

Shaping the Next Normal

Five Pillars for an Inclusive and
Sustainable Digital Future

Research by



Preface:

The Information and Communications Technology Council (ICTC) is a neutral, not-for-profit, national centre of expertise with the mission of strengthening Canada's digital advantage in the global economy. For more than 30 years, ICTC has delivered forward-looking research, practical policy advice, and capacity-building solutions for individuals and businesses. The organization's goal is to ensure that technology is utilized to drive economic growth and innovation and that Canada's workforce remains competitive on a global scale.

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Executive Summary

Despite a tumultuous 2020 and a future that continues to be fraught with uncertainties, cautious optimism reigns around the world. The global macro economic reality nevertheless is in a state of flux, with many industry verticals feeling the full brunt of this challenging environment, whereas others are finding reprieve in being digital by default.

The sharp drop in economic activity and job losses has prompted governments and central banks to act swiftly to mitigate the onslaught of this pandemic. Massive liquidity provisions and favourable credit support have played a role in calming markets amid signs of considerable financial stress. Much of the world population has rapidly embraced a contact-free economy. From eCommerce and eLearning to Telemedicine, this has become the new normal for many citizens.

Automation and digital adoption also showed businesses a path to resilience and continuity in a globally competitive landscape. Business and popular sentiment has shifted toward green as the colour of the post-pandemic economic recovery. This crisis has, more than ever, affirmed the significance of the UN's Sustainable Development Goals on climate action, good health and wellbeing, sustainable cities and communities, jobs and economic growth, and the importance of a shared and equitable future for all citizens.

The world economy, however, is at an inflection point that requires careful consideration and

potential actions. A key question facing world leaders now is how to best imagine and shape a post-pandemic economy. If necessity is the mother of invention, this pandemic raises critical questions that need to be addressed. Shaping the Next Normal explores the construct of a sustainable post-pandemic economy along the following themes:

- Prioritizing and incentivizing an environmentally responsible economy
- Rethinking GDP as a metric that encourages social, economic, and environmentally responsible innovations and outcomes
- Empowering the development of sustainable and intelligent communities to bridge the digital divide and create inclusive economic growth and employment
- Embracing online and digital education to support universal lifelong learning and the future of work
- Encouraging international trade agreements that promote resilient supply chains between nations

As global pressures mount for austerity and increased taxation to offset the cost of this pandemic, our best response should be firmly anchored in supporting economic growth and expansionary monetary policies built on strong international trade and partnerships. There is no time like the present to shape the future while fully embracing the transformative power of digital technologies.



“With adversity comes opportunities. It’s time for a bold vision to shape and reimagine the future. The science, policies, and practice of our actions today will form the foundations of a more prosperous, sustainable, and equitable future for generations to come,” said Namir Anani, ICTC President and CEO.



Introduction

The global pandemic was officially declared on March 11th, 2020,¹ and the world has operated in a profoundly altered state ever since. A health crisis turned economic crisis² turned social crisis,³ COVID-19 will be remembered as the catalyst that enshrined 2020 as a year of colossal and unprecedented disruption. With the first global lockdowns in Spring 2020, many believed that by summer, or surely the fall, the world would regain a sense of normalcy; that life, the way it was lived pre-pandemic, would resume. A year later, all that remains of this initial belief is its naivete. Not only does COVID-19 still linger, but a second wave is again hammering economies,⁴ and highly transmissible new strains⁵ have led many countries to implement another round of strict lockdowns.

Global vaccination efforts are underway; however, as of January 27th, there were more than 25 million active cases of COVID-19⁶ and over 2 million deaths.⁷ Earlier assumptions of a strong economic rebound in 2021⁸ have given way to adjusted forecasts issued by international organizations. Global debt has climbed to new heights, reaching over \$277 trillion, or 365% of

world GDP.⁹ Today, the World Bank estimates that worldwide economic output in 2021 will grow by 4% but, in so doing, will still be 5% below pre-pandemic levels.¹⁰ Likewise, the OECD forecasts a global unemployment rate of nearly 7%, almost two percentage points higher than February 2020.^{11, 12}

In contrast to the persisting fragility of the overall economy, the digital economy has demonstrated remarkable resilience. It has emerged as a source of ingenuity capable of solving key societal problems, as a bastion of opportunity for future employment, and as the main driving force behind an eventual economic rebound.

Just as COVID-19 was a catalyst for large-scale changes across our global community, technology is a catalyst for our collective rebuild. It is because of technology that rapid COVID-19 testing is available, that nearly half of the US workforce is able to work safely and effectively from home,¹³ and that 2020 ended with two authorized COVID-19 vaccines and three more in clinical trials.¹⁴

However, for all its capabilities, technology alone cannot build a better future. A resilient rebuild will require innovative policies that

1 "Archived: WHO Timeline – COVID-19," World Health Organization, April 27, 2020, <https://www.who.int/news/item/27-04-2020-who-timeline---covid-19>

2 "The Impact of the COVID-19 Pandemic on Trade and Development," United Nations, 2020, https://unctad.org/system/files/official-document/osg2020d1_en.pdf

3 "Everyone Included: Social Impact of COVID-19," United Nations, 2020, <https://www.un.org/development/desa/dspd/everyone-included-covid-19.html>

4 Reuters Staff, "Economic Impact of COVID-19 second wave on Canada has been deeper than expected: Finance Minister," Reuters, December 3, 2020, <https://www.reuters.com/article/us-canada-economy/economic-impact-of-covid-19-second-wave-on-canada-has-been-deeper-than-expected-finance-minister-idUSKBN28D3BQ>

5 Marilynn Marhcion, "A new COVID-19 challenge: Mutations rise along with cases," CTV News, January 19, 2021, <https://www.ctvnews.ca/health/coronavirus/a-new-covid-19-challenge-mutations-rise-along-with-cases-1.5272620>

6 Over 67 million recovered.

7 "Coronavirus Cases," Worldometer, 2021 <https://www.worldometers.info/coronavirus/> (Accessed: January 28, 2021)

8 "OECD Interim Economic Assessment – Coronavirus: The world economy at risk," OECD, March 2, 2020, <https://www.oecd.org/berlin/publikationen/Interim-Economic-Assessment-2-March-2020.pdf>

9 Marcus Lu, "This chart shows how debt-to-GDP is rising around the world," World Economic Forum, December 14, 2020, <https://www.weforum.org/agenda/2020/12/global-debt-gdp-covid19/>

10 World Bank. 2021. Global Economic Prospects, January 2021. Washington, DC: World Bank. Doi: 10.1596/978-1-4648-162-3. License: Creative Commons Attribution CC BY 3.0 IGO.

11 5.2% in February 2020.

12 OECD (2021), Unemployment rate (indicator). Doi: 10.1787/52570002-en (Accessed on 17 January 2021).

13 May Wong, "Stanford research provides a snapshot of a new working-from-home economy," Stanford News, June 29, 2020 <https://news.stanford.edu/2020/06/29/snapshot-new-working-home-economy/>

14 "Different COVID-19 Vaccines," Centres for Disease Control and Prevention, January 15, 2021, <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/different-vaccines.html>



strive to reconceptualize existing mechanisms and belief systems, while understanding that technology is both an enabling tool and a cornerstone of societal and business transformation. This white paper investigates this reconstruction in the context of environmental, health, community, business, and workforce needs and realities.

In 2020, the global community was shaken from its comfort zone and forced to adapt. With sound planning and honest reflection, 2021 can be the year where adapting becomes excelling.

The Foundation: Building Back Beyond GDP

For over 70 years, GDP has been effective in capturing critical data on the economic performance of countries. Importantly, this wealth of historical data makes it central to identifying potential future economic trends, while also allowing for global comparisons.

However, in recent years, the applicability of GDP as a measurement of growth in a multifaceted and increasingly complex world has come into question. Is it still the best measure when growth is conceptualized beyond purely economic boundaries? While GDP is an established indicator of a country's standard of living, it has many limitations. For example, GDP does not account for activities conducted outside of the formal marketplace, shifts in societal income inequality, or the value — positive or negative — placed on certain kinds of outputs, let alone outcomes.

These and other limitations have gained momentum during the pandemic. In the first

wave, daily CO2 emissions dropped by an average of 17% — at its peak, this figure was 29%.¹⁵ To some extent, the global community was invigorated by what seemed like the ability to effect positive environmental change relatively rapidly. Photographs circulated of atypical blue skies in cities like Delhi¹⁶ and Los Angeles,¹⁷ and the question almost naturally arose: is all growth good growth?

If GDP was developed to jumpstart a post-war economy, and in so doing, measure only the monetary value of production (prosperity),¹⁸ how does it fare in a world where intangible wealth is increasingly on the agenda? Biodiversity and environmental quality, health and social well-being, innovation outputs and technology advancements, and educational and workforce resilience are key considerations that extend beyond the reach of this traditional wealth-measuring metric.

Seeing the Forest for the Trees: Rethinking Prosperity

In the 1960s, the OECD developed the Better Life Index (BLI), including variables like housing, income, education, and civic engagement.¹⁹ About a decade later, Gross National Happiness (GNH) came to be, rooted in variables like living standards, health, and ecological diversity.²⁰ There are numerous others — so why are these measures not broadly adopted? Inertia may be partly to blame (after all, GDP has been the gold standard for 70 years), but measurability plays a role as well. Variables like civic engagement or ecological diversity can be challenging to accurately bound and capture. Additionally, even if properly bound, not every country will be

¹⁵ Corrine le Quere et al., "Temporary reduction in daily CO2 emissions during the COVID-19 forced confinement," *Nature Climate Change* 19, 647–653(2020), May 19, 2020, <https://www.nature.com/articles/s41558-020-0797-x>

¹⁶ Sushmita Pathak, "With Coronavirus Lockdown, India's Cities See Clear Blue Skies As Air Pollution Drops," NPR, April 10, 2020, <https://www.npr.org/sections/coronavirus-live-updates/2020/04/10/831592401/with-coronavirus-lockdown-indias-cities-see-clear-blue-skies-as-air-pollution-drops>

¹⁷ Jason Plautz, "Did Covid Lockdowns Really Clear the Air?," Bloomberg CityLab, December 21, 2020, <https://www.bloomberg.com/news/articles/2020-12-21/what-covid-lockdowns-did-for-urban-air-pollution>

¹⁸ Vanessa Thompson, "The Tragic Simplicity of GDP," *Berkeley Economic Review*, April 23, 2020, <https://econreview.berkeley.edu/the-tragic-simplicity-of-gdp/>

¹⁹ "What's the Better Life Index?," OECD Better Life Index, <http://www.oecdbetterlifeindex.org/about/better-life-initiative/#top>

²⁰ "Gross National Happiness Index," UN Sustainable Development Goals Knowledge Platform, <https://sustainabledevelopment.un.org/index.php?page=view&type=99&nr=266&menu=1449>



willing or able to capture and share this data, and without comparability, a global index falls flat.

Oxford economist Kate Raworth offers a potential solution by positioning the environment as the key growth influencer. In her book *Doughnut Economics: 7 Ways to Think Like a 21st Century Economist*, Raworth coins what she calls an “ecological ceiling” of nine planetary boundaries (including climate change, ozone depletion, and ocean acidification). The idea is that to prevent extreme environmental change and maintain a “social floor” of minimum standards of human wellbeing (based on the Sustainable Development Goals adopted by all United Nations Member States in 2015), these boundaries must not be exceeded. In a nutshell, Raworth posits that our survival as a species necessitates that economic policies must neither destroy the environment nor compromise a basic standard of living.²¹

This concept, seemingly backed by popular opinion,²² raises questions of just how “free” the free market should be to achieve higher levels of wellbeing alongside economic growth. More practically, it questions whether world leaders are incentivized enough to adopt new methods of governance to enable this shift. The European city of Amsterdam has officially adopted this model, setting specific targets for CO2 reduction²³ intended to enable improved health outcomes, more resilient communities, and generate new business opportunities. Other cities, namely Portland (Oregon), and Philadelphia (Pennsylvania) followed suit.²⁴

Although future adoption and application remains to be seen, living “within the doughnut” highlights a “yes, but” belief that is inherent in many of the alternatives to GDP: yes to economic growth, but not at the expense of everything else. COVID-19 has elevated the status of this school of thought, with many in the international community calling for a realignment of economic recovery with environmentally and socially responsible goals.

²¹ Kate Raworth, “Doughnut,” Kate Raworth: Exploring Doughnut Economics, n.d. <https://www.kateraworth.com/doughnut/>

²² Emma Charlton, “Here’s why the world’s recovery from COVID-19 could be doughnut shaped,” World Economic Forum, May 19, 2020, <https://www.weforum.org/agenda/2020/05/doughnut-model-amsterdam-coronavirus-recovery/>

²³ Daniel Boffey, “Amsterdam to embrace ‘doughnut’ model to mend post-coronavirus economy,” The Guardian, April 8 2020, <https://www.theguardian.com/world/2020/apr/08/amsterdam-doughnut-model-mend-post-coronavirus-economy#img-3>

²⁴ David Thorpe, “How Amsterdam and other cities are adopting a new model to support their citizens and the planet,” The Fifth Estate, May 19, 2020, <https://www.thefifthestate.com.au/urbanism/planning/how-amsterdam-and-other-cities-are-adopting-a-new-model-to-support-their-citizens-and-the-planet/>



Incentivizing the Private Sector

For all of its promise and opportunity, clean technology on its own is not a panacea. Clean technology³³ — a combination of engineering, digital technology, and natural resource processes — can take many forms and be applied across sectors. However, when it comes to capital input and R&D time required, clean technology more closely mirrors the natural resources sector than the technology sector. In other words, the capital input and testing required to facilitate clean technology ROI tends to be high. This partly accounts for a slump in clean technology venture capital and angel investment in the late 2000s, after nearly a decade of strong performance. In the early 2000s, investment in clean technologies reached record highs — it grew from \$365 million in 2001 to \$6.65 billion in 2008.³⁴ This fervour plummeted in 2009, as some companies did not meet their potential,³⁵ periods of ROI were longer than expected, and a financial crisis (the Great Recession) constrained investor risk tolerance.

Investments in clean technology did not see a strong rebound following the end of the 2008 financial crisis, yet now on the heels of another and more severe financial crisis, more investment is needed. An approach to overcoming this precedent in the current environment is a combination of unwavering government support for green recovery policies and initiatives — as well as financial incentives. Like the European Just Transition Mechanism, incentives should support emerging clean technologies, while helping traditional industries transition to carbon-neutral processes.

Investor tax credits can support the ramp up of the clean technology sector. In the Netherlands, the Energy Investment Allowance (EIA) provides

an 11% tax deduction for companies that invest in energy-efficient technologies and sustainable energy.³⁶ Other viable private-sector incentives to support clean technology and renewable energy are grants and subsidies. Feed-in-tariffs (FIT), for example, support renewable energy development by providing guaranteed prices for producers (subsidized by government). Agreements with companies tend to be lengthy (often 10–15 years) and are tied to the production of the energy source. However, guaranteed prices are critical for new businesses in the clean technology and renewable energy sector. As noted above, such projects require relatively high capital investment, and longer periods before they become fully viable.³⁷ In turn, economic viability also depends on market uptake, in which pricing plays a big role. Feed-in-tariffs allow renewable energy companies to sell their products at prices that the market will bear while they develop efficiencies that will eventually allow them to operate at market rates on their own. In Germany, feed-in-tariffs provided under the Renewable Energy Act saw the share of renewable power coming from wind, biomass, and solar rise from 3.5% in 1990 to 35% in 2018.³⁸

Incentivizing Consumers

In addition to investing in business growth and opportunities, world leaders have the opportunity to create policies that incentivize broad civil society buy-in and participation.

Many consumers inherently prefer to make climate-friendly choices. A recent report by Deloitte surveying 1,531 residential consumers in the US found that 68% were “extremely or very concerned” about climate change and their personal carbon footprint.³⁹ Another 65% felt

³³ Including renewable energy, and clean resources (e.g., natural resource extraction via “clean” or “green” methods)

³⁴ Devashree Saha, Marc Muro, “Cleantech venture capital: Continued declines and narrow geography limit prospects,” Brookings, May 16, 2017, <https://www.brookings.edu/research/cleantech-venture-capital-continued-declines-and-narrow-geography-limit-prospects/>

³⁵ “Flowing Investment to Scale Clean Technology,” Globe Series, May 2019, <https://www.globeseries.com/wp-content/uploads/2019/05/flowing-investment-to-scale-clean-tech.pdf>

³⁶ “Energy Investment Allowance — EIA,” Netherlands Enterprise Agency, <https://english.rvo.nl/subsidies-programmes/energy-investment-allowance-eia>

³⁷ Will Kenton, “What is a Feed-In Tariff (FIT)?” Investopedia, May 24, 2020, <https://www.investopedia.com/terms/f/feed-in-tariff.asp>

³⁸ Kerstine Appunn, Benjamin Wehrmann, “Germany 2021: when fixed feed-in tariffs end, how will renewables fare?” Energypost.eu, October 21, 2019, <https://energypost.eu/germany-2021-when-fixed-feed-in-tariffs-end-how-will-renewables-fare/>

³⁹ Marlene Motyka et. al, “Energy management: Paused by pandemic, but poised to prevail,” Deloitte Insights, 2020, <https://www2.deloitte.com/us/en/insights/industry/power-and-utilities/energy-study-of-businesses-and-residential-consumers.html>



that a boost in renewable energy will benefit the economy.⁴⁰ However, during periods of economic and labour market contraction, the desire to make environmentally conscious decisions can conflict with the need to make cost-effective ones. According to the IMF, unemployment in advanced economies averaged 7.3% in 2020, a sharp increase from 2019 (4.3%).⁴¹ For 2021, the IMF forecasts that unemployment will drop only modestly to 6.9%. Governments must focus on the tools and incentives that allow and encourage consumers to make the most environmentally-friendly choices, without sacrificing their financial stability.

When it comes to influencing consumer behaviour, upfront spending may be required to facilitate long-term payoffs – education, transparency about carbon emissions, and targeted financial programs are required to fill the gap between good intentions and action. An electric vehicle (EV) survey completed by Consumer Reports in 2020 found that savings in total ownership costs can make up for the added upfront investment needed to purchase an EV.⁴² Factoring in fuel, maintenance, repair costs, purchase price, financing, and resale value, Consumer Reports found that EVs save owners (an average of) \$6,000 to \$10,000 over the EV's service life.⁴³ While these savings may eventually make up for the higher upfront cost, many consumers do not have the luxury of time to recoup their initial costs. Tax rebates can be leveraged to bridge this gap. In the fall of 2020, the Canadian government pledged to support consumers by making zero-emissions vehicles

more affordable.⁴⁴ While it is yet unclear what this support will look like, many speculate that the government will develop a new tax rebate to incentivize consumers, in addition to expanding critical infrastructure and technology investments⁴⁵ to support such vehicles. In Germany, homeowners are able to deduct 20% of the costs of energy-efficient renovations (a value of up to EUR 40,000).⁴⁶ In the US, the Investment Tax Credit (ITC) permits consumers to deduct 26% of the cost of installing solar energy systems.⁴⁷ Such incentives can help guide consumers in making environmentally friendly purchases, which in turn propel the market for such products forward.

Feed-in-tariffs are not limited to industry applications: they can also be used to encourage private citizens to make clean energy choices while participating in its generation. In the UK, a feed-in-tariff scheme permits households with renewable energy electricity installations (solar, wind, hydro, anaerobic digestion) to receive cash payments in exchange for the electricity they generate. Here, the energy produced by a registered household receives a guaranteed payment from the government (a "generation tariff"), even if the electricity is consumed by the household. In cases where excess energy is "exported" to the grid, households receive an additional "export tariff."⁴⁸ This kind of mechanism can be likened to a version of energy trading, in this case administered by the government at a fixed price and sold back to energy suppliers for redistribution.

⁴⁰ Ibid

⁴¹ "Unemployment rate – Percent (2021)," International Monetary Fund, <https://www.imf.org/external/datamapper/LUR@WEO/OEMDC/ADVEC/WEOWORLD>

⁴² Benjamin Preston, "EVs Offer Big Savings Over Traditional Gas-Powered Cars," Consumer Reports, October 8, 2020, <https://www.consumerreports.org/hybrids-evs/evs-offer-big-savings-over-traditional-gas-powered-cars/>

⁴³ "Electric vehicles save consumers money," Consumer Reports, 2020, <https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-TCO-Overall-Fact-Sheet-FINAL-3.pdf>

⁴⁴ "Speech from the Throne," Privy Council Office, Government of Canada, <https://www.canada.ca/en/privy-council/campaigns/speech-throne/2020/speech-from-the-throne.html>

⁴⁵ Natural Resources Canada, "Canada Invests in Innovative EV Charging Technology," Cision, November 10, 2020, <https://www.newswire.ca/news-releases/canada-invests-in-innovative-ev-charging-technology-835983435.html>

⁴⁶ Freja Eriksen, "Germany grants homeowners tax incentives for energy efficient renovations," Clean Energy Wire, December 19, 2019, <https://www.cleanenergywire.org/news/germany-grants-homeowners-tax-incentives-energy-efficient-renovations>

⁴⁷ "The solar tax credit: an energy tax credit for going solar," Energy Sage, January 11, 2021, <https://www.energysage.com/solar/cost-benefit/solar-investment-tax-credit/>

⁴⁸ "Renewable Energy Consumer Code: Feed-in-tariff scheme," Government of the United Kingdom, <https://www.recc.org.uk/pdf/feed-in-tariff-scheme-guidance-for-consumers.pdf>



Traditionally applied to the resource exploration sector in Canada, flow-through shares are another tool by which to incentivize consumer behaviour. Here, taxpayers and equity investors receive tax deductions from a company for costs incurred via its exploration and development (activities often undertaken by companies in the mining, quarrying, and the oil and gas sector). Flow-through shares benefit the participating companies by allowing them to secure higher-value private equity investments

because they can “pass along” tax deductions they might not have a use for. A Canadian invention, this tax model is suitable for some clean energy companies, but its scope is limited to start-up and development expenses and only to clean technology companies that generate or distribute energy or fuel.⁴⁹ Expanding eligibility criteria to include a broader range of clean technology companies and applicable expenses could incentivize consumer investment.

⁴⁹ William Scott, Stewart Elgie, “Tax Incentives to Boost Clean Growth: Investor Tax Credits and Flow-Through Shares,” Smart Prosperity Institute, April 2019, <https://institute.smartprosperity.ca/sites/default/files/taxcredit.pdf>



Pillar II: Empowering Sustainable and Healthy Communities

Connectivity Needs for a Digital-First Future

According to Statista, as of fall 2020, there were 4.66 billion active internet users in the world — nearly 60% of the global population.⁵⁰ The countries with the highest internet penetration rates were China (854 million users), India (560 million users), and the US (313 million users).⁵¹ Increasingly, the internet has become a common and, in some cases, mandatory part of life. Its importance is clear for businesses and the average citizen, but it has not gone unnoticed by international governing bodies that help shape policy at the macro level. In 2016, the United Nations issued a declaration stating that “access to... the Internet facilitate[s] vast opportunities for affordable and inclusive education” and is a critical tool to “address digital literacy and the digital divide.”⁵² The article goes further to assert that “applying a comprehensive human-rights based approach when providing and expanding access to the Internet [is essential].”⁵³

Access to the internet can be measured in numerous ways. Mobile broadband subscriptions per 100 inhabitants is an indicator tracked by the OECD. This indicator is an important proxy for mobile data penetration — it picks up individual smartphone data plans as well as mobile subscriptions used by Internet of Things (IoT) devices, which is why

the value often exceeds 100. In 2018 (the latest data available), the average number of mobile broadband subscriptions was estimated to be 110 per 100 inhabitants across all OECD countries.⁵⁴ Japan ranked highest, with 172 mobile broadband subscriptions per 100 inhabitants, while Canada, for example, placed 30th at 76 mobile broadband subscriptions per 100 inhabitants. Even among advanced economies, internet access can vary significantly.

Within the first month of COVID-19 lockdowns, existing cracks in internet access and quality came to light. Experts estimate that around the world, total internet traffic grew by 40% to 60% during the spring 2020 lockdown period.⁵⁵ The surge in demand seen during daytime weekdays caused many telecommunications providers to make infrastructure upgrades to address growing network congestion. Immediate responses included “traffic shaping,” a form of bandwidth management that involves modifying the speeds of different kinds of data and applications to reduce network congestion. However, these modifications are not viable for the long-term. In the fall of 2020, Australia committed to spending \$3 billion to roll out high-speed broadband to allow millions of Australians to continue working from home. In a future where remote work is expected to remain a permanent fixture to some degree,⁵⁶

⁵⁰ “Global digital populations as of October 2020,” Statista, <https://www.statista.com/statistics/617136/digital-population-worldwide/>

⁵¹ “Countries with the highest number of internet users as of December 2019,” Statista, <https://www.statista.com/statistics/262966/number-of-internet-users-in-selected-countries/>

⁵² “A/HRC/32/L.20: Oral Revisions of June 30,” United Nations General Assembly, June 27, 2016, https://www.un.org/News/Press/docs/2016/201606/20160620_Oral_Revisions_of_June_30.html

⁵³ Ibid

⁵⁴ Mobile broadband subscriptions are mobile subscriptions that advertise data speeds of 256 kbit/s or greater. The subscription must allow access to the Internet via HTTP and must have been used to make a data connection via Internet Protocol (IP) in the previous three months. Standard SMS and MMS messaging do not count as an active Internet data connection even if they are delivered via IP. This indicator is measured in number of subscriptions per 100 inhabitants. Accessed here: <https://data.oecd.org/broadband/mobile-broadband-subscriptions.htm>

⁵⁵ Ella Koeze and Nathaniel Popper, “The Virus Changed the Way We Internet,” New York Times, April 7, 2020, <https://www.nytimes.com/interactive/2020/04/07/technology/coronavirus-internet-use.html>

⁵⁶ Caroline Castrillon, “This is the Future of Remote Work in 2021,” Forbes, December 27, 2020, <https://www.forbes.com/sites/carolinecastrillon/2021/12/27/this-is-the-future-of-remote-work-in-2021/?sh=1894e0d81e1d>



governments around the world must prioritize investments in critical telecommunications infrastructure that will seek to bridge the digital divide and ensure reliable, accessible, and affordable access for all.

Avoiding Protectionism: International Cooperation and Trade is Key to Achieving Outcomes

Globalization and international trade came under fire during the pandemic. Even within the European Union, a free-trading block guided by core values of shared prosperity, some nations enacted export bans on personal protective equipment (PPE) to avoid domestic shortages.⁵⁷ In the US, export controls on PPE⁵⁸ were implemented and, in the absence of federal price-control programs, import shortages caused bidding wars⁵⁹ between states battling for medical equipment and supplies.

Amid all this confusion and chaos, protectionism was on the rise beyond the scope of PPE. Trade policies on food exports,⁶⁰ manufacturing, and even technology goods and services⁶¹ came into question. Many wondered if the global supply chain disruption encountered during the pandemic was an endemic sign that globalization and international trade were not working. This notion caused countries around the world to turn inward, many vowing to become “self-reliant.”⁶²

However, lost in this rhetoric was the reality that global cooperation and trade has a proven and staggering capacity to increase the wealth of nations. Although GDP may not be the most suitable measure to track holistic growth, from a purely economic lens, a correlation exists between financial prosperity and trade.⁶³ In other words, countries with higher rates of trade, tend to have higher rates of economic output.⁶⁴

During times of crisis, protectionism tends to rise.⁶⁵ While in this case, developing domestic PPE industries (to be discussed in more detail) many prove prudent, overall, interterritorial and international trade will be a cornerstone of the future because cooperation and mutually beneficial outcomes are foundational to success.

In 2020, the value of international cooperation has, possibly more than ever, proven its worth. Some 172 countries banded together, sharing resources, data, and best practices — all with one goal: to develop a viable COVID-19 vaccine as quickly as possible. As 2020 closed, a sense of relief and optimism spread across the world with the news of not one, but several successful and approved vaccines ready for mass manufacturing and export. Now, global wellbeing hinges on that same theme of international cooperation to ensure equitable vaccine distribution. The alternative — isolationism and protectionism — will have devastating effects not only on the global economy but on global health as well. Countries must continue to cooperate, collaborate, and leverage trade agreements to build back better, together.

⁵⁷ “Germany bans export of medical protection gear due to coronavirus,” Reuters, March 4, 2020, <https://www.reuters.com/article/health-coronavirus-germany-exports/germany-bans-export-of-medical-protection-gear-due-to-coronavirus-idUSL8N2AX3D9>.

⁵⁸ “Position — Foreign Trade Policy — COVID-19: Export Controls and Export Bans over the Course of the COVID-19 Pandemic,” World Trade Organization, April 29, 2020, https://www.wto.org/english/tratop_e/covid19_e/bdi_covid19_e.pdf

⁵⁹ Carly Estes, “States Are Being Forced Into Medical Bidding Wars To Get Medical Equipment To Combat Coronavirus,” Forbes, March 28, 2020, <https://www.forbes.com/sites/claryestes/2020/03/28/states-have-are-being-forced-into-bidding-wars-to-get-medical-equipment-to-combat-coronavirus/?sh=47b9f3f21cde>

⁶⁰ “Working Paper: COVID-19 and Food Protectionism: The Impact of the Pandemic and Export Restrictions on World Food Markets,” World Bank Open Knowledge Repository, <https://openknowledge.worldbank.org/handle/10986/33800>

⁶¹ “OECD Policy Responses to Coronavirus (COVID-19) — COVID-19 and international trade: Issues and actions,” OCED, June 12, 2020, <http://www.oecd.org/coronavirus/policy-responses/covid-19-and-international-trade-issues-and-actions-494da2fa/>

⁶² Jack Kelly, “In A Post-Pandemic World, You Will Have To Become Self-Reliant To Survive and Succeed,” Forbes, October 8, 2020, <https://www.forbes.com/sites/jackkelly/2020/10/08/in-a-post-pandemic-world-you-will-have-to-become-self-reliant-to-survive-and-succeed/?sh=1dffb353c80>

⁶³ Esteban Ortiz-Ospina, “Does trade cause growth?,” Our World Data, October 22, 2018, <https://ourworldindata.org/trade-and-econ-growth>

⁶⁴ Ibid

⁶⁵ Crina Viju, William A. Kerr, “Protectionism During Recession — Why are Trade Barriers no Longer the Preferred Policy Choice?,” *Procedia — Social and Behavioral Sciences*, Volume 62, October 24, 2012



Enabling a Resilient and Connected Health System

The impact of COVID-19 on human suffering and health is unparalleled. With over 2 million deaths caused by the virus in under one year, healthcare systems around the world have been grappling to respond to the demand for services since the pandemic started. This demand is now accelerating once again as second waves produce surging case numbers.⁶⁶ Although there is some light at the end of the tunnel with numerous viable vaccines, supply chain blockages and logistical failures,⁶⁷ combined with the degree of public concern,⁶⁸ means that mass immunizations and global herd immunity are still very much in the future.

Alleviating Supply Constraints

The pandemic presents an opportunity to improve healthcare service provision. It has brought to light the need to increase the number of doctors and trained medical professionals. In 2018 (latest data available), the OECD estimates the presence of 2.6 doctors per 1,000 people in the OECD.⁶⁹ In Canada, this rate is only slightly higher at 2.8.⁷⁰ Austria tops the list in the OECD with 5.2 doctors per 1,000 inhabitants.⁷¹ The relative “availability” of doctors is not easily scaled. In advanced economies, weak graduate pipelines (7.7 and 8 medical school graduates per 100,000 people in Canada and the US during 2019, respectively⁷²) and varying regulatory constraints on foreign credential recognition exist.⁷³ Both factors tighten the supply crunch and constrain the availability of medical services.

Currently, additional regulatory barriers may further impact this crunch by limiting the type of healthcare providers who are able to administer vaccines. In Canada, immunizations are the jurisdiction of the provinces, and each has determined its own protocol for inoculation eligibility. For example, in the province of British Columbia, healthcare professionals are required to take and pass an immunization competency course⁷⁴ to be deemed eligible, while in Manitoba, a new provincial order has expanded the pool of eligible professionals to include paramedics and some medical assistants.⁷⁵ Fragmentation obscures processes and aids logistical challenges. Setting clear standards must be the driving force behind the revamping of healthcare supply policy. Cross-jurisdictional cooperation and cohesion on credential recognition can help to alleviate talent supply shortages, and standardization of emerging processes such as vaccine administration can smooth logistical challenges.

Accelerating Telemedicine

While technology cannot create more physicians or trained medical professionals, it can aid in making medical services more accessible. Many countries have universal healthcare, a policy that ensures equal access to healthcare services. However, access timeliness is driven by resource availability. For many citizens, geographic limitations can be a considerable barrier to accessing healthcare services. Most impacted are rural or remote communities. In some parts of rural Canada, it is not uncommon to travel 200 km to the

⁶⁶ Emad Hassan, Hussam Mahmoud, “Impact of COVID-19 Second Wave on Healthcare Networks in the United States,” July 2020, DOI: 10.1101/2020.07.11.20151217

⁶⁷ Stephanie Desmon, “COVID-19 Vaccines Face Logistical Challenges, Expert Says,” Hub — John Hopkins University, November 12, 2020, <https://hub.jhu.edu/2020/11/12/ezekiel-emanuel-logistics-of-covid-vaccine/>

⁶⁸ Jeffrey V. Lazarus et al., “A global survey on potential acceptance of a COVID-19 vaccine,” Nature Medicine, 2020, <https://www.nature.com/articles/s41591-020-1124-9>

⁶⁹ “Doctors,” OECD, <https://data.oecd.org/healthres/doctors.htm>

⁷⁰ Ibid

⁷¹ Ibid

⁷² “Medical graduates,” OECD, <https://data.oecd.org/healthres/medical-graduates.htm>

⁷³ “Learn about foreign credential recognition in Canada,” Employment and Social Development Canada — Government of Canada, <https://www.canada.ca/en/employment-social-development/programs/foreign-credential-recognition.html>

⁷⁴ “Immunization Competency Course,” BC Centre for Disease Control, <http://www.bccdc.ca/health-professionals/education-development/immunization-courses/immunization-competency-course>

⁷⁵ “The Regulated Health Professions Act,” Government of Manitoba, January 24, 2021, https://web2.gov.mb.ca/laws/orders/_pdf-order.php?ord=2020-12-09



nearest regional hospital.⁷⁶ Moreover, a perpetual shortage of medically trained talent means that the demand for in-person patient services remains high. In 2019, the median Canadian wait time from seeking a general practitioner to receiving treatment was 20 weeks.⁷⁷ In provinces with a higher portion of rural and remote communities, wait times increase to 50 weeks.⁷⁸

The concept of telemedicine as an alternative to in-person care is not new. In 1924, the mass proliferation of radios brought forward the notion of a “radio doctor.”⁷⁹ Three decades later in 1959, the first recorded instance of video communication for medical advice took place. Clinicians at the University of Nebraska used a two-way television to transmit information to medical students on campus.⁸⁰ Telemedicine has existed as a theory for nearly a century. However, public perception, regulatory hurdles, and the state of technology remained historical barriers to implementation.

In recent years, the technological barrier has been largely eliminated. Advancements in digital technology have made the deployment of telemedicine not only possible but desirable. Public perception has also shifted. US patients participating in a study that assessed perceptions of telemedicine use before and after the onset of COVID-19 were largely satisfied with their experience.⁸¹ Regulatory or policy constraints are the sole remaining barrier, namely those centred on cross-jurisdictional practice, licensing, reimbursement.⁸² Other

issues, such as digital privacy, have been effectively addressed by countries with strong e-government policies. In Canada, for example, a lack of interjurisdictional agreement between provinces means that patient care is billed for based on the patient’s physical location, subject to local licensing.⁸³ This approach requires telehealth providers to comply with the regulatory needs of all potential jurisdictions, as they cannot always guarantee where in Canada a patient may be accessing the service.

These barriers to entry (namely for small and medium sized businesses) constrain market availability, and thereby, use. Until recently, uptake of telemedicine remained low. In pre-pandemic Canada, telemedicine accounted for only 0.15% of all billable services in the healthcare system.⁸⁴ COVID-19 lockdowns and stay-at-home orders have changed this to some degree, somewhat loosening regulatory hurdles and shifting public perception.⁸⁵

Although the wheels of change are in motion, standardization and cross-jurisdictional cooperation must be accelerated. National and regional governments, along with overarching medical bodies and agencies will continue to lay the regulatory frameworks to continue to manage rollout and provision of telemedicine services. These efforts should be augmented to account for the reality that telemedicine—by nature of the borderless digital technology—will ultimately cross regional and even national borders.

⁷⁶ Annette Browne, “Issues Affecting Access to Health Services in Northern, Rural and Remote Regions of Canada,” UNBC, <https://www.unbc.ca/sites/default/files/sections/northern-studies/issuesaffectingaccesstohealthservicesinnorthern.pdf>

⁷⁷ “Median waiting times for medical care, from general practitioner to treatment, in Canada as of 2019, by province,” Statista <https://www.statista.com/statistics/649600/medical-treatment-wait-times-canada-province/>

⁷⁸ Ibid

⁷⁹ “Telemedicine: A Guide to Assessing Telecommunications in Health Care,” NCBI Resources, <https://www.ncbi.nlm.nih.gov/books/NBK45445/>

⁸⁰ Ibid

⁸¹ Bree E. Holtz, “Patients Perceptions of Telemedicine Visits Before and After the Coronavirus Disease 2019 Pandemic,” *Telemedicine and e-Health*, Vol 27, No 1, <https://www.liebertpub.com/doi/full/10.1089/tmj.2020.0168>

⁸² Gary W. Dunn, “Legal Issues Confronting 21st-Century Telehealth,” *BC Medical Journal* vol.46, No 6, August 2004, <https://bcmj.org/articles/legal-issues-confronting-21st-century-telehealth>

⁸³ Ibid

⁸⁴ “Virtual Care in Canada: Discussion Paper,” Canadian Medical Association, https://www.cma.ca/sites/default/files/pdf/News/Virtual_Care_discussionpaper_v2EN.pdf

⁸⁵ Rose M. Carter et. al, “The regulation of telemedicine in Canada,” Dentons, July 24, 2020, <https://www.dentons.com/en/insights/articles/2020/july/24/the-regulation-of-telemedicine-in-canada>



Optimizing Health Supply Chains

The relentless spread of COVID-19 has impacted all industries, many adversely. It has also highlighted key existing challenges and weaknesses of global supply chains. In 2003, Chinese manufacturing shut down due to the SARS epidemic. At that time, the Chinese economy contributed 3.5% of the world's GDP.⁸⁶ The resulting supply chain impacts went largely unnoticed by much of the global community. In 2020, when city-wide shutdowns took place in China due to the spread of COVID-19, the global community felt it, and almost immediately. The difference? Today, China contributes nearly 18%⁸⁷ of the world's GDP, with a significant portion of it coming from foreign investment, notably in manufacturing.⁸⁸ Wuhan alone is home to over 200 Fortune Global 500 companies.⁸⁹ Any economic or production shutdown in China has dramatic effects on the global supply chain.

Undoubtedly, the most critical supply chains that were impacted by this health crisis are the ones that supply personal protective equipment (PPE). Global PPE shortages reached critical levels in many countries during the initial rapid spread of the virus in the spring. News outlets in the US showcased harrowing footage of nurses wearing garbage bags in place of medical gowns⁹⁰ in states like New York, where outbreaks surged. As distressing as these images were, they underscored the need for countries to rethink how they structure, optimize, and prioritize critical supply chains.

The PPE Manufacturing Supply Chain

In February 2020, China was already in the midst of the pandemic, averaging thousands of new infections per day. In response, it ramped up its production of masks 12-fold to 150 tons per day. In February 2020, China's mask production was already 15 times higher than what the US produced after it ramped up domestic production later that spring.⁹¹ From March through May 2020, China exported 70.6 billion masks – in 2019, the entire world produced 20 billion.⁹² Overnight, it became the producer of one of the most in-demand commodities in the world, while the rest of the world competed⁹³ for this supply.

The implications of this power imbalance in PPE production led global leaders to abruptly shift gears from globalism to self-sufficiency enabled by domestic production. In spring 2020, Washington vowed to spur domestic production of PPE and other medical supplies. In August 2020, the US Administration passed the Executive Order on Ensuring Essential Medicines, Medical Countermeasures, and Critical Inputs are "Made in the United States."⁹⁴ In other words, this measure tightened "Buy American" legislation and required federal agencies to purchase American-made pharmaceuticals and medical equipment. This change marked a drastic policy departure from previous years, hinging squarely on the desire to make the US less dependent on foreign

⁸⁶ "China: Percent of world GDP," The World Bank, https://www.theglobaleconomy.com/china/gdp_share/

⁸⁷ Larry Elliott, "China to overtake US as world's biggest economy by 2028, report predicts," The Guardian, December 26, 2020, <https://www.theguardian.com/world/2020/dec/26/china-to-overtake-us-as-worlds-biggest-economy-by-2028-report-predicts>

⁸⁸ Heileng Tan, "There will be a 'massive' shift of supply chains globally after coronavirus shutdowns," CNBC, March 20, 2020, <https://www.cnbc.com/2020/03/20/coronavirus-shocks-will-lead-to-massive-global-supply-chain-shuffle.html>

⁸⁹ Ibid

⁹⁰ Quentin Fottrell, "Nurses are wearing garbage bags as they battle coronavirus: 'It's like something out of the Twilight Zone,'" Market Watch, April 13, 2020, <https://www.marketwatch.com/story/nurse-at-brooklyn-hospital-on-coronavirus-protective-clothing-its-a-garbage-bag-its-like-something-out-of-the-twilight-zone-2020-04-07>

⁹¹ Keith Bradsher, "China Dominates Medical Supplies, in This Outbreak and the Next," New York Times, July 5, 2020, <https://www.nytimes.com/2020/07/05/business/china-medical-supplies.html>

⁹² Ibid

⁹³ "EU warns of global bidding war for medical equipment," Financial Times, <https://www.ft.com/content/a94aa917-f5a0-4980-a51a-28576f09410a>

⁹⁴ "Executive Order Ensuring Essential Medicines," United States Whitehouse, <https://www.whitehouse.gov/presidential-actions/executive-order-ensuring-essential-medicines-medical-countermeasures-critical-inputs-made-united-states/>



manufacturers during this and any future health emergencies. Naturally, there are numerous caveats to this order, including changes to existing laws to fully support it, and exceptions based on public interest:⁹⁵ these products must still reach the market at a price that consumers and procurers are willing to pay.

Public interest, however, points to the exact reasons why offshore production first took place and has proliferated for so long. Much of the world's PPE (and other) manufacturing is done in China simply because of lower costs. It is estimated that the cost of manufacturing labour in China is roughly \$6.5 USD per hour,⁹⁶

compared to a country like Canada, where the average hourly wage hovered at \$21.2 USD in September 2020.⁹⁷ If the pure labour cost of domestic manufacturing is 200% higher than China, these costs need to be recouped elsewhere. The conundrum of this and all previous calls for onshoring manufacturing necessitates critical changes: either labour inputs shift, or market costs skyrocket. Onshoring the production of critical products like PPE is in the national interest of many countries – however, to be feasible this must be coupled with technology-driven efficiencies and automation.

⁹⁵ Joy Strum, "Navigating the new 'buy American' drug landscape: opportunities for some, pitfalls for others," STAT, October 15, 2020, <https://www.statnews.com/2020/10/15/buy-american-executive-order-opportunities-pitfalls/>

⁹⁶ "Manufacturing labor cost per hour in China, Vietnam, Mexico from 2016 to 2020," Statista, <https://www.statista.com/statistics/744071/manufacturing-labor-costs-per-hour-china-vietnam-mexico/>.

⁹⁷ "Wages in manufacturing in Canada decreased to 26.33 CAD/Hour in March from 27.07 CAD/Hour in February of 2020," Trading Economics, March 2020, <https://tradingeconomics.com/canada/wages-in-manufacturing>.



Pillar III: Rejuvenating and Future-Proofing Small Businesses

Supporting Digital-Ready Small Businesses

Small and medium-sized enterprises (SMEs) are the lifeblood of the global economy. According to the World Bank, SMEs account for 90% of all businesses in the world and more than 50% of global employment.⁹⁸ In emerging markets especially, SMEs are critical, estimated to generate 70% of all jobs.⁹⁹ However, SMEs have also been hardest hit by the pandemic. According to research completed by the OECD in the summer of 2020, SMEs have borne the brunt of the global reduction in demand.¹⁰⁰ Not surprisingly, SMEs in specific sectors like tourism or food and entertainment have been especially impacted. Research from the US finds that 50% of small businesses operate with fewer than 15 days worth of excess cash (buffer cash).¹⁰¹ Cash-flow issues and obstacles in accessing capital have choked these businesses further, preventing them from shifting focus from immediate survival to building resiliency strategies, which necessitate the adoption of digital technology.

Although governments around the world have implemented emergency packages to aid SMEs in the short term, systemic changes must be made to ensure that SMEs thrive in an economy that is digital by default.

Incentivizing Digital Adoption

The case for going digital has never been clearer than it is today. By end of March 2020, the world was undergoing a mass work-from-home experiment, and in 2021, it is clear that remote work will remain a mainstay. According to a recent survey by Upwork, one in four Americans will work remotely in 2021.¹⁰² Naturally, this shift created significant revenue implications for many small businesses. Analysis by the OECD finds that one third of SMEs around the world fear they will be insolvent within a month's time should government support be removed.¹⁰³

While digital adoption might be a distant luxury for businesses struggling to stay afloat, recent ICTC research found that companies in the Canadian digital economy were largely insulated from the shocks of the pandemic.¹⁰⁴ Strong digital infrastructure and know-how, although for some a steep climb, is no longer a luxury. In a global economy that is increasingly digital, it is a core business strategy that must be adopted by all SMEs to build future resilience. To facilitate this shift, SMEs need support to invest in critical digital infrastructure, like cloud technology or fintech applications, that will enable them to rebound and compete. Tax incentives can help small businesses invest in key digital applications and services. An amortization

⁹⁸ "Small and Medium Enterprises (SMEs), World Bank, <https://www.worldbank.org/en/topic/sme/finance>

⁹⁹ Ibid

¹⁰⁰ "OECD Policy Responses to Coronavirus (COVID-19) – Coronavirus (COVID-19): SME policy responses," OCED, July 15, 2020, <https://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/>

¹⁰¹ "Small Business Cash Liquidity in 25 Metro Areas," JP Morgan Chase & Co., April 2020, <https://institute.jpmorganchase.com/institute/research/small-business/small-business-cash-liquidity-in-25-metro-areas>

¹⁰² Lori Ioannou, "1 in 4 Americans will be working remotely in 2021, Upwork survey reveals," CNBC, December 15, 2020, <https://www.cnn.com/2020/12/15/one-in-four-americans-will-be-working-remotely-in-2021-survey.html>

¹⁰³ "OECD Policy Responses to Coronavirus (COVID-19) – Coronavirus (COVID-19): SME policy responses," OCED, July 15, 2020, <https://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/>

¹⁰⁴ Maryna Ivus, Akshay Kotak, Ryan McLaughlin, "The Digital-Led New Normal: Revised Labour Market Outlook for 2022," ICTC, August 2020, <https://www.ictc-ctic.ca/wp-content/uploads/2020/08/Outlook-ENG-FINAL-8.24.20.pdf>



regime, like the one introduced in Italy in January 2019¹⁰⁵ that allows SMEs to “frontload” asset depreciation, can offset the significant costs of acquiring technology services and products. Pairing this with grants to obtain consulting or advisory services to facilitate digital transformation is an optimal combination.

Incentivizing Cybersecurity

COVID-19 has made organizations, governments, and individuals more vulnerable to cyber attacks. The move to remote work and online education, alongside the boost in online activity, has created new opportunities for sophisticated cyber attacks like “social engineering.”¹⁰⁶ In April 2020, the World Health Organization recorded a fivefold increase in cyberattacks directed at its own staff. Scammers posed as WHO officials and requested donations, funnelling funds to an inauthentic COVID-19 Solidarity Response Fund.¹⁰⁷ Interpol finds that Business Email Compromise (BEC) — using supplier or client email addresses or near-matches — is currently one of the most common schemes used by cyber criminals.¹⁰⁸ According to IBM, the average cost of a data breach in 2020 totalled \$3.86 million.¹⁰⁹

Yet, according to recent research by the Ponemon Institute surveying over 1,000 US and UK business leaders, more than half of SMEs believe they are “too small to be hacked.”¹¹⁰ Another 39% have no incident response plan.¹¹¹

Cyber resilient small businesses are key to a strong economic recovery. In a world where technology is ever more ubiquitous, businesses must be prepared and protected to survive and thrive. Although COVID-19 has highlighted the importance of cybersecurity infrastructure (and other important digital infrastructure), small businesses dealing with issues of imminent survivability have limited resources to secure this protection. To this end, tax credits to offset cybersecurity software costs could help SMEs rebound from the pandemic. SMEs can benefit from tax credits allowing them to deduct cybersecurity software on their annual tax returns. The cost of cybersecurity services for an SME employing 40 ranges from \$2,500 to \$7,500 a year.¹¹² Even during normal economic times, these costs may be prohibitive, but when struggling to make payroll, they are likely considered an inaccessible luxury.

¹⁰⁵ Francesco Bonichi et al., “INSIGHT: Italy — New Tax Incentives for Digitization and Innovation,” Bloomberg Tax, March 21, 2019, <https://news.bloombergtax.com/daily-tax-report-international/insight-italy-new-tax-incentives-for-digitalization-and-innovation>

¹⁰⁶ Josh Fruhlinger, “Social engineering explained: How criminals exploit human behavior,” CSO United States, September 25, 2019, <https://www.csoonline.com/article/2124681/what-is-social-engineering.html>

¹⁰⁷ “WHO reports fivefold increase in cyber attacks, urges vigilance,” World Health Organization, April 23, 2020, <https://www.who.int/news/item/23-04-2020-who-reports-fivefold-increase-in-cyber-attacks-urges-vigilance>

¹⁰⁸ “Global Landscape on COVID-19 Cyberthreat,” Interpol, April 2020

¹⁰⁹ “How much would a data breach cost your business?,” IBM, <https://www.ibm.com/security/data-breach>

¹¹⁰ “2018 State of Cybersecurity in Small & Medium Size Businesses,” Ponemon Institute, November 2018, <https://www.keepersecurity.com/assets/pdf/Keeper-2018-Ponemon-Report.pdf>

¹¹¹ Ibid

¹¹² Andrew Rinaldi, “The Cost of Cybersecurity and How to Budget for It,” business.com, October 15, 2020, <https://www.business.com/articles/smb-budget-for-cybersecurity/>



Pillar IV: Digital and Equitable Education

Digital education or “edtech” is not a new phenomenon, and the idea of “distance education” is even older yet. In Canada, distance education has an especially long history. McGill University began offering distance learning in 1889 to provide degree options to rural teachers. By 1912, the Universities of Saskatchewan and Alberta followed suit. In 1921, a parent in British Columbia wrote the Ministry of Education requesting study materials (living a far distance from a physical school, this would be his children’s only means of obtaining an education). This served as the beginnings of grade school distance education in that province.¹¹³

Similarly, education by telephone and internet began almost as soon as these technologies became available. In 1941, the CBC, the Canadian Association for Adult Education, the Federation of Agriculture, and St. Francis Xavier University coordinated a series of radio broadcasts and materials for living room study groups. In 1972, the province of Alberta established Athabasca University, an entirely distance-based post-secondary institution relying on print course materials and student-tutor interaction via phone. Fast-forward to the 1990s, the arrival of the internet ushered in the e-campus, and offerings like OntarioLearn (1995), Campus Manitoba (1998), BCcampus (2002), eCampus Alberta (2003) grew steadily.¹¹⁴

Today, in the US alone, an estimated 6 million people are learning online.¹¹⁵ As economies rebound and technology becomes ever more ubiquitous and prolific, education and technology will continue to dovetail. Adequately preparing learners and educators with the skills needed to succeed in the digital economy is key.

Building Inclusive Online Education Pathways

Popular anecdotes paint a picture of today’s children as natural technology experts. However, while children growing up with technology might have better inherent tech skills, building 21st century digital competencies is a core educational priority that extends beyond this paradigm.

COVID-19 has thrown educators into the proverbial “deep end of the pool,” forced them to swim. Although tools like Blackboard or Google Classroom have facilitated this journey, education technology can involve complex trade-offs, but one of the most significant issues is inclusivity. Students without adequate internet, equipment, or learning environments can face significant challenges to participation and success. Ensuring that all students have equitable access to the technology¹¹⁶ and tools they need to learn and succeed is critical.

Moreover, the move to remote learning that took place in many countries around the world during 2020 was largely unplanned. Few countries had tried-and-tested online learning strategies and approaches in place — although Norway, Denmark, and Switzerland had some of the best conditions to support online education (access to home computers and internet speed).¹¹⁷ As a result, the rollout of many online learning strategies transpired by way of a hurried emergency response: well-intentioned but missing the mark. Countries around the world must now learn from these shortcomings and prioritize designing, testing, and deploying robust online learning strategies and curriculum that will meet the needs of students, educators, and parents.

¹¹³ Margaret Haughey, “Distance Learning,” The Canadian Encyclopedia, December 15, 2013, <https://www.thecanadianencyclopedia.ca/en/article/distance-learning#:~:text=Distance%20education%2C%20then%20called%20correspondence,study%20programs%20for%20rural%20learners>

¹¹⁴ Ibid

¹¹⁵ “The who, what, when and why behind online education,” UTEP Connect Extended University, January 2018, <https://www.utep.edu/extendeduniversity/utepconnect/blog/january-2018/the-who-what-when-and-why-behind-online-education.html>

¹¹⁶ Including supporting technology such as sufficient broadband speeds

¹¹⁷ “The countries with the best infrastructure for e-learning,” HR News, October 14, 2020, <http://hrnews.co.uk/the-countries-with-the-best-infrastructure-for-e-learning/>



Pillar V: Building an Inclusive and Adaptable Workforce

Jobs of the Future

Amid the severe downturn across the global economy, the digital economy remained resilient. In Canada, December 2020 employment in the technology (ICT sector) was 9.7% above pre-pandemic levels. In the broader digital economy, which encompasses areas like digital media, digital health, agritech, clean technology and more, employment was 7.5% higher.¹¹⁸ Compare this to employment in the nation's overall economy, which was nearly 2% below pre-pandemic levels, and hardest-hit sectors (accommodation, food services, etc.) that were down by nearly 25%.¹¹⁹

The digital economy will be a key driver of post-pandemic economic and employment growth. It will also act as a catalyst for broader sectoral change, as more businesses in “traditional” sectors adopt technology to grow and compete. A sizable shift in the labour market is expected as nations rebound and rebuild. Similar to the last recession,¹²⁰ digital jobs and skills are expected to play a key role. While there is no replacement for industry-domain knowledge and lived experience, sector transformation will bring to the forefront a demand for new occupations and augmentation – and sometimes automation – of existing ones.

For many people, the word “automation” is analogous to the demise of human labour. However, even the most progressive version of manufacturing, called “lights out manufacturing,”¹²¹ still requires human input and participation. Although many

existing occupations in manufacturing may be augmented with large-scale automation – which implies significant upskilling or workforce retraining – human labour will not be completely replaced. For another example, the intersection of technology and healthcare can increase demand for existing occupations like biostatisticians¹²² while elevating relatively “new” roles for data ethicists and ethnographers.

An economy that is increasingly digital does not mean that all existing workers need to learn to “code.” What it needs is a workforce that is creative, adaptable, and possesses flexible digital literacy skills.

A Focus on Adult and Ongoing Education

Along with the benefits that digital acceleration can offer, it is important to consider labour-market impacts on the whole economy, including on workers currently employed in more “traditional” sectors. Countries around the world must ensure that workers are not left behind in this transition. Access to high quality jobs cannot be decoupled from access to education and training, including upskilling (learning new skills needed for existing roles), cross-skilling (learning new skills to become multifunctional or take on additional responsibilities outside of existing roles), and reskilling (learning new skills needed to take on new roles).

¹¹⁸ Ryan McLaughlin, “January 2021 Economic Update,” Digital Think Tank by ICTC, January 8, 2021, <https://medium.com/digitalthinktankictc/2020-economic-update-25f234f33739>

¹¹⁹ Ibid

¹²⁰ Scott Rosenberg, “How the Great Recession teed tech’s long boom,” Axios, September 15, 2018, <https://www.axios.com/dotcom-bust-tech-growth-great-recession-b26085a7-128d-4724-a607-96114aecdf18.html>

¹²¹ “What exactly is lights-out manufacturing?” Essentra Components, 2020, <https://www.essentracomponents.com/en-gb/news/product-resources/what-exactly-is-lights-out-manufacturing>.

¹²² Alexandra Cutean, Rosina Hamoni, Ryan McLaughlin, “Canada’s Growth Currency: Digital Talent Outlook 2023,” ICTC, October 2019, <https://www.ictc-ctic.ca/wp-content/uploads/2019/11/canada-growth-currency-2019-FINAL-ENG-10.28.19.pdf>



It is critical that digital adoption be paired with proactive policies to monitor and respond to labour market changes. Namely, sectoral transformation can significantly impact older workers, some of whom may find themselves in a precarious situation without an obvious path to new employment. Research by the US National Institute on Retirement Security found that in 2019, 60% of working age Americans had no retirement savings, and for those that did, the median value of their savings was less than \$90,000.¹²³ A loss of employment without a clear direction for re-entering the labour market is highly damaging for individuals and society.

Responsive adult education and reskilling is a frequently cited policy objective that is challenging to achieve, but a number of

concrete strategies have been trialed around the world. One strategy gaining international attention is Individual Learning Accounts or Personal Training Accounts. These accounts attach rights and means for upskilling to people, rather than to jobs. This approach was piloted in France in 2015.¹²⁴ “Personal Training Accounts” (Compte Personnel de Formation) are primarily employer funded and provide an annual, cumulative €500 for education that follows an individual through their life until they exercise pension rights.¹²⁵

Regardless of the form, training and retraining policies and programs that support mid-career adults through a career transition must be less risky, more socially acceptable, less expensive, more flexible, and less stressful.

¹²³ “The Impact of the Coronavirus on Older Workers,” Joint Economic Committee – United States Senate, August 2020, https://www.jec.senate.gov/public/_cache/files/25a2a42f-6458-4d59-8c02-b19e6e0146f9/impact-of-the-coronavirus-recession-on-older-workers-final.pdf

¹²⁴ OECD Skills Studies, “OECD Skills Strategy Flanders: Assessment and Recommendations,” OECD, 2019, box 6.5. https://www.oecd-ilibrary.org/sites/9789264309791-en/1/2/6/index.html?itemId=/content/publication/9789264309791-en&_csp_=fedb4950d18f493d08b1bf67896fb192&itemID=oecd&itemContentType=book#chapter-d1e15754.

¹²⁵ Sabine Smith-Vital, “Vocational Training in France: Heading Toward a ‘Big Bang’ Reform?” Morgan Lewis, March 09, 2018. <https://www.morganlewis.com/pubs/vocational-training-in-france-heading-toward-a-big-bang-reform>



Conclusion

In 2020, a tumultuous picture of the future took shape, one that continues to be fraught with uncertainties. The global macroeconomic reality experienced an unprecedented state of flux. Many verticals felt the full brunt of this shift, while others found reprieve in being or becoming digital by default. The sharp drop in economic activity and unparalleled job losses prompted governments and central banks to act swiftly to mitigate the impacts of the pandemic. Massive liquidity provisions and favourable credit support played a role in calming markets amid signs of considerable financial stress.

Much of the world population also rapidly embraced a contact-free economy. From the growth in eCommerce and eLearning to Telemedicine, this new normal became home to many of the world's citizens. Automation and digital adoption also became the antidote to business disruption, providing resilience and continuity in a new global landscape. Business and popular sentiment also shifted toward a green post-pandemic economic recovery. This crisis has, more than ever, affirmed the significance of broadening our method of conceptualizing growth. Blueprints like the United Nation's Sustainable Development Goals centralize the importance of climate action, good health and wellbeing, and sustainable cities and communities in developing high quality jobs and facilitating strong economic growth. Moreover, they reinforce the importance of an equitable future for all citizens.

With the recent burst of vaccine innovations, a glimmer of hope points to a stabilization in the trajectory of this pandemic. Nearly two months into the new year, cautious optimism reigns around the world. The world economy, however, is at an inflection point that requires careful considerations and measurable actions. A key question facing world leaders now is how best to imagine and shape the post-pandemic economy?

If necessity is the mother of all inventions, the COVID-19 pandemic has raised critical questions that need to be addressed. This paper, *Shaping the Next Normal*, explores the construct of such an economy by rethinking the way we measure its outputs. Moving beyond GDP, building back must be done in a way that couples economic prosperity with social and environmental wellbeing. Notably, a resilient recovery must put the following considerations at its centre:

- Prioritizing and incentivizing environmentally responsible economic growth
- Empowering the development of sustainable and intelligent communities that bridge the digital divide and create resilient healthcare systems
- Encouraging interterritorial and international trade to promote resilient supply chains, a rebound of global prosperity, and social well-being
- Supporting SMEs in their need to digitize and thrive, creating inclusive economic growth and employment
- Embracing online and digital education to support universal, lifelong learning, and the future of work

As global pressures for austerity and taxation to offset the cost of this pandemic mount, our best response should be firmly anchored in supporting global economic growth, wellbeing, and expansionary monetary policies built upon strong international cooperation and partnerships. There is no time like the present to reimagine the future while fully embracing the transformative nature of digital technologies. The best way to predict the future is to create it. The science, policies, and practice of our actions today will form the foundations of a better, more prosperous, and more equitable future for generations to come.





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