115</sup>

6.1.2 Call out and test assumptions

Part of the challenge in managing frontier risks is that “group-think” or siloed thinking can create blind spots in longer-term or less perceptible threats. One way to help overcome these biases is to bring in a diversity of perspectives to call out risks and test assumptions. Outside experts, for example, from a variety of disciplines, will be able to view an issue or situation from a distinct perspective, bringing fresh thinking to risks. Similarly, within organizations or institutions, diverse voices, including on-the-ground workers, can spot subtle issues that may not be visible to more senior decision-makers. Strategies to implement this pathway are:

- **Develop task forces** composed of diverse, cross-sectoral experts convened with a mandate to probe a specific frontier, such as deep-sea exploration (government, civil society)

- **Invite senior experts to peer review crisis or management decisions** in a scenario-based exercise (“red-teaming”) to test decision-making and foresight in relation to frontier risks (government, business, civil society).
- **Maintain a direct line between risk managers and on-the-ground workers**, who can more readily detect weak cues that may be early-warning signs of a frontier risk (government, business, civil society).

Swissgrid, the electrical network operator in Switzerland, operates a RiskTalk app and associated triage team that provides all employees with a channel to report, anonymously if they wish, any issue that could impact strategy, operations or safety.<sup>116</sup> The company also convenes regular, interactive workshops for each subteam in which participants review previously identified and new risks.<sup>117</sup>

6.1.3 Prioritize and identify responsible actors where possible

Beyond identification, it is also useful for decision-makers to set priorities related to frontier risks, which will help organizations or individuals take decisions about resource allocation and timelines for intervention. Given the nature of frontier risks, it is difficult to prescribe a particular priority as each government, organization or individual might think about cost/benefit, risk, and reward differently; however, one approach might be to structure priorities around potential impacts (see Table 2). Additionally, frontier risks are unlikely to be confined to a single agency, particularly in the government context, so if it’s possible to assign “ownership” of a frontier risk, doing so could also help mitigate bias towards inertia. To implement this, decision-makers could:

- **Approach priorities based on factors other than likelihood** where such analysis is not possible, e.g. gestation period, overall size of impact or stakeholder priorities (government, business, civil society).
- **Track scientific and legal developments**, which may signal which risks are closer on the horizon and how impactful they may be (government, business, civil society).
- Once identified, **target specific agencies** to monitor and develop preparedness tactics for specific frontier risks (government).

TABLE 2 Sample prioritization

Tier 1	Tier 2	Tier 3
High impact/unknown likelihood	Unknown impact/high likelihood Unknown impact/unknown likelihood Unknown impact/low likelihood	Low impact/unknown likelihood



## 6.2 Developing and communicating scenarios

Without data to build probability models, well-formed scenarios developed in a collaborative process can help draw out potential impacts.<sup>118</sup> Articulating the sources, drivers, amplifiers and tipping points of a particular risk will help flesh

out its shape and provide potential avenues for preparedness. Harnessing the methodologies described above can also ensure scenarios are robust enough to be useful to policy-makers.

### 6.2.1 Use narrative

Developing narratives around scenarios will awaken policy-makers and the public to more uncertain threats.<sup>119</sup> Stories can much better communicate a threat as they will often elicit emotions that factual information alone may not. The best long-term scenarios are based on drivers and trends, which are then played out in multiple future dimensions. Importantly, effective narratives around uncertain risks should focus not only on protective actions, but also on clear explanations of the nature and known/unknown character of the risk in language that is accessible to the community. Strategies for better narrative development could be:

- **Appeal to collective experiences**, which often helps narratives find greater uptake (government, business, civil society).
- **Use other sensory tools**, such as art, gaming or virtual reality, to help fill gaps and make threats real (government, business, civil society).
- **Accompany the emphasis on threat with messages of hope**, such as offering examples of feasible pre-emptive actions that might help mitigate or avert the risk (government, business, civil society).

Although climate change is not a frontier risk, Indian Prime Minister Narendra Modi was successful in building a narrative on its mitigation measures around India's ancient texts, which helped transform a divisive North-South debate into a homegrown issue that the Indian populace could own.<sup>120</sup>

Superflux, a strategic foresight company, took another approach: it imagined what a future UAE would smell like if no pollution measures were taken and created a scent for it.<sup>121</sup>

## 6.2.2 Ensure transparent risk communication

Once frontier risks are identified and mitigation scenarios are developed, they should be directly and transparently communicated to populations. COVID-19 has provided clear examples of the value of regular and consistent public reporting and the governments that have most successfully sustained popular confidence throughout the crisis have been able to do this well.<sup>122</sup> Importantly, boosting epistemic security – or ensuring access to reliable information – can also facilitate resilience against threats with uncertain characteristics.<sup>123</sup>

Additionally, more regulation of social networks, including penalties for those who may be knowingly perpetuating false information, could help take the onus off individuals to filter out misinformation

or disinformation, and place it on the government or businesses overseeing such networks. To implement this pathway, it is important to:

- Use as **precise language** as possible (government, business, civil society).
- Be intentional about **timing and format** of communications (e.g. weekday versus weekend communications) (government, business, civil society).
- Regulate media outlets to ensure **baseline standards for information** (government).

Twitter introduced warning labels to provide additional context and information on tweets containing disputed or misleading information related to COVID-19.<sup>124</sup> UK Research and Innovation also recently issued a call to establish a centre of excellence focused on epistemic security.<sup>125</sup>

## 6.3 Refining organizational structures

While many organizations, public or private, employ strong enterprise risk management (ERM), these systems can fall short against frontier risks, which may not fall neatly within its frameworks. Governments, particularly, would benefit from centralized foresight bodies that have capacities

including but not limited to ERM frameworks. Both public- and private-sector organizations should also encourage cultures that accept uncertainty and value openness to alternative viewpoints – characteristics associated with both better risk detection and quicker recovery from shocks.

### 6.3.1 Invest in a coordinating government body to oversee risk management and resilience.

In the public sector, especially, frontier risk resilience often requires an all-of-government approach.<sup>126</sup> Thus, a coordinating body, ideally centralized with direct lines to both the head of government and on-the-ground units, could help avoid narrow viewpoints and non-systemic solutions.<sup>127</sup> The Government of New Zealand, for example, has instituted a national coordinating mechanism used across functions to manage risks.<sup>128</sup>

At the same time, such a risk unit, to the extent that it is granted the authority needed to execute a broad-based mission, should also be checked against abuse and human biases. Independent, multidisciplinary ethical commissions could act as

such a check. Reorienting risk identification and response functions in these ways is not only vital to a government's ability to see through a crisis but also contributes to its broader competitiveness. Strategies to coordinate frontier risk management include:

- **Incorporate a frontier risks arm** into ERM functions (business).
- **Empower a coordinating body**, led by a champion for foresight, to oversee risk management across agencies and functions (government).



### 6.3.2 Build conducive cultures

Certain characteristics allow organizations to be more receptive to perceiving and preparing for frontier risks. Organizations that accept change and uncertainty, track and learn from small failures and rely upon front-line local knowledge can build a dynamic situational awareness that enables them to anticipate and contain surprises.<sup>129</sup> Monitoring systems that regularly reach senior-level management will ensure buy-in on the suite of possible scenarios that could arise from emerging risks.<sup>130</sup> Finally, trust and openness is critical: an environment that is psychologically safe, diverse and inclusive will encourage and reward perspectives that illuminate frontier risks and opportunities more than one that is not<sup>131</sup> (see Chapter 4). These principles held up in the most recent crisis: organizations that scored higher on ESG metrics were better able to weather COVID-19 storms.<sup>132</sup> To build such cultures, organizations can:

- **Assess organizational culture** through interviewing and surveying the workforce to determine where gaps might exist in characteristics conducive to better risk management; recruit and develop leaders to help close those gaps (government, business, civil society).
- **Train workforce in risk management**, exposing workers to frontier risks and how they might manifest (government, business, civil society).
- **Empower the entire workforce to understand the new frontiers** that the business or organization may be reaching (government, business, civil society).

## 6.4 Enhancing regulatory regimes and resilience financing

Along with significant uncertainties, reaching new frontiers can bring great opportunities. Governments, regional bodies and international organizations have

a role to play in hedging against potential risk by ensuring unintended consequences of a frontier risk manifested do not beset advancements.

### 6.4.1 Consider resilience financing

Public financing for frontier risk resilience must be (re)considered. For example, rather than assessing loss (and therefore future risk) from the direct impacts of risks such as national disasters or cyberattacks, governments should account for frontier risks: longer-term impacts, new factors and interconnections that could exacerbate down-the-line costs. While debt is already at an all-time high, some countries have managed to retain national emergency funds and crisis reserves, while others promote or provide unique insurance arrangements to shore up protections. One lesson from the COVID-19 crisis is that cushions such as automatic stabilizers and agile emergency spending triggers are key to ensuring economies can bounce back from unanticipated shocks (see Chapter 1).

Sovereign wealth funds (SWF), particularly when used transparently, could also be a useful tool to allocate resources to offset the impact of disasters, including those related to frontier risks.<sup>133</sup> For example, some countries with SWFs, such as Botswana, Chile, Peru, Kazakhstan, Namibia, Tanzania, Timor-Leste and Trinidad and Tobago, have been able to borrow against these funds, taking advantage of low interest rates on sovereign debt.<sup>134</sup>

Infrastructure investment and redundancy expenditure is vital as well, with a focus on critical assets. Such initiatives are part and parcel of a country's ability to absorb unanticipated shocks and, therefore, its competitiveness. The Room for the River project in the Netherlands is a good example, investing 1.2% of gross national product each year in flood prevention.<sup>135</sup>

Lastly, engineering choice architecture around public and private financing of frontier risks can also help overcome psychological biases that may prevent individuals or institutions from making the forward-thinking resilience investments needed today.

In financing resilience, strategies include:

- **Provide innovative insurance solutions** that can bridge gaps between frontier risks and opportunities (government, business).
- **Determine critical infrastructure assets** and develop a plan for investment in them (government).
- **Build strategies for overcoming risk pathology into business models**, e.g. ensuring long-term, frontier costs are incorporated into current plans (business).

The Dutch Bank ING addressed risk pathologies head-on by adding a behavioural risks management team to its global risks strategy in 2018. The team identifies high-risk behaviours and their drivers and analyses them in a “nudge lab”, which allows employees to explore their behavioural biases and develop simple but effective solutions to overcome them.

Flood insurance schemes provide another example of how choice architecture can force forward-thinking decision-making in relation to risk. For example, in some countries such as France and Spain, government-backed schemes include a compulsory, flat-rate surcharge for flood and other hazard coverage, whereas in the UK, flood coverage is included in standard household insurance (and required by mortgage lenders).<sup>136</sup>

## 6.4.2 Responsibly regulate new frontiers

Governments and international bodies should prioritize closing obvious gaps in legal frameworks governing new frontiers, such as in the realm of space or AI. For instance, the last major treaty governing outer space entered into force more than half a century ago,<sup>137</sup> while space activity has expanded dramatically in the intervening years.<sup>138</sup> Similarly, new technologies should be regulated against malicious or unintentionally harmful use. This requires governing institutions to bring in, develop or collaborate with the private sector to harness the expertise needed to understand and responsibly regulate such technologies. A new or reoriented transnational body could also play a role: e.g. gathering various ethical standards and frameworks relating to frontier risk topics, such as a new technology, and providing standardized, industry-specific guidelines (see Chapter 5).<sup>139</sup> The

Global Partnership on AI provides an example of a transnational, multistakeholder approach to ethical techniques for one set of new technologies.<sup>140</sup> Strategies to ensure better regulation include:

- **Educate the public** on new frontiers and the possible risks they might carry (government, civil society).
- **Exercise precautionary principles** in the development of new technologies (government, business).
- **Leverage current international or transnational organizations** that may be well placed to coordinate frameworks or standards for new realms (government, civil society).

## Bibliography

- Alan Turing Institute, Tackling Threats to Informed Decision-Making in Democratic Societies: Promoting Epistemic Security in a Technologically-Advanced World, 2020: [https://www.turing.ac.uk/sites/default/files/2020-10/epistemic-security-report\\_final.pdf](https://www.turing.ac.uk/sites/default/files/2020-10/epistemic-security-report_final.pdf) (link as of 10 May 2021).
- Al-Rodhan, N., “3 Disruptive Frontier Risks that Could Strike by 2040”, World Economic Forum Agenda, 18 December 2020: <https://www.weforum.org/agenda/2020/12/3-disruptive-frontier-risks-that-could-strike-by-2040/> (link as of 26 May 2021).
- Al-Rodhan, N., “Implications of New Space Forces for Sustainable Space and Terrestrial Security”, Global Policy, 19 February 2021: <https://www.globalpolicyjournal.com/blog/19/02/2021/implications-new-space-forces-sustainable-space-and-terrestrial-security> (link as of 10 May 2021).
- Bailey, R., Saffioti, C. and Drall, S. Sunk Costs: The Socioeconomic Impacts of Flooding (Rethinking Flood Series). Marsh McLennan, 2021.
- Bauer, A., “How Have Governments of Resource-Rich Countries Used Their Sovereign Wealth Funds During the Crisis?”, Natural Resource Governance Institute, 21 August 2020: <https://resourcegovernance.org/blog/how-have-governments-resource-rich-countries-used-their-sovereign-wealth-funds-during-crisis> (link as of 10 May 2021).
- Ciampaglia, G.L., and F. Menczer, “Misinformation and Biases Infect Social Media, Both Intentionally and Accidentally”, The Conversation, 20 June 2018: <https://theconversation.com/misinformation-and-biases-infect-social-media-both-intentionally-and-accidentally-97148> (link as of 10 May 2021).
- Chief Risk Officers Forum, Emerging Risks Initiative: Major Trends and Emerging Risk Radar, 30 June 2020: <https://www.thecroforum.org/2020/06/30/emerging-risk-initiative-major-trends-and-emerging-risk-radar-2020-update/> (link as of 10 May 2021).
- Decision Lab, “Cognitive Biases”, 2021: <https://thedecisionlab.com/biases/> (link as of 10 May 2021).
- Gaub, F., “How to Get Better at Making Warnings”, World Economic Forum Agenda, 24 March 2021: <https://www.weforum.org/agenda/2021/03/how-to-get-better-at-making-warnings> (link as of 10 May 2021).
- Global Partnership on AI, 2021: <https://gpai.ai/> (link as of 10 May 2021).
- Gluckman, P., and A. Bardsley, Uncertain but Inevitable: The Expert-Policy-Political Nexus and High-Impact Risks, The Centre for Informed Studies, 2021: <https://informedfutures.org/wp-content/uploads/High-impact-risks.pdf> (link as of 10 May 2021).
- Halpern, O., “Resilient Natures”, SocialText Online, 24 November 2020: [https://socialtextjournal.org/periscope\\_article/resilient-natures/](https://socialtextjournal.org/periscope_article/resilient-natures/) (link as of 10 May 2021).
- Hoffmann, B., T. Armangué i Jubert and E. Parrado, The Business Case for ESG Investing for Pension and Sovereign Wealth Funds, Inter-American Development Bank, June 2020: <https://publications.iadb.org/en/the-business-case-for-esg-investing-for-pension-and-sovereign-wealth-funds> (link as of 10 May 2021).
- Kay, J., and M. King, Radical Uncertainty: Decision-Making Beyond the Numbers, W. W. Norton & Company, 2020.
- Letwin, O., Apocalypse How?, Atlantic Books, 2020.
- Meyer, K., A. Mikes and R. Kaplan, “When Every Employee Is a Risk Manager”, Harvard Business Review, 25 January 2021: <https://hbr.org/2021/01/when-every-employee-is-a-risk-manager?registration=success> (link as of 10 May 2021).
- Narlikar, A., Poverty Narratives and Power Paradoxes in International Trade Negotiations and Beyond, Cambridge University Press, 2020.
- Narlikar, A., “India’s Role in Global Governance: A Modification?”, International Affairs 93(1): 93–111, 2017: <https://academic.oup.com/ia/article-abstract/93/1/93/2731382?redirectedFrom=fulltext> (link as of 10 May 2021).

New Zealand Department of the Prime Minister and Cabinet, “National Intelligence and Risk Coordination”, 2021: <https://dpmc.govt.nz/our-business-units/national-security-group/national-intelligence-and-risk-coordination> (link as of 10 May 2021).

Rios Rojas, C., C. Rhodes, S. Avin, L. Kemp and S. Beard, “Foresight for Unknown, Long-Term and Emerging Risks: Approaches and Recommendations”, 2021: <https://doi.org/10.17863/CAM.64582> (link as of 10 May 2021).

Roth, Y., and N. Pickles, “Updating our Approach to Misleading Information”, Twitter Blog, 2020: [https://blog.twitter.com/en\\_us/topics/product/2020/updating-our-approach-to-misleading-information.html](https://blog.twitter.com/en_us/topics/product/2020/updating-our-approach-to-misleading-information.html) (link as of 10 May 2021).

S20 Saudi Arabia, Foresight: Science for Navigating Critical Transitions, G20 Science Engagement Group Synthesis Report, 2020: <https://www.cser.ac.uk/news/science-20-report-foresight-science-navigating-critical-transitions> (link as of 10 May 2021).

Sheldrick, M., “Will Activist Tech Billionaires Be the Superheroes the World Needs in the Post-Covid World?”, interview with Maha Hosain Aziz, Forbes, 22 January 2021: <https://www.forbes.com/sites/globalcitizen/2021/01/22/will-activist-tech-billionaires-be-the-superheroes-the-world-needs-in-the-post-covid-world/?sh=7956bc4f7526> (link as of 10 May 2021).

Smith-Bingham, R., The Emerging Risks Quandary: Anticipating Threats Hidden in Plain Sight, Marsh McLennan, 2016: <https://www.mmc.com/content/dam/oliver-wyman/global/en/2016/mar/Emerging%20Risks%20Quandary%20-%202016%20web.pdf> (link as of 10 May 2021).

Smith-Bingham, R., A. Wittenberg and D. Kaniewski, Building National Resilience, Marsh McLennan, 2020: [https://www.mmc.com/content/dam/mmc-web/insights/publications/2020/april/Building--National--Resilience--Report\\_web.pdf](https://www.mmc.com/content/dam/mmc-web/insights/publications/2020/april/Building--National--Resilience--Report_web.pdf) (link as of 10 May 2021).

Taleb, N.M., The Black Swan: The Impact of the Highly Improbable, 2nd ed., Random House, 2007.

Toffler, A., Future Shock, Bantam, 1970.

Tversky, A. and D. Kahneman, “Judgement Under Uncertainty: Heuristics and Biases”, Science, 1974: <https://science.sciencemag.org/content/185/4157/1124> (link as of 10 May 2021).

United Kingdom Parliament, “Well-Being of Future Generations Bill”, 2019: <https://bills.parliament.uk/bills/2477> (link as of 10 May 2021).

United Nations Office for Outer Space Affairs, “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty)”, 1967: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html> (link as of 10 May 2021).

Weick, K.E., and K.M. Sutcliffe, Managing the Unexpected, Jossey-Bass, 2007.

Weick, K.E., K.M. Sutcliffe and D. Obstfeld, “Organizing and the Process of Sensemaking”, Organization Science 16(4): 409–21, 2005: <http://www.sietmanagement.fr/wp-content/uploads/2016/04/Weick2005.pdf> (link as of 10 May 2021).

World Economic Forum, 2021, Global Risks Report 2021: <https://www.weforum.org/reports/the-global-risks-report-2021> (link as of 14 May 2021).

World Economic Forum, Global Risks Report 2007: [http://www3.weforum.org/docs/WEF\\_Global\\_Risks\\_Report\\_2007.pdf](http://www3.weforum.org/docs/WEF_Global_Risks_Report_2007.pdf) (link as of 10 May 2021).

Wucker, M., The Gray Rhino: How to Recognize and Act on the Obvious Dangers We Ignore, St Martin's Press, 2016.

Wucker, M., *You Are What You Risk: The New Art and Science of Navigating an Uncertain World*, Pegasus Books, 2021.



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# Endnotes

1. Blanchard, O.J., and L.H. Summers, “Automatic Stabilizers in a Low-Rate Environment”, AEA Papers and Proceedings, 110: 125–30, 2020.
2. International Monetary Fund, Fiscal Monitor: A Fair Shot, IMF, April 2021.
3. Boushey, H., R. Nunn and J. Shambaugh, Recession Ready: Fiscal Policies to Stabilize the US Economy, The Hamilton Project, Washington Center for Equitable Growth, May 2019: [https://www.hamiltonproject.org/assets/files/AutomaticStabilizers\\_FullBook\\_web\\_20190508.pdf](https://www.hamiltonproject.org/assets/files/AutomaticStabilizers_FullBook_web_20190508.pdf) (link as of 11 May 2021).
4. Lustig, N., G. Neidhöfer and M. Tommasi, “Back to the 1960s? Education May Be Latin America’s Most Lasting Scar from COVID-19”, Americas Quarterly, December 2020.
5. See chapter 3 of this brief.
6. Lustig, N., G. Neidhöfer and M. Tommasi, Intergenerational Transmission of Lockdown Consequences: Prognosis of the Longer-Run Persistence of COVID-19 in Latin America, CEQ Institute Working Paper 99, December 2020.
7. Le Quéré, C., R.B. Jackson, M.W. Jones, et al., “Temporary Reduction in Daily Global CO<sub>2</sub> Emissions During the COVID-19 Forced Confinement”, Nature Climate Change 10: 647–53, 2020: <https://www.nature.com/articles/s41558-020-0797-x> (link as of 11 May 2021).
8. Dabla-Norris, E., J. Daniel, M. Nozaki, C. Alonso et al., “Fiscal Policies to Address Climate Change in Asia and the Pacific”, IMF Working Paper, March 2021: <https://www.imf.org/en/Publications/Departmental-Papers-Policy-Papers/Issues/2021/03/24/Fiscal-Policies-to-Address-Climate-Change-in-Asia-and-the-Pacific-Opportunities-and-49896> (link as of 11 May 2021).
9. IMF, Fiscal Monitor Database of Country Fiscal Measures in Response to the COVID-19 Pandemic: <https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19> (link as of 11 May 2021).
10. Vivid Economics, Greenness of Stimulus Index (February 2021 update): <https://www.vivideconomics.com/wp-content/uploads/2021/02/Greennes-of-Stimulus-Index-5th-Edition-FINAL-VERSION-09.02.21.pdf> (link as of 11 May 2021).
11. Dabla-Norris et al., “Fiscal Policies to Address Climate Change in Asia and the Pacific”.
12. International Monetary Fund (IMF), Mitigating Climate Change, World Economic Outlook. Washington, DC, October, 2020; see also chapter 2 of this brief.
13. World Bank, Carbon Pricing Dashboard, 2020 update.
14. Rees, D., “What Comes Next? Recovery from an Uneven Recession”, BIS Bulletin 33, Bank for International Settlements, December 2020: <https://www.bis.org/publ/bisbull33.pdf> (link as of 11 May 2021).
15. Kindermann, F., and D. Krueger, High Marginal Tax Rates on the Top 1%? Lessons from a Life-Cycle Model with Idiosyncratic Income Risk, American Economic Journal: Macroeconomics (forthcoming).
16. Giles, C., “IMF Proposes ‘Solidarity’ Tax on Pandemic Winners and Wealthy”, Financial Times, 7 April 2021: <https://www.ft.com/content/5dad2390-8a32-4908-8c96-6d23cd037c38> (link as of 11 May 2021).
17. Lustig, N., and G. Inchauste, The Distributional Impact of Taxes and Transfers: Evidence from Eight Developing Countries, World Bank, 2017: <https://openknowledge.worldbank.org/handle/10986/27980> (link as of 11 May 2021).
18. Cobham, A., J. Garcia-Bernardo, M. Palansky and M. Bou Mansour, The State of Tax Justice 2020, Tax Justice Network, 20 November 2020: <https://www.taxjustice.net/reports/the-state-of-tax-justice-2020/#:~:text=Countries%20are%20losing%20a%20total,nurse's%20annual%20salary%20every%20second> (link as of 11 May 2021).
19. Picciotto, S., J. Kadet, A. Cobham, J. Garcia-Bernardo, P. Janský and T. Faccio, “For a Better GLOBE: A Minimum Effective Tax Rate for Multinationals”, Tax Notes International 101(7): 863–7: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3796030](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3796030); Cobham, A., J. Garcia-Bernardo, P. Janský, T. Faccio, J. Kadet and S. Picciotto, A Practical Proposal to End Corporate Tax Abuse: METR, a Minimum Effective Tax Rate for Multinationals, IES Working Papers, August 2021: [https://ideas.repec.org/p/fau/wpaper/wp2021\\_08.html](https://ideas.repec.org/p/fau/wpaper/wp2021_08.html) (links as of 11 May 2021).
20. Ibid.
21. UN FACTI Panel, Financial Integrity for Sustainable Development, New York: United Nations, February 2021: <https://www.factipanel.org/reports> (link as of 11 May 2021).
22. World Economic Forum, Chief Economist Outlook 2021, January 2021: [http://www3.weforum.org/docs/WEF\\_Chief\\_Economists\\_Outlook\\_2021.pdf](http://www3.weforum.org/docs/WEF_Chief_Economists_Outlook_2021.pdf)
23. Ibid.
24. Rajan, R., “A Riot of US Spending Spells Trouble for Future Generations”, Financial Times, 4 April 2021: <https://www.ft.com/content/4121badd-9e89-41c1-9863-dccbfb69baa> (link as of 11 May 2021).
25. International Labour Organization, ILO Monitor: COVID-19 and the World of Work, 7th edn, 2021: [https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS\\_767028/lang-en/index.htm](https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS_767028/lang-en/index.htm) (link as of 7 May 2021).

26. World Economic Forum, Human Capital as an Asset, 2020: <https://www.weforum.org/reports/human-capital-as-an-asset-an-accounting-framework-to-reset-the-value-of-talent-in-the-new-world-of-work> (link as of 7 May 2021).
27. Cognizant Center for the Future of Work, Cognizant Jobs of the Future Index, 2021: <https://www.cognizant.com/jobs-of-the-future-index> (link as of 11 May 2021).
28. OECD, Turning Hope into Reality: OECD Economic Outlook, December 2020, 2020: <https://www.oecd.org/employment-outlook/2020/> (link as of 7 May 2021).
29. International Labour Organization, World Employment and Social Outlook 2018: Greening with Jobs, 2018: <https://www.ilo.org/global/research/global-reports/weso/greening-with-jobs/lang--en/index.htm> (link as of 7 May 2021).
30. International Trade Union Confederation, Discussion paper, Creating Jobs: What Can Governments Do?, 2021.
31. Ibid.
32. World Economic Forum, Human Capital as an Asset, 2020.
33. International Labour Organization, ILO Monitor: COVID-19 and the World of Work, 7th edn, 2021.
34. Organisation for Economic Co-operation and Development (OECD), OECD Education Working Papers No.153, Striking the Right Balance: Costs and Benefits of Apprenticeship, 2017: [https://www.oecd-ilibrary.org/education/striking-the-right-balance\\_995fff01-en](https://www.oecd-ilibrary.org/education/striking-the-right-balance_995fff01-en) (link as of 7 May 2021).
35. World Bank, E-Commerce Participation and Household Income Growth in Taobao Villages, 2019: <http://documents1.worldbank.org/curated/en/839451555093213522/pdf/E-Commerce-Participation-and-Household-Income-Growth-in-Taobao-Villages.pdf> (link as of 7 May 2021).
36. World Economic Forum, Human Capital as an Asset, 2020.
37. Ibid.
38. Ibid.
39. Accenture, Unilever, Walmart, SkyHive and World Economic Forum, Future Skills Pilot Report: Thinking Outside the Box to Reimagine Talent Mobility, 2020: [https://www.accenture.com/\\_acnmedia/PDF-149/Accenture-Future-Skills-Case-Study.pdf](https://www.accenture.com/_acnmedia/PDF-149/Accenture-Future-Skills-Case-Study.pdf) (link as of 7 May 2021).
40. International Labour Organization, Global Wage Report 2020–21: Wages and Minimum Wages in the Time of COVID-19, 2020: <https://www.ilo.org/global/research/global-reports/global-wage-report/2020/lang--en/index.htm> (link as of 7 May 2021).
41. The Economist, The Future of Work, 10 April 2021: <https://www.economist.com/special-report/2021-04-10> (link as of 7 May 2021).
42. Cengiz, D., A. Dube, A. Lindner and B. Zipperer, “The Effect of Minimum Wages on Low-Wage Jobs: Evidence from the United States Using a Bunching Estimator”, Quarterly Journal of Economics, 134(3), 2019; Ahlfeldt, G., D. Roth and T. Seidel, “The Regional Effects of Germany’s National Minimum Wage”, Economics Letters, 172, 2018.
43. International Labour Organization, Global Wage Report 2020–21, 2020.
44. The Economist, The Future of Work, 10 April 2021.
45. Opportunity@Work and Accenture, Reach for the STARS, 2020: <https://opportunityatwork.org/wp-content/uploads/2020/03/Opportunity-At-Work-Report-Reach-for-the-STARS-FINAL.pdf> (link as of 11 May 2021).
46. Gratton, L., “An Emerging Landscape of Skills for All”, MIT Sloan, 8 March 2021: <https://sloanreview.mit.edu/article/an-emerging-landscape-of-skills-for-all/> (link as of 11 May 2021).
47. World Economic Forum, Human Capital as an Asset, 2020.
48. World Economic Forum, The Future of Jobs Report, 2020: <https://www.weforum.org/reports/the-future-of-jobs-report-2020> (link as of 7 May 2021).
49. Rutkowski, M., Social Insurance/Savings for the Informal Sector to Build Resilience, World Bank presentation 2021.
50. Brynjolfsson, E., A. Collis, W.E. Diewert, F. Eggers and K.J. Fox, “GDP-B: Accounting for the Value of New and Free Goods in the Digital Economy”, no. w25695, National Bureau of Economic Research, 2019.
51. Arrieta-Ibarra, I., L. Goff, D. Jiménez-Hernández, J. Lanier and E.G. Weyl, “Should We Treat Data As Labor? Moving Beyond ‘Free’”, in AEA Papers and Proceedings, 108, 2018.
52. Ibid.
53. Posner, E., and G. Weyl, Radical Markets: Uprooting Capitalism and Democracy for a Just Society. Princeton University Press, 2018.
54. World Economic Forum, Jobs of Tomorrow: Mapping Opportunity in the New Economy, 2020: <https://www.weforum.org/reports/jobs-of-tomorrow-mapping-opportunity-in-the-new-economy> (link as of 7 May 2021).
55. World Economic Forum, Building a Common Language for Skills: A Global Taxonomy, 2021: <https://www.weforum.org/reports/building-a-common-language-for-skills-at-work-a-global-taxonomy> (link as of 7 May 2021)..
56. World Economic Forum, The Future of Jobs Report 2020, 2020.
57. World Economic Forum, Upskilling for Shared Prosperity, 2021: <https://www.weforum.org/reports/upskilling-for-shared-prosperity> (link as of 11 May 2021).



58. Istance, D., and Paniagua, A., Learning to Leapfrog: Innovative Pedagogies to Transform Education, The Brookings Institution Center for Universal Education, 2019: <https://www.brookings.edu/wp-content/uploads/2019/09/Learning-to-Leapfrog-InnovativePedagogiestoTransformEducation-Web.pdf> (link as of 7 May 2021).
59. Ibid.
60. Samek, M., S. Comi, F. Origo, N. Torchio, S. Speckesser and J. Montalt, The Effectiveness and Costs-Benefits of Apprenticeships: Results of the Quantitative Analysis, The European Commission, 2013: <https://www.employment-studies.co.uk/resource/effectiveness-and-costs-benefits-apprenticeships-results-quantitative-analysis> (link as of 11 May 2021).
61. National Center on Education and the Economy, Gold Standard: The Swiss Vocational Education and Training System, 2015: <http://ncee.org/wp-content/uploads/2018/09/SWISSVETSep2018web.pdf> (link as of 11 May 2021).
62. Association of American Colleges and Universities, “Trustees Think Graduates Aren’t Prepared for Work. They Should Talk to Their Provosts”, 2020: <https://www.aacu.org/aacu-news/newsletter/trustees-think-graduates-arent-prepared-work-they-should-talk-their-provosts> (link as of 11 May 2021).
63. P-Tech, Workplace Learning: <https://www.ptech.org/how-it-works/the-model/workplace-learning/> (link as of 11 May 2021).
64. Polli, F., S. Kassir, J. Dolphin, L. Baker and J. Gabrieli, J., “Cognitive Science as a New People Science for the Future of Work”, MIT Work of the Future, 2021: <https://workofthefuture.mit.edu/research-post/cognitive-science-as-a-new-people-science-for-the-future-of-work/> (link as of 7 May 2021).
65. World Economic Forum, Dashboard for a New Economy: Towards a New Compass for the Post-COVID Recovery, October 2020: <https://www.weforum.org/reports/dashboard-for-a-new-economy-towards-a-new-compass-for-the-post-covid-recovery> (link as of 7 May 2021).
66. SkillsFuture, “What Are Critical Core Skills?”, 2021: <https://www.skillsfuture.gov.sg/skills-framework/criticalcoreskills> (link as of 7 May 2021).
67. Leibowitz, D., “You Don’t Need College Anymore, Says Google”, Medium, 29 July 2020: <https://medium.com/provocate/you-dont-need-college-anymore-says-google-102d4beec668> (link as of 7 May 2021).
68. UNGA, “COVID-19, Systemic Racism and Global Protests”, Agenda Item 9, 14 September–2 October 2020: <https://www.undocs.org/A/Hrc/45/44> (link as of 18 May 2021).
69. Madgavkar, A., O. White, M. Krishnan, D. Mahajan and X. Azcue, COVID-19 and Gender Equality: Countering the Regressive Effects, McKinsey, 2020.
70. The European Commission Against Racism and Intolerance (ECRI), 2020 Annual Report, 2021.
71. Shakespeare, T., F. Ndagire and Queen E. Seketi, “Triple Jeopardy: Disabled People and the COVID-19 Pandemic”, The Lancet, 16 March 2021.
72. Harvard Law School Forum on Corporate Governance, “New Law Requires Diversity on Boards of California-Based Companies”, 10 October 2020: <https://corpgov.law.harvard.edu/2020/10/10/new-law-requires-diversity-on-boards-of-california-based-companies/> (link as of 14 May 2021).
73. Cassells, R., and A. Duncan, “Gender Equity Insights 2020: Delivering the Business Outcomes”, BCEC|WGEA Gender Equity Series, issue #5, 2020.
74. Cain Miller, C., “Mothers Are Regaining Jobs, Even While Shouldering Pandemic Burdens at Home”, New York Times, 4 March 2021: <https://www.nytimes.com/2021/03/04/upshot/mothers-jobs-pandemic.html> (link as of 10 May 2021).
75. Aspan, M., “Women Accounted for 100% of the 140,000 Jobs Shed by the US Economy in December”, Fortune, 8 January 2021: <https://fortune.com/2021/01/08/covid-job-losses-women-december-us-unemployment-rate/> (link as of 10 May 2021).
76. The International Labour Organization, Ending Forced Labour by 2030, 2018.
77. James Cockayne, “Developing Freedom: The Sustainable Development Case for Ending Modern Slavery, Forced Labour and Human Trafficking”, United Nations University, 2021: [https://www.developingfreedom.org/wp-content/uploads/2021/01/DevelopingFreedom\\_KeyFindings\\_WebFinal-1.pdf](https://www.developingfreedom.org/wp-content/uploads/2021/01/DevelopingFreedom_KeyFindings_WebFinal-1.pdf) (link as of 14 May 2021).
78. Ibid.
79. Mazzucato, M., Mission Economy: A Moonshot Guide to Changing Capitalism, Penguin, 2021; Mazzucato, M., “Mission Oriented Innovation Policy: Challenges and Opportunities”, Industrial and Corporate Change, 27(5): 803–815, 2018.
80. Marglin, S.A., and J.B. Schor, The Golden Age of Capitalism: Reinterpreting the Postwar Experience, Oxford University Press, 1992; and Goldin, I., Rescue: From Global Crisis to a Better World, Hachette, 2021.
81. World Economic Forum, Markets of Tomorrow: Pathways to a New Economy, 2020.
82. Geels, F., “From Sectoral Systems of Innovation to Socio-technical Systems: Insights about Dynamics and Change from Sociology and Institutional Theory”, Research Policy, 33(6–7): 897–920, 2004; Geels, F., and J. Schot, “Typology of Sociotechnical Transition Pathways”, Research Policy, 36(3): 399–417, 2007.
83. World Economic Forum, Markets of Tomorrow, 2020.
84. Mazzucato, M., The Entrepreneurial State: Debunking the Public vs Private Myths in Risk and Innovation, Anthem Press, 2013.

85. Commonwealth of Australia, Department of the Prime Minister and Cabinet, The Australian Government Guide to Regulatory Impact Analysis, 2020.
86. Laplane, A., and M. Mazzucato, "Socializing the Risks and Rewards of Public Investments: Economic, Policy, and Legal issues", *Research Policy*: X, 2, 2020.
87. Institute for Innovation and Public Purpose, "Stakeholder Capitalism during and after COVID-19", UCL IIPP COVID-19 Briefing Papers 01, 2020.
88. Coyle, D., *GDP: A Short but Affectionate History*, Princeton University Press, 2014; Mazzucato, M., *The Value of Everything: Making and Taking in the Global Economy*, Allen Lane, 2018.
89. Haskel, J., and S. Westlake, *Capitalism without Capital: The Rise of the Intangible Economy*, Princeton University Press, 2017.
90. Value Balancing Alliance, *Methodology: Impact Statement General Paper version 0.1*, 2021.
91. The Adecco Group, 2020; see also World Economic Forum, *Human Capital as an Asset: An Accounting Framework to Reset the Value of Talent in the New World of Work*, 2020, for a framework for human capital accounting.
92. Règlement no. 2019-09 du 18 Décembre 2019 Modifiant le Règlement ANC N°2014-03 Relatif aux Frais de Formation, Autorité Comptable Nationale, 18 December 2019: <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000041835276> (link as of 11 May 2021).
93. Infocomm and Media Development Authority (IMDA) and Personal Data Protection Commission (PDPC), *Guide to Data Valuation for Data Sharing*, 2019.
94. RadicalxChange, Taiwan: Grassroots Digital Democracy that Works, 2021.
95. Eenmaa, H., "Sovereignty and Autonomy via Mathematics", *Stanford Journal of Blockchain Law & Policy*, 4(1): 79–101, 2021.
96. Posner and Weyl, *Radical Markets*, 2018.
97. Mazzucato, M., R. Kattel and J. Ryan-Collins, "Challenge-Driven Innovation Policy: Towards a New Policy Toolkit", *Journal of Industry, Competition and Trade*, 20: 421–437, 2019.
98. Mazzucato, M., and C.C.R. Penna, "Beyond Market Failures: The Market Creating and Shaping Roles of State Investment Banks", *Journal of Economic Policy Reform*, 19(4): 305–326, 2016.
99. Food System Impact Valuation Initiative (FoodSIVI), *Valuing the Impact of Food: Towards Practical and Comparable Monetary Valuation of Food System Impacts*, 2020; RethinkX, *Rethinking Food and Agriculture 2020–2030: The Second Domestication of Plants and Animals, the Disruption of the Cow, and the Collapse of Industrial Livestock Farming*, 2019.
100. Rodrik, D., *Normalizing Industrial Policy*, The World Bank Commission on Growth and Development Working Paper, no. 3, 2008.
101. Sampat, B.N. and K.C. Shadlen, "The COVID-19 Innovation System", *Health Affairs*, 40(3): 400–9, 2021.
102. Kremer, M., J. Levin and C. M. Snyder, *Advance Market Commitments: Insights from Theory and Experience*, NBER Working Paper 26775, 2020.
103. Georgieva, K., "The Great Divergence: A Fork in the Road for the Global Economy", IMFBlog, 24 February 2021: <https://blogs.imf.org/2021/02/24/the-great-divergence-a-fork-in-the-road-for-the-global-economy/> (link as of 10 May 2021); Rockefeller Foundation, *One for All: An Action Plan for Financing Global Vaccination and Sustainable Growth*, 2021.
104. Cottam, H., *Welfare 5.0: Why We Need a Social Revolution and How to Make it Happen*, UCL Institute for Innovation and Public Purpose, Policy Report, 2020.
105. Wucker, M., *The Gray Rhino: How to Recognize and Act on the Obvious Dangers We Ignore*, St Martin's Press, 2016.
106. Taleb, N.M., *The Black Swan: The Impact of the Highly Improbable*, 2nd edition, Random House, 2007.
107. "Risk", by its classical definition, is a quantifiable probability, as compared to an "uncertainty". However, precision regarding probability is itself a challenge as the parameters around what is likely or unlikely can vary widely. See Wucker, *The Gray Rhino*, 2016.
108. Smith-Bingham, R., *The Emerging Risks Quandary: Anticipating Threats Hidden in Plain Sight*, Marsh McLennan, 2016: <https://www.mmc.com/content/dam/oliver-wyman/global/en/2016/mar/Emerging%20Risks%20Quandary%20-%202016%20web.pdf> (defining "emerging risks" for business).
109. Tversky, A., and D. Kahneman, "Judgement Under Uncertainty: Heuristics and Biases", *Science*, 1974: <https://science.sciencemag.org/content/185/4157/1124>; Halpern, O., "Resilient Natures", *SocialText Online*, 24 November 2020: [https://socialtextjournal.org/periscope\\_article/resilient-natures/](https://socialtextjournal.org/periscope_article/resilient-natures/) (links as of 10 May 2021).
110. See, e.g., Toffler, A., *Future Shock*, Bantam, 1970; Weick, K.E., K. M. Sutcliffe and D. Obstfeld, "Organizing and the Process of Sensemaking", *Organization Science* 16(4): 409–21, 2005: <http://www.sietmanagement.fr/wp-content/uploads/2016/04/Weick2005.pdf>; Decision Lab, "Cognitive Biases", 2021: <https://thedeclarationlab.com/biases/>; Gluckman, P., and A. Bardsley, *Uncertain but Inevitable: The Expert-Policy-Political Nexus and High-Impact Risks*, The Centre for Informed Studies, 2021: [https://auckland.figshare.com/articles/report/Uncertain\\_but\\_inevitable\\_The\\_expert-policy-political\\_nexus\\_and\\_high-impact\\_risks/14399654](https://auckland.figshare.com/articles/report/Uncertain_but_inevitable_The_expert-policy-political_nexus_and_high-impact_risks/14399654) (links as of 10 May 2021).
111. Ciampaglia, G.L., and F. Menczer, "Misinformation and Biases Infect Social Media, Both Intentionally and Accidentally", *The Conversation*, 20 June 2018: <https://theconversation.com/misinformation-and-biases-infect-social-media-both-intentionally-and-accidentally-97148> (link as of 10 May 2021).

112. Gluckman, P., and A. Bardsley, *Uncertain but Inevitable: The Expert-Policy-Political Nexus and High-Impact Risks*, 2021; Gaub, F., “How to Get Better at Making Warnings”, *World Economic Forum Agenda*, 24 March 2021: <https://www.weforum.org/agenda/2021/03/how-to-get-better-at-making-warnings> (link as of 10 May 2021); and Wucker, *The Gray Rhino*, 2016.
113. Gluckman and Bardsley, *Uncertain but Inevitable: The Expert-Policy-Political Nexus and High-Impact Risks*, 2021.
114. Rios Rojas, C., C. Rhodes, S. Avin, L. Kemp and S. Beard, “Foresight for Unknown, Long-Term and Emerging Risks: Approaches and Recommendations”, 2021: <https://doi.org/10.17863/CAM.64582> (link as of 10 May 2021).
115. Chief Risk Officers Forum, Emerging Risks Initiative: Major Trends and Emerging Risk Radar, 30 June 2020: <https://www.thecroforum.org/category/emerging-risk-initiative/> (link as of 10 May 2021).
116. Meyer, K., A. Mikes and R. Kaplan, “When Every Employee Is a Risk Manager”, *Harvard Business Review*, 25 January 2021: <https://hbr.org/2021/01/when-every-employee-is-a-risk-manager?registration=success> (link as of 10 May 2021).
117. Ibid.
118. Kay, J., and M. King, *Radical Uncertainty: Decision-Making Beyond the Numbers*, W. W. Norton & Company, 2020.
119. See, e.g., Narlikar, A., *Poverty Narratives and Power Paradoxes in International Trade Negotiations and Beyond*, Cambridge University Press, 2020.
120. Narlikar, A., “India’s Role in Global Governance: A Modification?”, *International Affairs* 93(1): 93–111, 2017: <https://academic.oup.com/ia/article-abstract/93/1/93/2731382?redirectedFrom=fulltext> (link as of 10 May 2021).
121. Gaub, “How to Get Better at Making Warnings”, 24 March 2021.
122. World Economic Forum, *Global Risks Report*, 2007: [http://www3.weforum.org/docs/WEF\\_Global\\_Risks\\_Report\\_2007.pdf](http://www3.weforum.org/docs/WEF_Global_Risks_Report_2007.pdf) (link as of 10 May 2021).
123. Alan Turing Institute, *Tackling Threats to Informed Decision-Making in Democratic Societies: Promoting Epistemic Security in a Technologically-Advanced World*, 2020: [https://www.turing.ac.uk/sites/default/files/2020-10/epistemic-security-report\\_final.pdf](https://www.turing.ac.uk/sites/default/files/2020-10/epistemic-security-report_final.pdf) (link as of 10 May 2021).
124. Roth, Y., and N. Pickles, “Updating our Approach to Misleading Information”, *Twitter Blog*, 2020: [https://blog.twitter.com/en\\_us/topics/product/2020/updating-our-approach-to-misleading-information.html](https://blog.twitter.com/en_us/topics/product/2020/updating-our-approach-to-misleading-information.html) (link as of 10 May 2021); see also Sheldrick, M., “Will Activist Tech Billionaires Be the Superheroes the World Needs in the Post-Covid World?”, interview with Maha Hosain Aziz, *Forbes*, 22 January 2021: <https://www.forbes.com/sites/globalcitizen/2021/01/22/will-activist-tech-billionaires-be-the-superheroes-the-world-needs-in-the-post-covid-world/?sh=7956bc4f7526> (advocating for leadership from “activist tech billionaires” who could help lead the charge towards stronger epistemic security) (link as of 10 May 2021).
125. Alan Turing Institute, *Tackling Threats to Informed Decision-Making in Democratic Societies*, 2020.
126. Smith-Bingham, R., A. Wittenberg and D. Kaniewski, *Building National Resilience*, Marsh McLennan, 2020: [https://www.mmc.com/content/dam/mmc-web/insights/publications/2020/april/Building--National--Resilience--Report\\_web.pdf](https://www.mmc.com/content/dam/mmc-web/insights/publications/2020/april/Building--National--Resilience--Report_web.pdf) (link as of 10 May 2021).
127. World Economic Forum, *Global Risks Report*, 2007 (calling for a “country risk officer” who would serve similar functions as a chief risk officer in the corporate sector).
128. New Zealand Department of the Prime Minister and Cabinet, “National Intelligence and Risk Coordination”, 2021: <https://dpmc.govt.nz/our-business-units/national-security-group/national-intelligence-and-risk-coordination> (link as of 10 May 2021).
129. Weick, K.E., and K.M. Sutcliffe, *Managing the Unexpected*, Jossey-Bass, 2007.
130. Smith-Bingham, *The Emerging Risks Quandary*, 2016.
131. Wucker, M., *You Are What You Risk, The New Art and Science of Navigating an Uncertain World*, Pegasus Books, 2021.
132. See, e.g., Hoffmann, B., T. Armangué i Jubert and E. Parrado, *The Business Case for ESG Investing for Pension and Sovereign Wealth Funds*, Inter-American Development Bank, June 2020: <https://publications.iadb.org/en/the-business-case-for-esg-investing-for-pension-and-sovereign-wealth-funds> (reviewing literature on link between financial performance and ESG ratings) (link as of 10 May 2021).
133. Bauer, A., “How Have Governments of Resource-Rich Countries Used Their Sovereign Wealth Funds During the Crisis?”, *Natural Resource Governance Institute*, 21 August 2020: <https://resourcegovernance.org/blog/how-have-governments-resource-rich-countries-used-their-sovereign-wealth-funds-during-crisis> (link as of 10 May 2021).
134. Note, however, that countries with poor credit ratings are less able to take advantage of this option.
135. Smith-Bingham et al., *Building National Resilience*, 2020.
136. Bailey, R., Saffioti, C. and Drall, S. *Sunk Costs: The Socioeconomic Impacts of Flooding (Rethinking Flood Series)*, Marsh McLennan, 2021.
137. United Nations Office for Outer Space Affairs, “Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty)”, 1967: <https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introouterspacetreaty.html> (link as of 10 May 2021).

138. Al-Rodhan, N., “Implications of New Space Forces for Sustainable Space and Terrestrial Security”, Global Policy, 19 February 2021: <https://www.globalpolicyjournal.com/blog/19/02/2021/implications-new-space-forces-sustainable-space-and-terrestrial-security>; Al-Rodhan, N., “3 Disruptive Frontier Risks that Could Strike by 2040”, 18 December <https://www.weforum.org/agenda/2020/12/3-disruptive-frontier-risks-that-could-strike-by-2040/> (links as of 26 May 2021).
139. See, e.g., S20 Saudi Arabia, Foresight: Science for Navigating Critical Transitions, G20 Science Engagement Group Synthesis Report, 2020: <https://www.cser.ac.uk/news/science-20-report-foresight-science-navigating-critical-transitions> (proposing the establishment of a Scientific Foresight hub, which would serve as an independent institution drawing support from across G20 nations) (link as of 10 May 2021).
140. Global Partnership on AI, 2021: <https://gpai.ai/> (link as of 10 May 2021).





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