

02 Global and Regional Trends and Prospects



Global and Regional Trends and Prospects

While some of the trends identified three years ago remain relevant, the COVID-19 pandemic is expected to exert an unprecedented impact on global and regional developments over the next few years. The Philippines will have to nimbly maneuver through the following health, environmental, economic, social, political, and technological trends as it pursues development towards a healthy and resilient Philippines.

Health and Environmental Trends

The COVID-19 pandemic

Since it was first reported in China in December 2019, confirmed cases of COVID-19, caused by the novel coronavirus SARS-CoV-2, have exceeded 42 million individuals in over 200 countries, leading to over 1.1 million deaths over a period of 11 months.¹ Some estimates, based on serosurveys, indicate that the actual number of infections could be 7 to 27 times larger than the confirmed cases. Similarly, the number of deaths may be double the official estimate.² In any case, early results from seroepidemiologic studies indicate that in most cases, less than 10 percent of the population have been infected with COVID-19, likely far below the level that would confer herd immunity.³

As of late October 2020, a rapid rise in cases and deaths was reported in Europe. More gradual uptick was also observed in Africa, Eastern-Mediterranean, and Western Pacific regions. Declines continued to be reported in the Americas and Southeast Asia, although the incidence of new infections remains

high, and collectively these two regions contribute over half of new cases and deaths observed globally. New cases are driven mainly by France, United Kingdom, Spain, Italy, Russia, Czechia, Germany, Poland, and Netherlands in Europe; United States of America, Brazil, Argentina, Colombia, and Mexico in the Americas; India, Indonesia, and Nepal in Southeast Asia; Iran, Iraq, and Morocco in Eastern Mediterranean; Philippines in the Western Pacific; and South Africa in Africa.⁴

The majority of countries in Africa, Eastern Mediterranean, Europe, and the Americas continue to report community transmission of COVID-19. In contrast, most countries in Southeast Asia and the Western Pacific are reporting only either clusters of cases, sporadic cases, or even no active cases. Only four countries (Bangladesh, Indonesia, Philippines, and Papua New Guinea) in the two regions are still reporting community transmission.

Despite the overall uptrend in cases, incidence of deaths has remained relatively stable, possibly due to better case management. The results of several

¹ World Health Organization (WHO), "Coronavirus Disease (COVID-19)," WHO Website, October 12, 2020.

² The Economist, "The Covid-19 Pandemic is Worse than Official Figures Show," September 26, 2020.

³ WHO, "COVID-19: Serology, Antibodies and Immunity," WHO Website, December 31, 2020.

⁴ WHO, "COVID-19 Weekly Epidemiological Update," WHO Website, October 18, 2020.

clinical trials for other novel and repurposed therapies are expected in the last quarter of 2020 and first quarter of 2021. At the same time, the long-term impact of the disease is still not well understood. To improve detection, World Health Organization is evaluating over 50 diagnostic tests, including several potentially game-changing rapid diagnostic tests.⁵

As of mid-October 2020, there are around 200 candidate vaccines, 44 of which are now undergoing human trials, while 10 have reached Phase 3 trials of safety and efficacy.⁶ Some of the leading trials may report results in the last quarter of 2020.⁷ The Philippines is participating in the WHO Solidarity Vaccine Trials, with 12 hospitals around the country designated as trial sites. Aside from these, the country is also studying results of clinical trials of vaccines from six companies from China, Russia, Australia, and Taiwan.⁸ Phase 3 vaccine clinical trials are set to begin in November 2020⁹ (see Chapters 10, 11, and 14 for additional information).

Global production capacity is estimated at 1 billion doses by end-2020, rising to an estimated 8 billion by end-2021.¹⁰ Other estimates note that while there is a high probability that at least one vaccine will be approved by 2021, it will likely take over a year to produce enough doses for healthcare professionals worldwide, and that it could take at least until 2023 before there are enough doses to cover most of the world population.^{11, 12} An important challenge therefore is ensuring equitable access to vaccines, therapeutics, diagnostics, and other essential products (including personal protective equipment and oxygen). WHO is coordinating

efforts to equitably distribute 2 billion vaccine doses by 2021 to immunize health care workers and the vulnerable.¹³ However, as of late September, less than 7 percent of the USD38 billion total funding needed, has been pledged.

The COVID-19 pandemic is a stark reminder of the rising risks from infectious disease outbreaks. Between 2011 and 2018, WHO tracked 1,483 epidemic events in 172 countries. Climate change, urbanization, and the lack of water and sanitation are all factors that contribute to fast-spreading, catastrophic outbreaks. Antimicrobial Resistance (AMR) also poses a significant and growing threat. The Global Preparedness Monitoring Board had previously warned that the world is not prepared for a fast-moving, virulent respiratory pathogen pandemic. Previous World Bank (WB) and WHO analyses indicate that most countries would need to spend on average between USD1 to 2 per person per year to reach an acceptable level of pandemic preparedness.¹⁴ (*Improvements in the Philippines' health care system are discussed in Chapters 1, 4, and 10*)

Climate change

Human activities are estimated to have resulted in a 1.0 degree Celsius (°C) global warming above pre-industrial levels. If it continues to increase at current rate, the world is expected to be warmer by 1.5°C between 2030 and 2052. In such a scenario, warming of extreme temperatures in many regions; increases in frequency, intensity, and/or amount of heavy precipitation in several regions; and an increase in intensity or frequency of droughts in

⁵ WHO, *ACT-Accelerator Status Report & Plan, September 2020 – December 2021*, WHO Website, September 25, 2020.

⁶ WHO, “Draft landscape of COVID-19 candidate vaccines,” WHO Website, October 19, 2020.

⁷ WHO, “COVID-19: Serology, Antibodies and Immunity.”

⁸ Department of Science and Technology, “DOST Prepares for WHO Solidarity Trials,” Press Release, October 9, 2020.

⁹ Department of Health, “DOST-led Sub-TWG on Vaccine Dev’t Gears Up for Vaccine Trials in the Philippines,” Press Release, October 10, 2020.

¹⁰ World Bank (WB), “From Containment to Recovery: Economic Update for East Asia and the Pacific, October 2020.”

¹¹ Center for Global Development, “COVID-19 Vaccine Predictions: Using Mathematical Modelling and Expert Opinions to Estimate Timelines and Probabilities of Success of COVID-19 Vaccines,” *CGD Policy Paper 183*, October 2020.

¹² Stephanie Findlay and Anna Gross, “Not Enough Covid Vaccine for All until 2024, Says Biggest Producer,” *Financial Times*, September 14, 2020.

¹³ WHO, *ACT-Accelerator Status Report*.

¹⁴ Global Preparedness Monitoring Board, *A World at Risk: Annual Report on Global Preparedness for Health Emergencies*, World Health Organization, September 19, 2019.

some regions are expected. The number of hot days is projected to increase in most land regions, with highest increases in the tropics.¹⁵

Global emissions are reaching record levels and show no sign of peaking. The last four years have been the hottest on record, and winter temperatures in the Arctic have risen by 3°C since 1990. In effect, sea levels are rising, coral reefs are dying, air is becoming more polluted, and there are more heatwaves and risks to food security.¹⁶

The Intergovernmental Panel on Climate Change (IPCC) projects that global mean sea level will rise to 0.26 meters to 0.77 meters with global warming of 1.5°C by 2100. Sea level will continue to rise well beyond 2100, and the magnitude and rate of this rise depend on future emission pathways.¹⁷

The IPCC also expects that “global warming of 1.5°C will shift many marine species to higher latitudes and worsen the damage to many ecosystems. Furthermore, the loss of coastal resources will increase, while the productivity of fisheries and aquaculture will be reduced. For example, coral reefs are seen to decline by a further 70 percent to 90 percent.”

Countries in the tropics and Southern Hemisphere subtropics are projected to experience the largest impacts on economic growth due to climate change should global warming increase from 1.5°C to 2°C. Indeed, the WB and Climate Analytics have cited the Philippines as one of the countries most vulnerable to climate change with its high exposure to extreme weather events and long coastlines subject to rising sea levels.¹⁸ The Department of Science and Technology-Philippine Atmospheric, Geophysical and Astronomical Services Administration (DOST-PAGASA) reported a warming of an average rate of 0.1°C per decade and will continue to increase in the future. Projection shows that the country will experience an average temperature increase by as much as 0.9°C to 1.9°C in a moderate emission scenario and 1.2°C to 2.3°C in a high emission scenario in 2036 to 2065. By the end of 21st century, this increase could range from 2.5°C to 4.1°C if there is no concerted effort to cut greenhouse gas emissions¹⁹ (see Chapters 3, 18, 19, and 20).

The United Nations (UN) IPCC also projects that risks from some vector-borne diseases, such as malaria and dengue fever, will increase with warming from 1.5°C to 2°C.

Economic Trends

Weaker economic outlook amid COVID-19 and the great lockdown

After relatively weak global growth in the past three years, the International Monetary Fund (IMF) projects that the pandemic and resulting restrictions in economic activities will push the

global economy into a recession in 2020, shrinking by -4.4 percent. After rebounding by 5.2 percent in 2021, global growth is expected to gradually slow down again to about 3.5 percent in the medium-term.²⁰ Most countries in the region are expected to contract, with the notable exception of China. Within the ASEAN-5, only Vietnam is expected to post positive growth. Malaysia and Indonesia's GDP are expected to recover to pre-pandemic levels by 2021, while Thailand and the Philippines will do so

¹⁵ United Nations Intergovernmental Panel on Climate Change (UN-IPCC), *Special Report: Global Warming of 1.5°C*, World Meteorological Organization, Geneva, 2018.

¹⁶ UN, “2019 Climate Action Summit,” United Nations, 2019.

¹⁷ UN-IPCC, *Global Warming of 1.5°C*.

¹⁸ Climate Analytics, “Country Profile: Philippines. Decarbonising South and South East Asia,” May 2019.

¹⁹ Philippine Atmospheric, Geophysical, and Astronomical Services Administration, “Climate Change in the Philippines,” DOST-PAGASA, 2018.

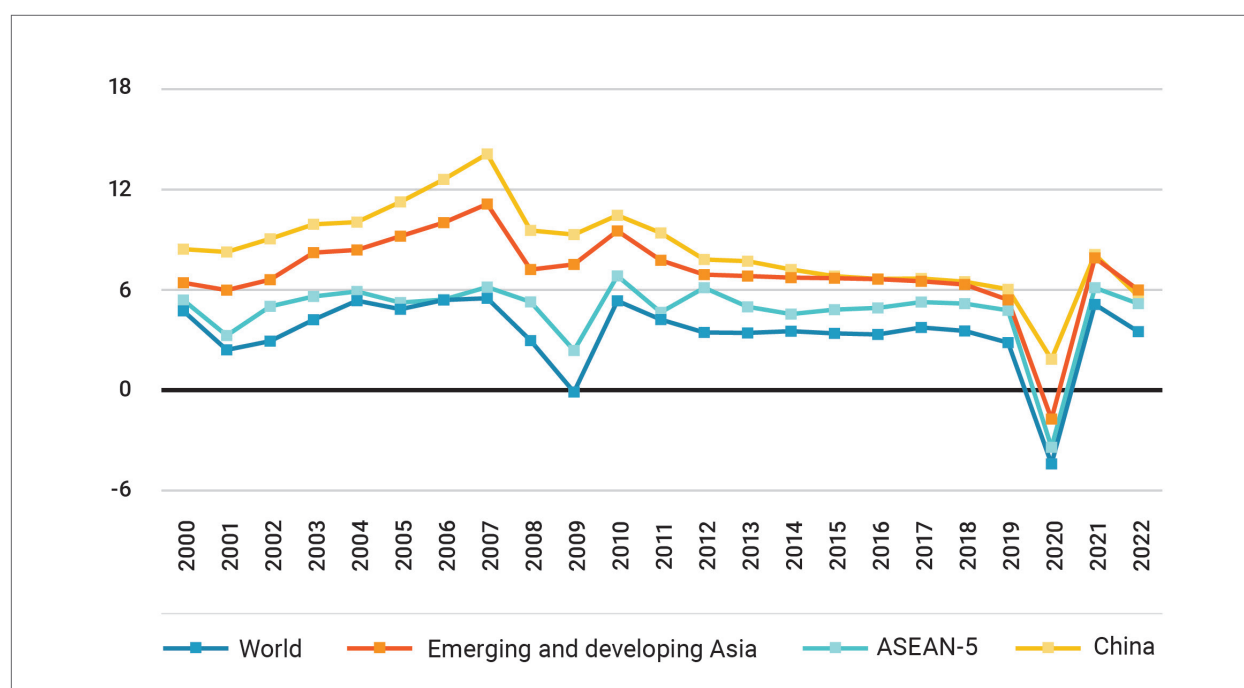
²⁰ IMF, “World Economic Outlook,” October 2020.

only by 2022.²¹ (*The impact of the pandemic on the Philippines' growth prospects are discussed further in Chapter 4*)

While oil prices are expected to pick up after dipping in 2020, the IMF now expects it to remain below USD60 even by 2025, amid subdued aggregate demand. Downside risks abound from the following: multiple waves of COVID-19 pandemic outbreaks, slower than expected recovery as lockdowns are gradually lifted and consumers adapt to 'new normal,' potential financial crises

as governments take on higher fiscal spending/debt and as financial markets diverge from the real economy, destabilizing policy and geopolitical developments (e.g., Brexit, Hong Kong, North Korea, and China-India conflict), trade war escalation and uncertainty, renewed stress towards financially vulnerable countries, and sharper-than-expected slowdown in key economies (i.e., China and European Union [EU]). Upside risks include supply shocks from geopolitical tensions (e.g., Saudi Arabia Oil Tanker Attack).

Figure 2.1 GDP Growth



Source: IMF World Economic Outlook, October 2020

Slower global trade amid shifts in supply chains and rising protectionism

Global trade experienced strong growth in 2017 to 2018 at an average of 4.5 percent growth, before

slowing to less than 1 percent in 2019. However, with the pandemic, the IMF projects that global trade will shrink by 8 percent in 2020, before recovering by 7.9 percent in 2021, and gradually easing to 3.5 percent in the medium-term.²² For the ASEAN-5, the average decline in exports is 7.4 percent in 2020, before recovering by 12.2 percent in 2021. For 2020, a double-digit decline is expected

²¹ The IMF baseline projection assumes that social distancing will continue into 2021 but will subsequently fade over time as vaccine coverage expands and therapies improve. Local transmission is assumed to be brought to low levels everywhere by the end of 2022.

²² IMF, World Economic Outlook database, October 2020, Raw data.

in Indonesia, Malaysia, and the Philippines, with a full recovery expected only by 2022 for Malaysia, Thailand, and the Philippines. Slowing global trade is compounded by weaker external demand, terms-of-trade losses, and supply chain disruptions (e.g., due to production restrictions or border delays). Indeed, the World Trade Organization (WTO) notes that sectors with more complex value chains²³ as well as services trade will be most affected by the COVID-19 pandemic.

The slowdown in trade is happening amidst rising protectionist tendencies over the past decade. Trade restrictions by WTO members have reached historic highs. The stockpile of import restrictions implemented since 2009, and still in force, is estimated to affect around USD1.7 trillion or 8.7 percent of world imports.²⁴ While trade facilitation measures have likewise been introduced, these have been outpaced by restrictive measures.

Given the pandemic, there may be some shifts in supply chains with rising political pressure to re-shore production to reduce perceived vulnerabilities from reliance on foreign producers. Firms may also reconfigure their global production networks to manage the risks of production disruptions better. The pandemic may also induce protectionist measures to shield local firms given weakening local economies or limit exports given domestic needs.

Over a period of seven months to mid-May 2020, WTO members implemented 363 new trade and trade-related measures, 256 of which (about 71%) were linked to the pandemic. Of the pandemic-related measures, 47 facilitated trade and 109 restricted trade. Some of the export restrictions on surgical masks, gloves, medicine, and disinfectant have started to be eased during the latter part of the period though.

The pandemic is also expected to have a sharp and prolonged impact on services trade, particularly on travel and tourism. International travel restrictions, together with consumers' fear of exposure to the virus, are likely to subdue tourism activity. The International Air Transport Association (IATA) projects air transport demand to decline by over 66 percent in 2020, and that it may take some 5 years for passenger demand to return to pre-COVID levels.²⁵ Similarly, the UN World Tourism Organization expects tourism arrival declines of 58 to 78 percent for 2020, with full recovery possibly by 2024.²⁶ *(Strategies to address the impact of the pandemic on Philippines' goods and services trade are discussed in Chapter 9)*

Global investment flows to remain below pre-pandemic levels

After fully recovering and peaking at USD2 trillion in 2015, global foreign direct investment (FDI) has been declining again, reaching USD1.3 trillion in 2018 and USD1.5 trillion in 2019, with the contraction mostly coming from US multinationals repatriating earnings from abroad due to policy-driven tax reforms.²⁷

In contrast, FDI inflows to developing Asia have been broadly steady, with a minimal decline of 5 percent to USD474 billion in 2019.²⁸ For ASEAN-5, FDI inflows actually increased by around 30 percent between 2015 and 2018, exceeding inflows to China in the last three years.

Given the pandemic, UN forecasts that global FDI flows will fall by 40 percent bringing FDI to USD1 trillion in 2020. From there, FDI is projected to further decrease by 5 percent to 10 percent in 2021.

²³ World Trade Organization (WTO), "Trade Set to Plunge as COVID-19 Pandemic Upends Global Economy," Trade Statistics and Outlook, Press Release, April 8, 2020.

²⁴ WTO, *Report to the TPRB from the Director-General on Trade-Related Developments*, July 10, 2020.

²⁵ International Air Transport Association (IATA), "June Data and Revised Air Travel Outlook," July 28, 2020; Brian Pearce, Downgrade for Global Air Travel Outlook, IATA, September 29, 2020.

²⁶ UN World Tourism Organization, "UNWTO World Tourism Barometer and Statistical Annex, August/September 2020," *UNWTO World Tourism Barometer* 18, no. 5 (2020): 1-36.

²⁷ United Nations Conference on Trade and Development (UNCTAD), "Global Foreign Direct Investment Slides for Third Consecutive Year," June 12, 2019.

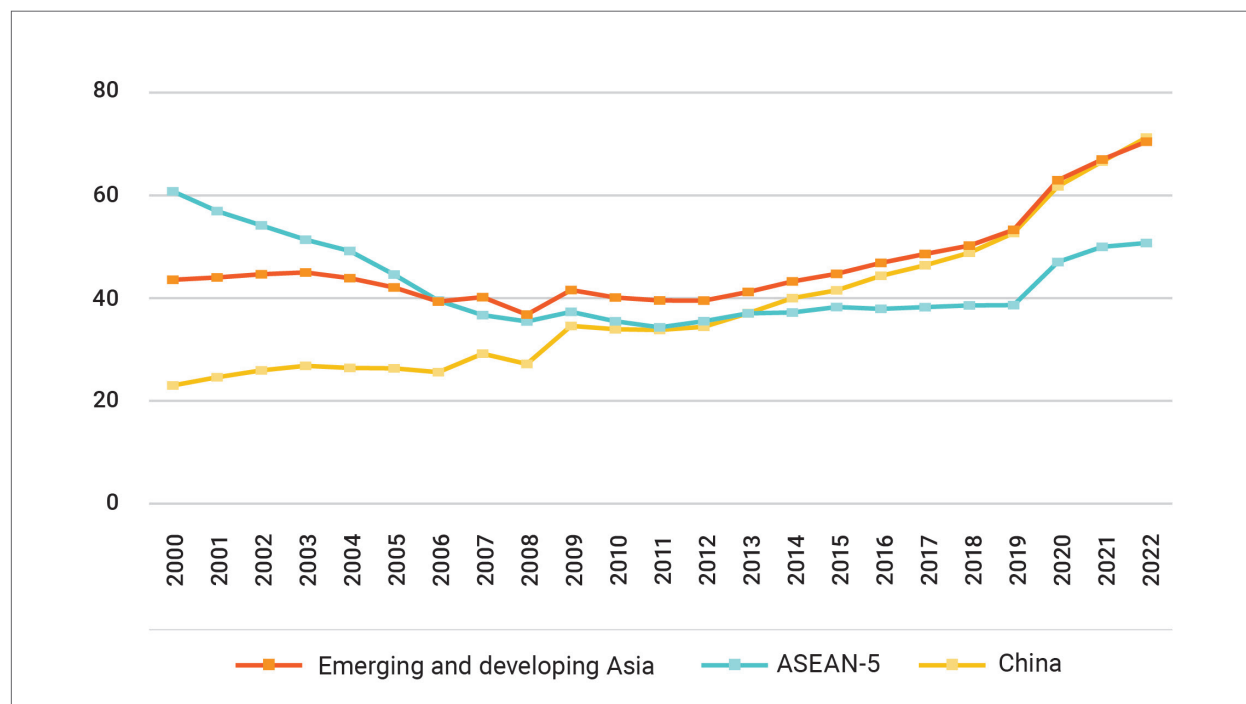
²⁸ UNCTAD, "World Investment Report 2020," June 16, 2020.

Despite a potential initial rebound in 2022, FDI flows are not expected to return to pre-COVID levels. For developing Asia, FDI is projected to fall by 30 percent to 45 percent in 2020. The pandemic is expected to accelerate pre-existing trends towards rationalization of international operations, reshoring, nearshoring, and regionalization.²⁹ (Strategies to address the impact of the pandemic on FDI flows into the Philippines are discussed in Chapter 9)

Sovereign debt levels to rise significantly

As economies slow down, revenue collections are expected to fall. Together with an increase in spending in response to the crisis, the IMF expects budget deficits and sovereign debt-to-GDP ratios to increase over the medium-term. In advanced economies, government debt is projected to rise by about 20 percentage points (ppts) to 124 percent of GDP by the end of 2022. Over the same period, sovereign debt in emerging markets and developing Asia is projected to rise by more than 17 ppts to about 70 percent of GDP. For the ASEAN-5, a 12 ppts increase to over 50 percent of GDP is projected over the period. (Strategies to address the impact of the pandemic on Philippines' fiscal position and public debt are discussed in Chapter 15)

Figure 2.2 General Government Gross Debt (% of GDP)



Source: IMF World Economic Outlook, October 2020

²⁹ UNCTAD, "World Investment Report 2020."

Broad-based monetary easing bias

Over the past three years, central banks across both developed and emerging markets have largely taken an accommodative monetary policy stance given slowing global growth and subdued inflation. Amid the COVID-19 pandemic, countries across the globe are further easing monetary policy to support growth. By some estimates, the US, UK, Japan, and the Euro Area, together, have injected liquidity

worth USD3.8 trillion so far in 2020, helping yields on long-term government debt remain close to zero despite the increased deficit and debt levels.³⁰

In fact, interest rates are projected to fall further. In turn, borrowing rates that stay lower for longer will help cushion the expected increase in debt burdens³¹ as a result of similarly expansive fiscal policy. *(Strategies to address the impact of the pandemic on the Philippines' monetary and financial sectors are discussed in Chapter 15)*

Political Trends

Rising populism, separatism, and geopolitical tensions

The shift away from multilateralism, towards populist and inward-looking policies has gathered steam and may persist over the next three years. This shift has had a substantial impact on international policy discussions in the areas of trade, migration, environment, and security, among others.

In addition, the outcome of the elections in the US is likely to have a significant impact on the direction of its policies. That said, most political analysts expect that tensions between the US and China are likely to persist given their growing rivalry in various fields.

For the UK, an extended period of uncertainty is likely even after Brexit. Apart from the economic fallout from leaving the EU, the UK may face increasing internal pressure from rising separatist sentiments in certain areas. China and India face similar challenges.³²

Moreover, geopolitical tensions are on the rise with North Korea missile talks and disputes over Iran's nuclear program. This has increased global uncertainty, dampened investor and business sentiment, and have consequently clouded the outlook for global growth moving forward. *(Strategies to address the impact of geopolitical tensions are discussed in Chapters 9 and 18)*

³⁰ The Economist, "The Eternal Zero," October 8, 2020.

³¹ Paul Dales and Neil Shearing, "Global State of Play," Capital Economics Webinar, June 11, 2020.

³² Gideon Rachman, "The Coming Surge of Separatism," The Economist (The World in 2020).

Social and Demographic Trends³³

Unemployment is expected to remain elevated

With the contraction in economic activities, the IMF expects unemployment rates to increase and remain elevated over the next three years across both advanced and emerging market economies. In the USA and Euro area, unemployment is projected to rise to 8.9 percent in 2020, before easing to 5.7 percent in 2022 for the USA. For the Euro area, it will increase further to 9.1 percent in 2021 before easing to 8.4 percent in 2022. Unemployment rates in several emerging market economies are projected to increase significantly this year. The main exception seems to be China and Thailand. *(The impact of the pandemic on the Philippines' labor markets are discussed further in Chapter 4. Strategies to address the impact of the pandemic on the Philippines labor markets are discussed in Chapter 10)*

Migration and remittance flows are expected to decline sharply in the medium-term, but long-term factors are likely to persist

The WB projects global remittances to decline by 20 percent in 2020. Remittance flows are expected to fall across all regions, most notably in Europe and Central Asia (27.5%), followed by Sub-Saharan Africa (23.1%), South Asia (22.1%), the Middle East and North Africa (19.6%), Latin America and the Caribbean (19.3%), and East Asia and the Pacific (13.0%). In 2021, WB estimates that remittances to low- and middle-income countries will experience a weak recovery of only 5.6 percent. Despite a sharp decline in remittances early in the lockdown, there are some signs of recovery.

The nearly simultaneous decline in economic activities globally, though, is likely to subdue the counter-cyclical tendency of remittance flows in the short term.

Nonetheless, over the long term, the main drivers of migration – diverging demographic trends and the related wide gap in wages and incomes – are unlikely to change significantly.

International migration has become a major factor of population dynamics. Europe and North America, Australia and New Zealand, and Western Asia have experienced net inflows of international migrants. On the other hand, Central and Southern Asia, Eastern and Southeastern Asia, Latin America, and Sub-Saharan Africa have experienced net outflows of migrants over the past two decades.

The largest outflows are driven by demand for migrant workers (such as from Bangladesh, Nepal, and Philippines) or violence, insecurity, and armed conflict (such as Myanmar, Syria, and Venezuela).

Belarus, Estonia, Germany, Hungary, Italy, Japan, the Russian Federation, Serbia, and Ukraine will experience a net inflow of migrants over the next decade, helping to offset population losses caused by an excess of deaths over births. *(Strategies to address the impact of the pandemic on migrant Filipinos are discussed in Chapter 21)*

³³ United Nations Department of Economic and Social Affairs (UNDESA), *World Population Prospects 2019: Highlights*, June 17, 2019.

Global demographic trends will remain broadly the same³⁴

The UN expects over 47 million women in 114 low- and middle-income countries to lose access to modern contraceptives, some seven million unintended pregnancies are projected to occur if the pandemic-induced lockdowns persist for six months.³⁵ Nevertheless, long-term demographic trends are expected to remain broadly the same despite the pandemic.

The UN projects that global population will increase by 2 billion persons in the next 30 years from 7.7 billion in 2019. However, growth rates vary greatly across regions. Nine countries will make up more than half the projected growth of the global population between now and 2050: India, Nigeria, Pakistan, Congo, Ethiopia, Tanzania, Indonesia, Egypt, and the USA. Around 2027, India is projected to overtake China as the world's most populous country.

Life expectancy at birth for the world's population reached 72.6 years in 2019, an improvement of more than eight years since 1990. Further improvements in survival are projected to result in an average length of life globally of around 77.1 years in 2050.

Global fertility rate fell from 3.2 births per woman in 1990 to 2.5 in 2019. It is projected to decline further to 2.2 in 2050.³⁶ (*Demographic trends in the Philippines are further discussed in Chapters 3, 10, and 13*)

Ageing and shrinking populations in some regions

As a result, the old population is fast increasing. The UN also expects the share of the population who are over the age of 65 is expected to rise from 9 percent in 2019 to 16 percent by 2050. In line with this, working-age population has fallen in proportion, consequently putting pressure on social protection systems (health care, pensions, and social protection).

The speed of population aging is fastest in Eastern and South-Eastern Asia, particularly in South Korea, Singapore, Taiwan, Macao, Thailand, Hong Kong, and Brunei. These countries will experience an increase in the share of the older person by between 16.5 ppts to 23.0 ppts.

Since 2010, 27 countries or areas have experienced a reduction of one percent or more in the size of their populations. Per the UN, this drop is caused by sustained low levels of fertility. The impact of low fertility on population size is reinforced in some locations by high rates of emigration. Between 2019 and 2050, populations are projected to decrease by one percent or more in 55 countries or areas, of which 26 may see a reduction of at least 10 percent. The largest relative reductions in population size over that period, with losses of around 20 percent or more, are expected in Lithuania, Bulgaria, Latvia, the Wallis and Futuna Islands, and Ukraine.

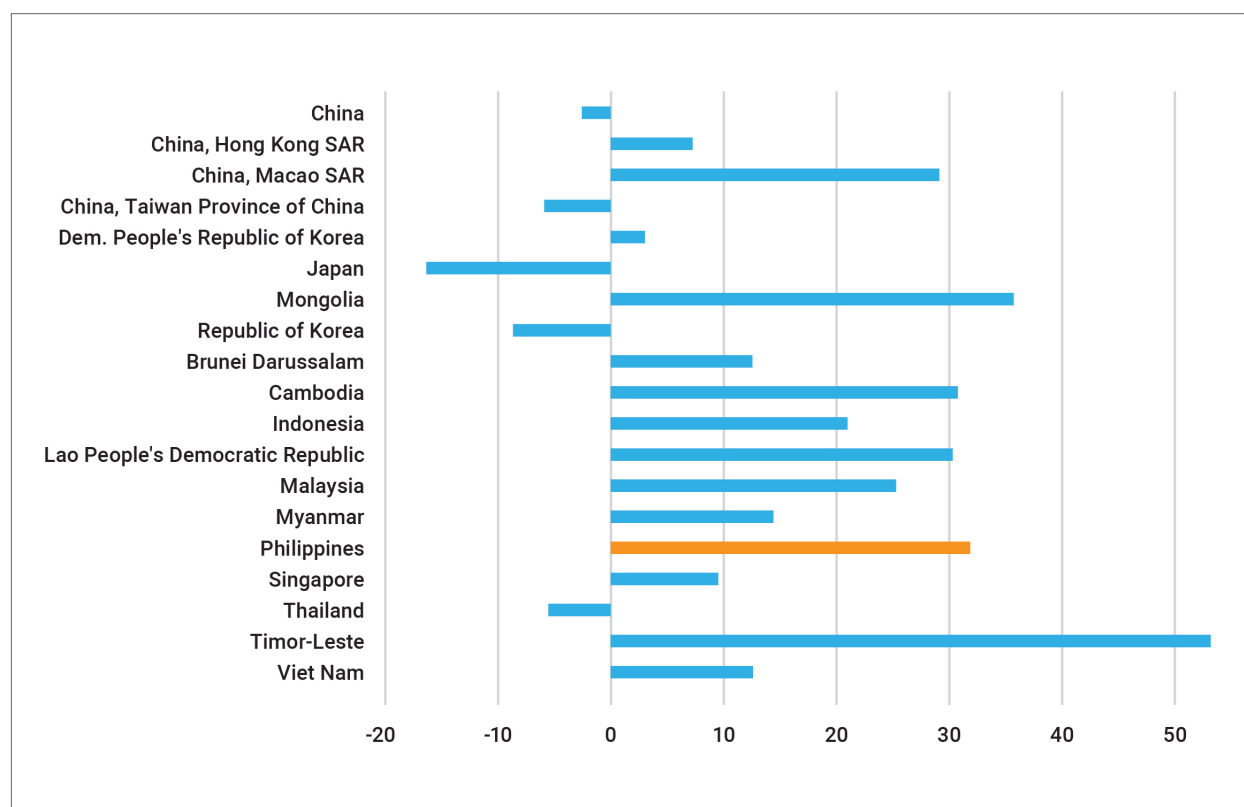
Countries in the region that will see significant declines in population between 2020 and 2050 are Japan (-16%), South Korea (-9%), Taiwan (-6%), Thailand (-6%), and China (-3%). In contrast, all ASEAN member states, except Thailand, will have increases in population led by the Philippines (32%), followed by Cambodia and Lao People's Democratic Republic (at about 30%).

³⁴ UNDESA, *World Population Prospects*.

³⁵ United Nations Population Fund (UNFPA), *Impact of the COVID-19 Pandemic on Family Planning and Ending Gender-based Violence, Female Genital Mutilation and Child Marriage*, UNFPA, April 2020.

³⁶ Fertility level of 2.1 births per woman is needed to ensure replacement of generations and avoid population decline over the long run in the absence of migration.

Figure 2.3 Change in Population (%), 2020-2050



Source: UNDESA

Demographic window is opening for some regions

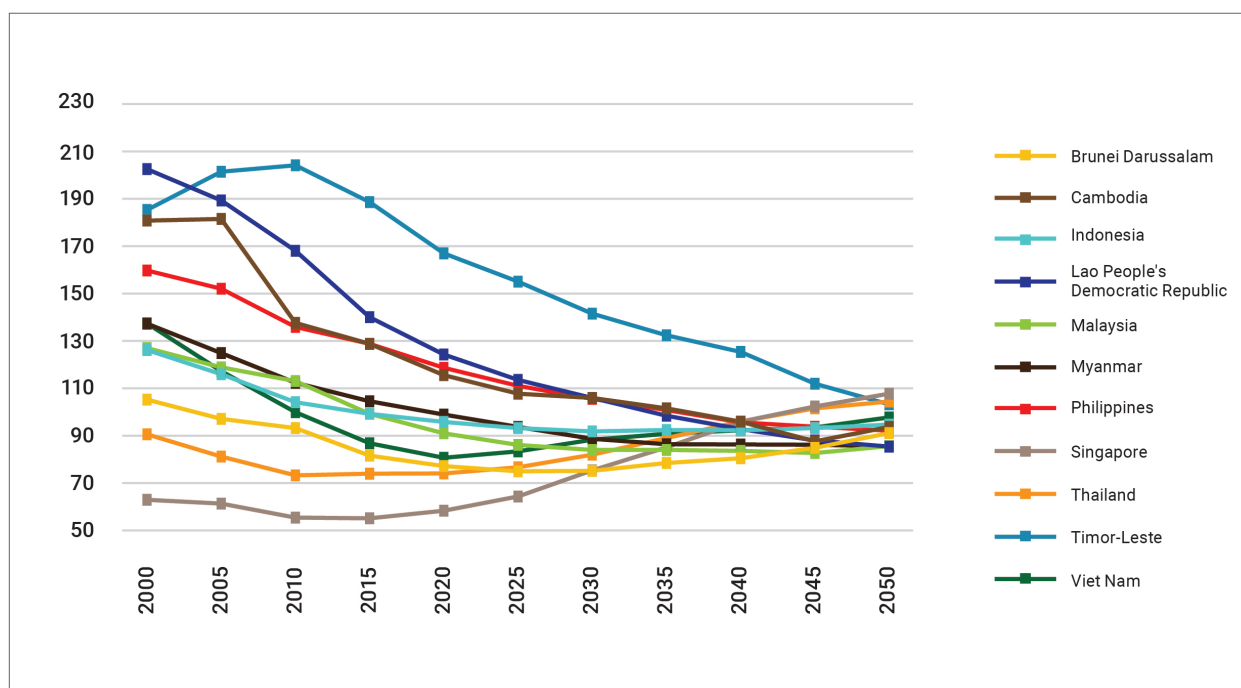
In most of sub-Saharan Africa, and in parts of Asia and Latin America and the Caribbean, recent reductions in fertility have caused the number of the working age group (25-64 years) to grow faster than the rest.

In Southeast Asia (SEA), UN Department of Economic and Social Affairs (UNDESA) projections³⁷ indicate that the share of working-age population in Brunei, Singapore, Thailand, and Vietnam will drop between 2020 and 2050. For the rest of SEA, including the Philippines, it is expected to increase. Consequently, the total dependency ratios³⁸ for Brunei, Singapore, Thailand, and Vietnam will increase, while it is expected to decline in the rest of SEA, including the Philippines, for the same period. (*Strategies to take advantage of the Philippines' demographic window are discussed in Chapter 13*)

³⁷ UNDESA, *World Population Prospects 2019*, Custom data.

³⁸ Ratio of population aged 0-24 and 65+ per 100 population aged 25-64.

Figure 2.4 Total Dependency Ratio



Total Dependency Ratio ((Age 0-24 + Age 65+) / Age 25-64) De facto population as of July 1 of the year indicated.

Source: UNDESA

Progress in reducing global poverty will be delayed

The WB expects that the pandemic will push 88 to 115 million people into extreme poverty or those living below or on less than USD1.90 a day in 2020, or a rise in global extreme poverty incidence to between 9.1 percent to 9.4 percent in 2020, from 8.4 percent in 2019. Most of the additional extreme poor will come from South Asia (49 to 56 million people) and Sub-Saharan Africa (26 to 40 million people). The bulk will come from middle-income countries (72 to 94 million people). Many of the new poor are likely to be engaged as paid employees in informal services, construction, and manufacturing, live in urban areas, with better access to infrastructure, and more educated than the chronic poor.

For 2021, global extreme poverty rate is expected between 8.9 percent and 9.4 percent – a return to the 2017 global poverty rate. This means that the world could lose some three to four years in the fight against poverty. Over the longer term, even if per capita income growth returns to pre-COVID rates, extreme poverty is projected to decline to 6.7 percent by 2030, more than twice the target of 3.0 percent.³⁹ (*The impact of the pandemic on the Philippines' fight against poverty are discussed further in Chapter 4. Strategies to address the impact of the pandemic on poverty in the Philippines are discussed in Chapters 5, 8, 10, 11, and 12*)

³⁹ WB, "Poverty and Shared Prosperity 2020," October 15, 2020.

Technological Trends

Technologies for the next production revolution^{40,41}

Technological developments have been catered towards solving global concerns such as slowing productivity growth, ageing populations, climate change, globalization, and adapting to the ‘new normal.’ However, the speed and uncertainty of technological change present a challenge to governments in terms of oversight to prevent inappropriate applications.

Artificial Intelligence (AI): In the pharmaceutical industry, AI is expected to become the “primary-drug discovery tool” by 2027. It has likewise improved the affordability of certain medical procedures such as genome sequencing and disease detection – indeed, the National Human Genome Research Institute estimates that as many as two billion people will have their genome sequenced by 2025.⁴²

AI is already being used in industrial settings to identify and recommend solutions to production problems, operate autonomous machines, design buildings, discover new materials, and predict maintenance needs. It is also being used for real-time fleet-management, optimizing energy consumption, digital security, office task automation, and workforce training.

Blockchain: While its potential applications could be transformative, blockchain remains an immature technology. Challenges include the need for fundamental changes in business practices, and slower transaction speeds. Nevertheless, “blockchain as a service” is already being offered by a few firms. Blockchain technology has made advancements in the financial sector with the establishment of cryptocurrencies and financial technology (fintech). China, in particular, is seen to take the lead in digital

cash payments with companies such as Alibaba and Tencent dominating the field. Indeed, with the COVID-19 pandemic and the ensuing ‘new normal,’ e-commerce and contactless digital transactions are expected to become the norm.

Additive manufacturing: 3D printing is rapidly expanding, with falling prices for printers and materials, quality improvements and other innovations. Recent innovations include 3D printing with novel materials, such as glass, biological cells, and even liquids (using nanoparticles); robot-arm printheads that allow printing objects larger than the printer itself (opening the way for automated construction); touchless manipulation of print particles with ultrasound (allowing printing electronic components sensitive to static electricity); and hybrid 3D printers, combining additive manufacturing with computer-controlled machining and milling. Research is also advancing on 3D printing, with materials programmed to change shape after printing. Most 3D printing is used to make prototypes, models, and tools. Currently, 3D printing is not cost-competitive at volume with traditional mass-production technologies, such as plastic injection moulding. The costs of switching from traditional mass-production technologies to 3D printing are expected to decline in the coming years as production volumes grow.

Green technology: Amidst concerns of climate change and diminishing resources, green technology has also been on the rise. Among the advancements made are bio-refineries (aimed at reducing greenhouse gas emissions), industrial biotechnology, and bioeconomy (production of goods from renewable biomass/synthetic biology such as biofuels and artificial photosynthesis), gene-editing technologies, synthetic biology, and electric vehicles. Indeed, major car companies such as Volkswagen and Volvo aim to be all-electric by 2021 to 2026.⁴³

⁴⁰ Organisation for Economic Co-operation and Development (OECD), *Science, Technology and Innovation Outlook 2018* (Paris, OECD Publishing, 2018).

⁴¹ The Economist, “Of Anniversaries and Climate Change, 2019 in Review: Science and Technology,” December 29, 2019.

⁴² John Thornhill, “Three Technological Trends That Will Shape the Decade,” *Financial Times*, January 6, 2020.

⁴³ Ed Oswald, “Welcome to the 2020s. Here’s the Tech That Will Shape the Next Decade,” *Digital Trends*, January 1, 2020.

New materials: Materials with entirely novel properties are emerging: solids with densities comparable to the density of air; super-strong lightweight composites; materials that remember their shape, repair themselves, or assemble themselves into components; and materials that respond to light and sound, are now realities.

Nanotechnology: Advanced nanomaterials are increasingly used in manufacturing high-tech products (e.g., to polish optical components). Recent innovations include nano-enabled artificial tissue, biomimetic solar cells, and lab-on-a-chip diagnostics.

High Performance Computing (HPC): This involves computing performance far beyond that of general-purpose computers. It is increasingly important to firms in industries ranging from construction to pharmaceuticals, the automotive sector, and aerospace. Small and medium-sized enterprises (SMEs) could potentially use HPC for prototyping, testing, and design.

5G Networks: Statista forecasts that 5G mobile network will have reached 40 percent of the global population – further enhancing the internet of things (IoT) and general technological connectivity and efficiency. Likewise, there is a need for further improvements in internet and connectivity capacity as the workplace and schools shift towards remote services and education.

Space Travel and Tourism: Several space missions were launched in 2020. Despite the pandemic, the USA, China, and United Arab Emirates (UAE) managed to launch their respective missions to Mars in July. On the other hand, Europe's Mars mission has been pushed back by two years.⁴⁴ Likewise, commercial suborbital flights planned this year were delayed to at least 2021 given the pandemic.^{45, 46}

Digital technology in the New Normal: The nature of COVID-19 has brought about the need for social distancing, contactless procedures, as well as work and study from home arrangements in light of the new normal. Across the world, economies are shifting towards online shopping, digital banking, e-governance, telehealth and contact-tracing applications, remote learning, and virtual meetings.

That said, such technological advancements carry underlying risks particularly for privacy, infrastructure, and employment. Labor concerns have been raised with the advent of automation. Indeed, McKinsey sees automation displacing jobs by as early as the 2030s.⁴⁷ Likewise, greater connectivity because of IoT and 5G ubiquity, as well as shift towards new normal digital services, raise concerns of reduced privacy, increased surveillance, and cybersecurity. This is a particular concern for contact-tracing applications and increased online financial transactions (*Strategies for the Philippines to take advantage of technological advancements are discussed in Chapters 5, 6, 7, 8, 9, 10, 11, 14, 19, and 20*).

⁴⁴ Kenneth Chang, "NASA Launches Perseverance Rover, Capping Summer of Missions to Mars," *The New York Times*, July 30, 2020.

⁴⁵ Justin Bachman, "Virgin Galactic Delays Key Flight," *Bloomberg*, August 4, 2020.

⁴⁶ Christian Davenport, "Jeff Bezos's Secretive Space Venture Launches a Rocket to the Edge of Space for the First Time in Months," *The Washington Post*, October 14, 2020.

⁴⁷ Peter Gumbel, Interview with Michael Chui and Susan Lund, "How Will Automation Affect Jobs, Skills, and Wages?" *New World of Work*, Podcast transcript, McKinsey Global Institute. March 23, 2018.

