



Boao Forum for Asia

Sustainable Development: Asia and the World Annual Report 2021

—the Road towards Sustainable Recovery in a Fast Changing World



Shamshad Akhtar, former Under-Secretary-General of the United Nations, Policy Sherpa at Boao Forum for Asia:

The post-2020 era offers an opportunity to invest more thoughtfully, drawing from lessons of the pandemic and related crises, to set on course SDG compliance. Bringing in the integration and interdependence between core SDGs with the four priorities advocated in the report will offer a conceptual framework to the diagnosis and analytical context.

Erik Berglof, Chief Economist of Asian Infrastructure Investment Bank:

We need to have data showing that we are moving in the right direction of net-zero, that decision-makers in different parts of society have the right information when they make this decision. We need to generate more incentive to invest in infrastructure, and we should encourage agreements like RCEP. But to get the full benefits we need deeper agreements that address standards for climate mitigation as well as services and information flows. That is the future.

Frank Rijsberman, Director General of Global Green Growth Institute:

Combining greener recovery with more ambitious Nationally Determined Contributions (NDCs) is really an opportunity for many countries in the next one or two years; and conversely, a threat if that doesn't happen. It would be very interesting to see how BFA corporate members could increase their awareness of sustainability and potentially see this as not a CSR issue, but quite a strategic issue for many companies in the medium to long run.

Liang Wannian, Executive Associate Dean of Vanke School of Public Health, Tsinghua University:

The report puts forward four deficit problems, including health deficit, infrastructure deficit, green deficit, and digital deficit, and finally comes down to "governance deficit". It has strong pertinence and guidance, which makes my eyes light up. In terms of health deficit, we should focus on several aspects in the future: improving the completeness of the health service system, strengthening the reserve dealing with public health emergencies, and developing the general health industry for SDGs.

SHEN Jianguang, Chief Economist of JD Group:

The report offers a very good overview of sustainability in various sectors, and also, there's one case study about using digital technology to help cities manage their urban services and make urban development more sustainable. I think this is a very important topic of how the digital economy and digital technology can transform and help us make the economy more sustainable.

Boao Forum for Asia

Sustainable Development: Asia and the World

Annual Report 2021

*—The Road towards Sustainable Recovery in a Fast
Changing World*

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Foreword

The first two decades of the new millennium have witnessed remarkable achievements in economic development, science and technology advancement, and global connectivity. Nevertheless, these accomplishments have been disrupted by global financial crisis, geopolitical tensions, protectionism and unilateralism, natural disasters, and the devastating pandemic which is still raging around the globe, and other traditional and untraditional challenges and threats. To call for concerted actions to address the challenges, in particular, to help countries, generations, and gender lagging behind, the United Nations General Assembly adopted the *2030 Agenda for Sustainable Development* in 2015, to end poverty, hunger and to build a better society, better nature and a better world.

In 2020, a UN report revealed that changes towards SDGs were still not happening at the speed or scale required¹. The unprecedented outbreak of the COVID-19 pandemic has further widened the gap towards the SDGs. The *Financing for Sustainable Development Report 2021* released by the United Nations estimated that about 120 million people had been plunged back into extreme poverty due to COVID-19 pandemic.

To reverse the trend and come back to the track of poverty eradication (SDG-1) and correct the other slippages in SDG compliance, we need swift and collective actions from the government, the enterprises, the general public, and the international community. Within limited resources in the economic stimulus plans, priorities shall be given to address those development deficits bottlenecking the recovery, including healthcare, infrastructure, green and digital deficits.

Suffering a negative growth in 2020, the first time in the past 60 years, Asia has been confronted with daunting tasks in meeting SDGs. Tireless efforts have been made to address the four development deficits in Asia. Many Asian countries have forcefully gripped pandemic containment, pushed forward vaccination plans, and reinforced the healthcare facility. They have worked hard to avoid interruption of the production chain, secured free flow of goods, and infrastructure connectivity. The RCEP Agreement signed at the end of 2020 equipped the region with solid institutional arrangements for economic integration. State leaders of China, Republic of Korea (hereafter referred to as Korea) and Japan announced Carbon Neutrality Timetable last year to press ahead with green transformation. Furthermore, with vibrant technology innovation, digital economy has been further expanding in Asia under the pandemic.

The impact of the COVID-19 pandemic demonstrates again that pandemic prevention requires joint efforts from the whole world, and not a single country is able to survive alone. The end of the pandemic worldwide ultimately depends on all countries overcoming the pandemic. Therefore, we cannot achieve sustainable recovery and development without connecting with other countries, and multilateralism and coordinated actions are the key to it. In the fast-changing world, Asia is willing to join hands with other

¹ United Nations. 2020. *The Sustainable Development Goals Report 2020*. <https://unstats.un.org/sdgs/report/2020/>

countries and regions to overcome the pandemic, narrow the development deficit, return to the road of sustainable recovery, reshape international rules and order, and promote the construction of a community of shared future for mankind.

On the occasion of the 20th anniversary of the Boao Forum for Asia, we are very happy to launch the first edition of the flagship report series on sustainable development. I sincerely hope this report can increase public awareness and trigger wide discussions on where we are and how to move forward in the realization of sustainable development in Asia and the world, resulting in broader consensus, more comprehensive initiatives, and more concrete efforts.

Secretary General of Boao Forum for Asia



Acknowledgments

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CAO Li, SUN Shixuan, and REN Changyu from the BFA Academy authored Chapter 1 and Chapter 4, and compiled the report. Dr. Ghulam Samad, Dr. Qaisar Abbas and Dr. Iskandar Abdulaev from CAREC Institute authored Chapter 2, and Mr. Ghulam Nabi, Ms. Emma Tong, Ms. Zoey Xiao, Dr. Bob Zhao, Dr. Tumurpurev Dulambazar also contributed to the report. Lydia Chen, ZHAO Yu, and WU Fenlin from Deloitte China authored Chapter 3.

The team received valuable guidance from Mr. LI Baodong, Secretary General of the Boao Forum for Asia, Mr. Syed Shakeel Shah, Director of CAREC Institute, and Mr. Liang Ziqian, Deputy Director One of CAREC Institute, during the whole writing process. The professional guidance from our advisory group have greatly benefited the team, and significantly improved the quality of the report, which consists of Shamshad Akhtar, former Under-Secretary-General of the United Nations, Policy Sherpa at Boao Forum for Asia, Erik Berglof, Chief Economist of Asian Infrastructure Investment Bank, Frank Rijsberman, Director General of Global Green Growth Institute, LIANG Wannian, Executive Associate Dean of Vanke School of Public Health of Tsinghua University, and SHEN Jianguang, Chief Economist of JD Group. Our special thanks go to all BFA family members who participated in the sustainable development enterprise survey, especially those who provided their particular cases. We are also very grateful for the professional editing and publishing team of the University of International Business and Economics Press.

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Chapter I

Overview

To address common challenges facing mankind and improve the lives of people on the planet, the UN set out Sustainable Development Goals (SDGs) in 2015, calling for relentless and concerted efforts around the globe to promote prosperity and economic opportunity, greater social well-being, and protection of the environment. Nevertheless, the pace has been far from satisfying globally, owing to insufficient national actions, the decline in official assistance, and disruption to the private flows in many developing countries.

The ravaging COVID-19 pandemic since early 2020, which has taken a myriad toll on people's lives and health, the world economy, and social stability, has further widened the UN SDG gap. The uneven containment of the pandemic, rolling out of the vaccines, and unbalanced recovery of the economy posed great risks of dividing nations, enlarging inequality, and hampering inclusive growth. It may also trigger more geopolitical tensions and make global governance more complicated, further weakening the world's resilience to future shocks. According to the *Sustainable Development Report 2020*¹ published by Cambridge University Press, at least 13 out of 17 sustainable development goals have received a moderately negative impact due to COVID-19, if not a highly negative impact.

How can we reboot the world economy and fill the widening gap to achieve the SDGs? The world is looking to a new norm and pattern of sustainable growth, rather than going back to the old days. This report highlights addressing **"four development**

deficits" to stride towards a sustainable recovery, which are health care, infrastructure, green, and digital deficits.

Under the pandemic, Asian economies have reinforced their healthcare system by all means, stabilized the global supply chain, and led trade and investment recovery. Many regional initiatives were brought out to fight against the pandemic, enhance transportation connectivity, facilitate green transformation and shape up digital economy by the regional cooperation platforms, such as ASEAN+3, the Shanghai Cooperation Organization and the Gulf Cooperation Council (GCC), and international organizations including the Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB), etc.

To rein in its pace on the road towards sustainable recovery and contribute to the world economy, Asia needs to further narrow the four development deficits. An integrated and cooperative approach is required for Asian economies to overcome new risks and challenges and make contributions to world economic growth.

On health care deficit: Due to the lack of financial capacity or proper scheme, shortage of medical resources is a huge obstacle for many Asian economies, and to distribute vaccines with speed in such a populous continent is a daunting task. Various health policies need to be maintained to calm the pandemic curve. And investments in social determinants of health, education, physical environment, access to health services, and paid sick leave particularly can

1 Sachs, Jeffrey, et al. The Sustainable Development Goals and COVID-19. *Sustainable Development Report 2020*, 2020.

significantly impact health outcomes. In addition, public health infrastructure is also crucial for health security and epidemic preparedness.

On infrastructure deficit: The level of infrastructure development in Asia seems uneven, and trade barriers are relatively high across countries and subregions. Hard and soft infrastructure need to be more resilient to bolster economic activities and supply chains within the region. Further cross-border infrastructure connectivity, firm implementation of free trade arrangement including the newly signed Regional Comprehensive Economic Partnership, as well as employing e-commerce, automation, will ensure the continuation of trade and production in the post-pandemic era.

On green deficit: With the rapid economic development, carbon dioxide emissions of Asian countries are growing. Many of them are facing severe environmental and climatic risks, along with challenges of adaptation and mitigation, though the extent of vulnerability varies according to geographical location and socio-economic strength. The continuous occurrence of extreme weather disasters and air pollution problems has shown urgency in Asia. Announcements made by leaders of China, Japan, Korea, and other Asian economies on carbon neutrality in 2020 are most welcome. Concrete blueprints are needed in industry transformation, technology advancement, and finance adaptation and mitigation.

On digital deficit: Digital inequality exists across Asian economies, with the top digital firms highly concentrated geographically. After the COVID-19 outbreak, several serious reforms have been in the pipeline to establish digital platforms in places where it previously non-existed. Much space exists for improvement in digital technology applications, and the governance in related fields needs to be strengthened. How to abridge the digital gap across Asian economies is presently one of Asia's biggest challenges.

Based on our survey on sustainable recovery,

half of the business owners are neutral about the prospect of the global recovery, while 60 percent are optimistic about Asia. Quick move in vaccination and steady ease of lockdown measures, easing of trade friction, stabilization of global value chain, and technological innovation ranked the top 4 main driving forces for global recovery, while in those for Asia recovery, regional trade integration, reinforcing cross-border infrastructure connectivity including through BRI, connecting Euro-Asia ranked 2 and 3, next to pandemic containment.

It is encouraging that BFA members and partners have been contributing to the course of achieving SDGs, especially in proactively transforming their business to new energy, new infrastructure, new retail and low carbon emission sectors. However, their efforts are constrained by unclear understandings of what they can do, how to integrate social targets into their operational business target, and the risks posed to businesses by factors such as climate change. That said, government guidance, supply chain support, and price signals sent from the market are very important in building up the correct incentive mechanism.

The specific cases of the Hyundai Motor Group, Merck, and JD Technology, demonstrated how the enterprises are aligning their businesses with the SDGs, through healthcare support, green transformation and technology innovation.

At the very end, this report puts forward a series of **recommended actions to “build back better”**, as per the UN Secretary General's mantra—to lay groundwork for a sustainable recovery. It calls for the concerted efforts of the governments, the enterprises, the general public, and the international community, to address the negative impacts brought by COVID-19, narrow the four development deficits, and tackle “global governance deficit”, to which multilateralism is the key.



Chapter II

Address Development Deficits in Asia

2.1 Introduction

Asian economies are putting unprecedented efforts to achieve SDGs, however, the perceived goals seem hard to be achieved due to changes in country's priorities and many challenges. Prevailing dilapidated healthcare system, inefficient hard and soft infrastructure to support trade and growth, environmental and climatic issues, and lacking digital transformation, are some of the key challenges that further lagging the Asian economies to achieve the defined SDGs. On top of these challenges, substantial fiscal stimulus is required to meet SDGs. How to structure SDGs holistically especially perceiving integrated approach based on SDGs interconnectedness is also a challenge. Debt restructuring or debt relief might benefit the economies in a short run, but it will bring colossal challenges to fiscal stimuli later. Therefore, continuous fiscal stimulus enhancement through domestic and multilateral organizations is strongly required for the realization of SDGs.

The SDGs contingent on the healthcare system in Asian economies are slow because of unstructured¹ healthcare system. On top of that, the outbreak of COVID-19 has explored the strength and vulnerability of the healthcare system in Asian economies. The outbreak was unprecedented that even pushed the advanced economies in Asia to the edge. The drawbacks of traditional healthcare or medicines include incorrect diagnosis, improper medicine dosage,

poor quality hygiene and lack of disaster preparedness and prevention (Fokunang, 2008; LeBeau, 1998; Teklehaymanot, 2009), which ultimately failed to break the chain of spreading the virus. The overburden in public hospitals increased the huge demand of protective equipment such as masks, gloves, sanitizers, etc. The massive demand created extreme shortage of such types of equipment, and exhausted staff in hospitals (Lancet, T., 2020). As a result, this situation has led to an increase in human and resource costs and the number of infections rose exponentially in the early stages of the epidemic.

Infrastructure in many Asian economies supports both direct and indirect SDGs. However, the infrastructure landscape is uneven across the Asian economies. That is why the countries whose infrastructure landscape improve will accelerate their trade, growth and eventually SDGs. Since the outbreak of COVID-19, governments, border agencies, logistics companies and traders have been exploring how they can leverage existing trade and transport facilitation measures to keep goods moving across borders. The trade and transport facilities operations have been accelerated in the region due to the COVID-19 crises². The COVID-19 crisis exposed Asian economies, infrastructure vulnerability as well.

Climate and environmental factors are another major impediments to Asian SDGs. Initially, Asia used to have less contribution to global Green House Gas (GHG) emissions. However, as the economies expand

¹ Didn't develop with passage of time. Institutional and financial arrangements are weak.

² ADB and UN ESCAP, <https://www.unescap.org/kp/2021/regional-cooperation-trade-and-transport-connectivity-age-pandemics-asia-and-pacific-0>

rapidly, the GHG emissions in Asia are in increasing trend. In the ASEAN region, the GHG emissions quantity increased from 404 MMT in 1990 to 1747 MMT in 2018. The increase in GHG emissions, mainly anthropogenic, will cause global warming and have severe ecological impacts¹ such as an increase in the frequency of floods, extreme storms, rise of the sea level, damage to water system and uneven temperature that will eventually cause obstacles to the achievements of related SDGs.

The 21st century marks a turning point in human history, known as the Digital Age, and world economies are shifting to digitalization. The global economy is becoming digital by adopting new digital technologies to accelerate operations, with major implications for *2030 Agenda on Sustainable Development*, and digital technologies have the potential to greatly affect the achievement of the SDGs (*Digital Economy Report, 2019. UNCTAD*). The United States and China are the top leading countries developing such digital technology, whereas many other countries are sprawling far behind in digital technology.

The global pandemic by COVID-19 has demonstrated the importance of digital transformation. Quarantine measures are accelerating the digital transformation in the areas of e-commerce, finance, telecommunications, and digital entertainment in many countries. The most important thing is that hopefully, in the next two years, the COVID-19 vaccine will be fully developed and administered and the spread will be stopped, but the patterns and cultures that have developed during this time, such as virtual office or working from home, will not disappear. That's why businesses are gaining momentum in digital transformation. According to the OECD's policy brief (2020)², the COVID-19 crisis accelerated an expansion of e-commerce towards new firms, customers and types of products. Thus, the current situation opens up many opportunities for digital transformation, as well as many governance challenges.

2.2 Narrowing Health Deficit

2.2.1 Healthcare System Landscape

Every country in the world is seriously finding new ways to improve the healthcare system and learning to manage health crises. However, it is observed during the COVID-19 pandemic that the prevailing healthcare system is not able to manage crises efficiently. The crises of COVID-19 pose huge healthcare challenges to Asian economies. According to the average Global Health Security Index (2019), most of the Asian economies were not well prepared for a pandemic. The average Global Health Security (GHS) Index was 40.2/100³ and the health security index for high-income countries was 51.9/100. However, the report⁴ reveals that the capacity of the government in terms of preparedness for epidemics and pandemic is relatively sluggish. The report also found that 75 percent of the countries had a low score to biosecurity including emergency response and other countermeasures⁵.

Figure 2-1 shows the health and security index for some Asian economies. It categorized the economies into three different index level; most prepared (67-100), more prepared (33-66) and least prepared (0-33). The figure shows that, according to GHI index 2019, Thailand and Korea were among the most prepared and globally ranked 6 and 9 respectively out of 195 economies, Pakistan and Kazakhstan were among the least prepared countries to cater the health crises due to the lack of resources. Yet all economies showed insufficient preparedness in the face of the COVID-19 pandemic.

Healthcare system in Asia varies with financial endowments that predominantly linked with financial schemes⁶ to generate financial resources. Countries that are financially sound have more allocation to health expenditures. Figure 2-2 shows the trend of health expenditure as a percentage of Gross Domestic

1 Anthropogenic Carbon Emission, https://energyeducation.ca/encyclopedia/Anthropogenic_carbon_emissions#:~:text=Anthropogenic%20carbon%20emissions%20are%20the,a%20net%20increase%20in%20emissions.

2 E-commerce in the times of COVID-19, https://read.oecd-ilibrary.org/view/?ref=137_137212-t0fjgnerdb&title=E-commerce-in-the-times-of-COVID-19

3 The GHS Index.

4 <https://www.ghsindex.org/data-stories/global-catastrophic-biological-risks-index-finds-weak-global-capacity/>

5 Global Health Security Index: Data stories — Global Catastrophic Biological Risks: Index Finds Weak Global Capacity, <https://www.ghsindex.org/data-stories/global-catastrophic-biological-risks-index-finds-weak-global-capacity/>

6 Government schemes and compulsory contributory healthcare financing schemes, voluntary healthcare payment schemes, household out-of-pocket payment, rest of the world financing schemes (non-resident).

Product (GDP) in some Asian countries. Figure 2-3 shows health expenditure as a percentage of GDP in some Asian countries in 2018. In Figure 2-2, Japan stood as a top country in healthcare expenditure

that is nearly 11 percent of GDP in 2018. Japan is followed by Korea; Bangladesh, Indonesia, Kazakhstan and Pakistan are the least countries for healthcare expenditure as of GDP percentage.



Figure 2-1 Health and Security Index for Some Asian Economies

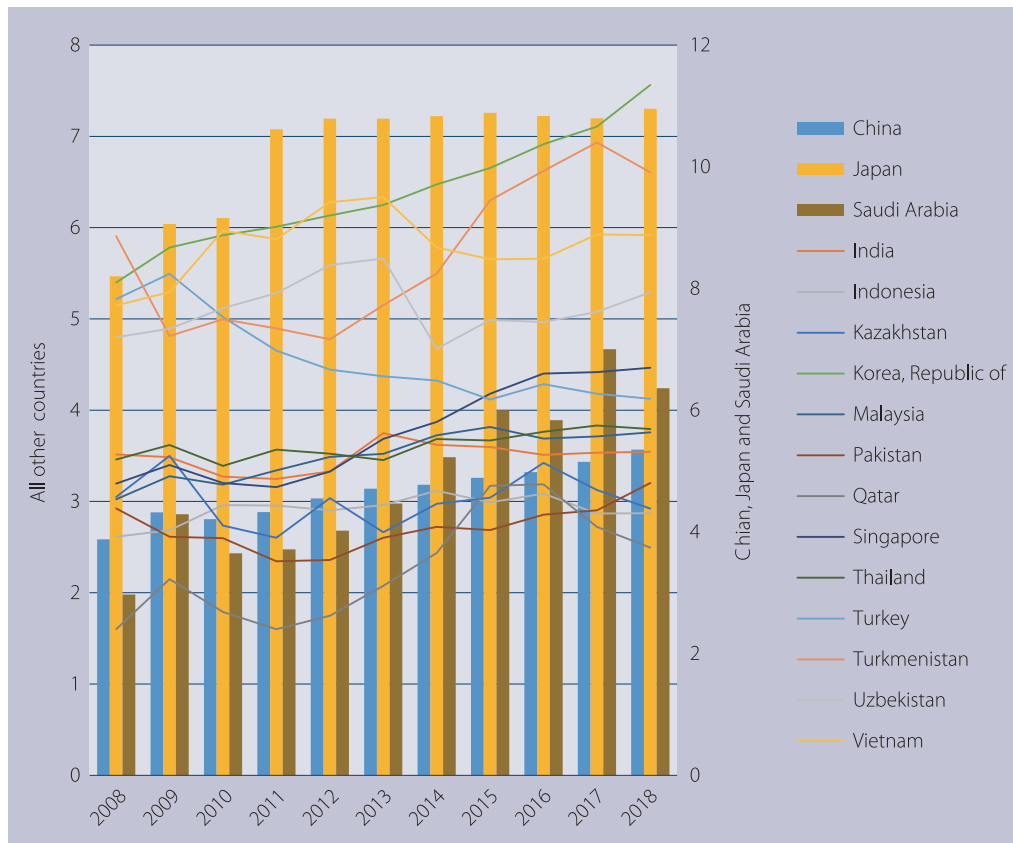


Figure 2-2 Healthcare Expenditure (Percent of GDP)

Source: World Development Indicators, World Bank, 2020.

Similarly, if we look at the per capita health expenditure (See Table 2-1), Japan has the highest per capita expenditure that is USD 4,267, around 85 percent of these expenditures beard by the Japanese government while only 15 percent goes out of the private expenditure. Singapore is the second most country on the table with USD 2,834 per capita on

healthcare expenditure (both private and government share are around 50 percent). Pakistan and India are the least countries in the list with USD 42.87 and USD 72.84 per capita respectively, whereas their government share is 35.53 percent for Pakistan and 26 percent for India of total healthcare expenditure.

Table 2-1 Healthcare Expenditure, 2018 (per capita, USD)

Country	Total Expenditure	Domestic Government	Domestic Private	External Health
	2018	2018	2018	2018
China	501.06	282.68	218.38	<0.01
India	72.83	19.63	52.70	0.51
Indonesia	111.68	55.09	56.17	0.42
Japan	4266.59	3587.74	678.85	0
Kazakhstan	275.85	167.82	107.61	0.43
Malaysia	427.22	218.65	208.51	0.05
Pakistan	42.87	15.24	27.38	0.26
Singapore	2823.64	1421.57	1402.07	0
Thailand	275.92	210.45	64.54	0.92
Vietnam	151.69	69.11	79.78	2.80

Source: WDI, World Bank, 2020.

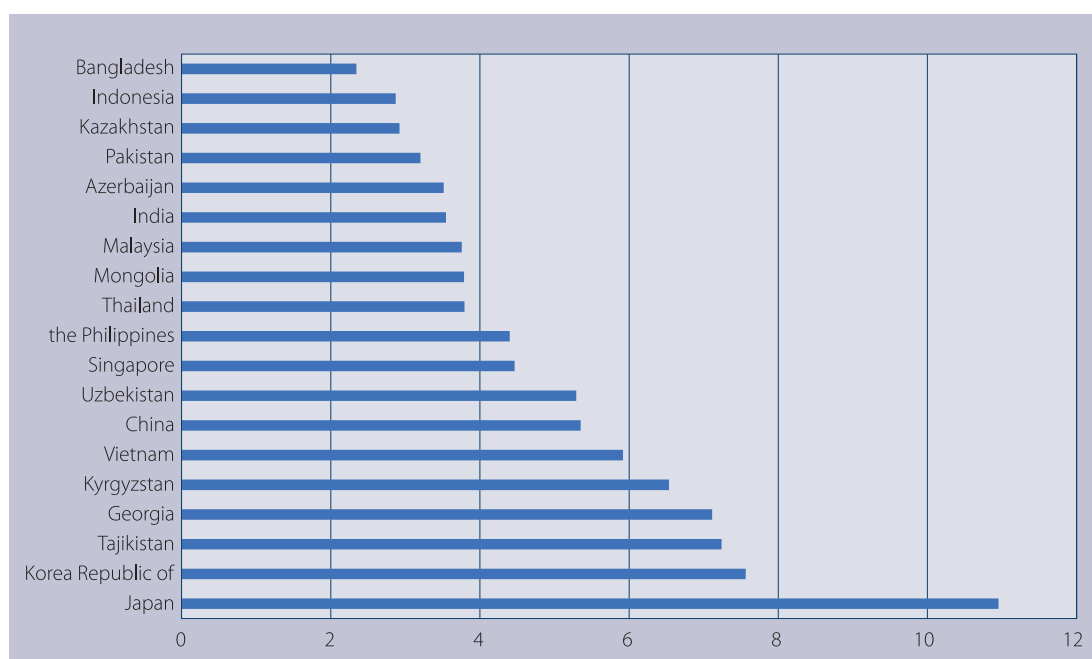


Figure 2-3 Healthcare Expenditure, 2018 (Percent of GDP)

Source: World Health Organization (WHO), Global Health Expenditure Database.

The COVID-19 pandemic has exposed every country across the globe that there was a considerable deficiency of medical resources as the number of infections increased. Nearly every hospital in the world has experienced a dearth of medical resources such as ventilator machines, oxygen regulators, personal protectives, gloves, surgical masks, disposable isolation gowns, eye protection and lifesaving medicines during the pandemic. It created a demand and supply gap, and available equipment was highly inadequate (Sun et al., 2021). Further, the number of beds available in the hospitals was scarce due to the increasing number of infected patients with COVID-19 (Chen et al., 2020). Lack of trained medical staff has further worsened the healthcare burden. Universal healthcare system might be a proposed solution, however, its practicability in terms of funds availability and implementation mechanism might be a challenge for most of the developing economies.

2.2.2 Personal Protective Goods/Medical Goods and Trade Facilitation Measures

The unprecedented impacts of the COVID-19 crises

have been placed on social wellbeing, human health, and global trade (Shrestha, 2020). It brought substantial attention to trade in medical products. Many governments have responded with certain measures including the supplies of personal protective goods/medical goods and trade facilitation measures, such as facilitating trade of medical goods and restricting export goods. Under this facilitation, more than 250 trade-related measures have been executed in the context of COVID-19¹.

Table 2-2 shows the import and export data of medical-related pharmaceutical products. In the table, India is the biggest exporter of pharmaceutical products (USD 16,264,000 thousand) and has significantly increased its exports in pharmaceutical products in a decade. India is followed by China (USD 9,165,509 thousand) and Singapore (USD 8107010 thousand), both countries had increased their pharmaceutical export as compared with 2009. In the table, China is the largest country importing pharmaceutical products (USD 33,614,184 thousand in 2019), followed by Japan and Vietnam.

Table 2-2 Asia Economies' Import and Export of Pharmaceutical Products (Thousand USD)

Countries	Exports		Imports	
	2009	2019	2009	2019
China	2,903,409	9,165,509	6,015,012	33,614,184
India	5,005,349	16,264,000	1,077,859	2,525,996
Indonesia	205,335	556,162	380,418	912,232
Japan	2,960,780	6,370,928	13,058,253	27,227,564
Kazakhstan	20,146	58,902	759,625	1,156,897
Korea, Republic of	919,446	3,922,653	3,036,303	7,080,960
Malaysia	133,944	306,299	938,609	1,646,829
Pakistan	118,884	217,587	538,546	798,165
Singapore	4,218,764	8,107,010	1,705,287	3,190,537
Thailand	272,478	593,184	1,342,714	2,510,894
Vietnam	33,845	185,994	1,178,484	3,315,227

Source: Trade Map, 2020.

¹ The WTO report shows that members moving to facilitate imports even as trade restrictions remain high. https://www.wto.org/english/news_e/news20_e/trdev_24jul20_e.htm. See also WTO Report on G20 Trade Measures (Mid-October 2019 to May 2020) (WTO, June 2020) available at https://www.wto.org/english/news_e/news20_e/report_trdev_jun20_e.pdf

To facilitate personal protective equipment (PPE) trade, the applied tariff rate has been reduced in some countries. Figure 2-4 shows the applied tariff rates on COVID-19 relevant medical products. The medical products include medicine, medical supplies, medical

equipment, and personal protective¹. The figure shows that Singapore and Japan have the lowest tariff rate on all medical products in the context of COVID-19. Whereas Malaysia, India and Pakistan have the highest tariff rate on medical products.

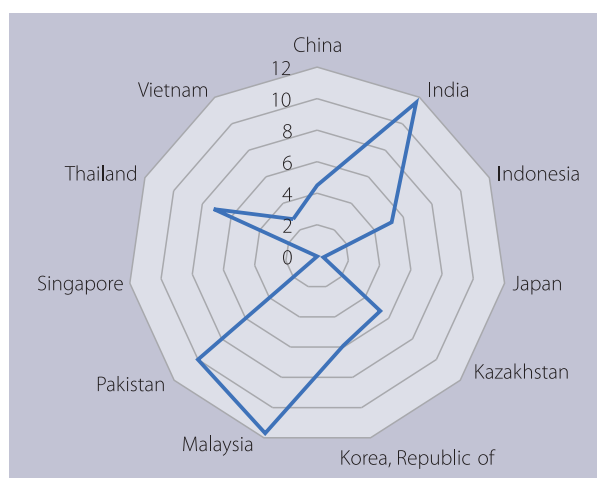


Figure 2-4 Tariff Rates on All Medical Products (in Percentage)

Source: WTO Secretariat, 2020.

Table 2-3 shows the different tariff rates on medical products. First, Pakistan and India have the highest tariff rate whereas Japan and Singapore have zero tariffs for medicinal products. Second, Malaysia has the highest tariff rate that is 32 percent and

Singapore and Japan have the lowest tariff for medical supplies. As of the tariff rates on medical equipment and personal protective, India have highest rate and Singapore and Japan has the lowest rate for such supplies.

Table 2-3 Latest Tariff Rate on Medical Products (In Percentage)

Country	Medicines				Protective Products
	All Products	Drugs	Supplies	Equipment	
China	4.5	2.1	7.4	2.5	7.2
India	11.6	10	15	9	12
Indonesia	5.2	3.8	5.5	4.5	10.5
Japan	0.4	0	0.8	0	1.8
Kazakhstan	5.3	0.2	13	1.1	5.2
Korea, Republic of	5.9	6.9	8.1	1.5	7.1
Malaysia	11.7	0	32	0.3	6
Pakistan	10	10.9	13.4	3.6	13.1

1 Critical medical products include: disinfectants/ sterilization products; face masks; gloves; hand soap and hand sanitizer; patient monitors and pulse oximeters; protective spectacles and visors; sterilizers; syringes; thermometers; ultrasonic scanning apparatus; ventilators, oxygen masks; X-ray equipment; and other devices such as computer tomography apparatus. https://www.wto.org/english/tratop_e/covid19_e/medical_goods_update_e.pdf

(continued)

Country	Medicines				Protective Products
	All Products	Drugs	Supplies	Equipment	
Saudi Arabia	4.1	0	4.5	4.6	8.7
Singapore	0	0	0	0	0
Thailand	7.2	7.6	11.9	0.8	7.4
Turkey	2	0	3.9	1	4
Vietnam	2.8	0.8	4.3	0.2	11.4

Source: WTO Secretariat, 2020.

2.2.3 COVID-19 and Challenges for the Healthcare System

The COVID-19 has spread all across the world, millions of people have been infected, and an increasing number of people died of COVID-19. In countries where governments are unable to taking stringent measures to break the virus chain, it may badly affect the flow of trade across territories especially for

medical goods¹.

Table 2-4 shows the COVID-19 update. As of March 7, 2021, India has nearly 11.23 million (8,137.1 per million cases) registered cases and 157,853 (114.4 death per million) people died due to COVID-19. The last column in Table 2-4 is indicating the percentage of hand wash facility. Kazakhstan has the highest handwashing facility in context on COVID-19.

Table 2-4 Health System and COVID-19

Country	Date	Total Case	Total Cases (per million)	Total Death	Total Death (per million)	Hand Wash Facility
Asia	2021-03-07	25,565,522	5,510.0	404,340	87.1	n/a
China	2021-03-07	101,132	70.3	4,838	3.4	n/a
India	2021-03-07	11,229,398	8,137.2	157,853	114.4	59.6
Indonesia	2021-03-07	1,379,662	5,044.0	37,266	136.2	64.2
Japan	2021-03-07	439,356	3,473.8	8,255	65.3	n/a
Kazakhstan	2021-03-07	268,327	14,290.4	3,184	169.6	99.0
Malaysia	2021-03-07	313,460	9,684.9	1,169	36.1	n/a
Pakistan	2021-03-07	592,100	2,680.5	13,227	59.9	59.6
Qatar	2021-03-07	166,949	57,947.1	262	90.9	n/a
Saudi Arabia	2021-03-07	379,831	10,910.3	6,528	187.5	n/a
Singapore	2021-03-07	60,033	10,261.5	29	5.0	n/a
Korea, Republic of	2021-03-07	92,817	1,810.4	1,642	32.0	n/a
Thailand	2021-03-07	26,441	378.8	85	1.2	90.7
Turkey	2021-03-07	2,780,417	32,967.1	29,030	344.2	n/a
Vietnam	2021-03-07	2,512	25.8	35	0.4	85.8

Source: Our World In Data, 2021.

1 Trade in Medical Goods in the Context of Tackling COVID-19, https://www.wto.org/english/news_e/news20_e/rese_03apr20_e.pdf

Figure 2-5 shows the hospital bed status, as bed per thousand of population. Demographic trend in Asia are worrisome. In the next 20 years, the number of people aged 65 and above (senior citizens) in Asia will be doubled from 412 million to 802 million¹. To scale up the vaccine production healthcare

infrastructure needs to be expanded. According to the statistics, Japan and Korea have the highest number of beds that is 13 and 12 bed per thousand respectively. Whereas India, Indonesia and Pakistan have less than 1 bed per thousand of their population.

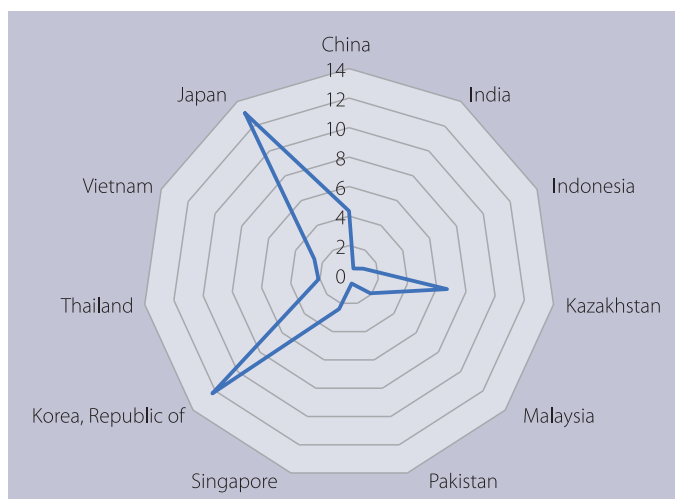


Figure 2-5 Hospital Bed (per thousand)

Source: Our World in Data, 2021.

2.2.4 COVID-19 Vaccines Initiatives

Human life is badly affected by the COVID-19 pandemic. To bring everything back to normal, experts worldwide have attempted to create safe and

effective COVID-19 vaccines and now around the globe several vaccines have been authorized and several in the development stage (See Column 2-1 and Table2-5).

Column 2-1 Authorized/Approved Vaccines

Number	Name	Vaccine Type	Primary Developers	Country of Origin	Authorization/Approval
1	Comirnaty (BNT162b2)	mRNA-based vaccine	Pfizer, BioNTech; Fosun Pharma	Multinational	Albania; Andorra; Argentina; Aruba; Australia; Bahrain; Brazil; Canada; Caribbean; Chile; Colombia; Costa Rica; Ecuador; European Union; Faroe Islands; Greenland; Hong Kong SAR, China; Iceland; Iraq; Israel; Japan; Jordan; Kuwait; Lebanon; Liechtenstein; Malaysia; Mexico; Monaco; New Zealand; North Macedonia; Norway; Oman; Panama; the Philippines; Qatar; Rwanda; Saint Vincent and the Grenadines; Saudi Arabia; Serbia; Singapore; Korea; Suriname; Switzerland; UAE; UK; the US; Vatican City; WHO

¹ Increase will primarily be driven in China, India, Indonesia, Bangladesh and Vietnam.

(continued)

Number	Name	Vaccine Type	Primary Developers	Country of Origin	Authorization/Approval
2	Moderna COVID-19 Vaccine (mRNA-1273)	mRNA-based vaccine	Moderna, BARDA, NIAID	the US	Andorra, Canada, European Union, Faroe Islands, Greenland, Iceland, Israel, Liechtenstein, Norway, Qatar, Saint Vincent and the Grenadines, Singapore, Switzerland, UK, the US, Vietnam
3	COVID-19 Vaccine AstraZeneca (AZD1222); also known as Covishield	Adenovirus vaccine	BARDA, OWS	UK	Andorra; Argentina; Bahrain; Bangladesh; Barbados; Brazil; Canada; Chile; Dominican Republic; Ecuador; El Salvador; Egypt; Ethiopia; European Union; Faroe Islands; Gambia; Ghana; Greenland; Guyana; Hungary; Iceland; India; Indonesia; Iraq; Ivory Coast; Malawi; Malaysia; Maldives; Mauritius; Mexico; Morocco; Myanmar; Nepal; Nigeria; Norway; Pakistan; the Philippines; Rwanda; Saint Vincent and the Grenadines; Serbia; Sierra Leone; South Africa; Korea; Sri Lanka; Sudan; Suriname; Taiwan, China; Thailand; UK; Vietnam
4	Sputnik V	Recombinant adenovirus vaccine (rAd26 and rAd5)	Gamaleya Research Institute, Acellena Contract Drug Research and Development	Russia	Algeria, Angola, Argentina, Armenia, Azerbaijan, Bahrain, Belarus, Bolivia, Congo, Djibouti, Egypt, Gabon, Ghana, Guatemala, Guinea, Guyana, Honduras, Hungary, Iran, Iraq, Jordan, Kazakhstan, Kenya, Kyrgyzstan, Laos, Lebanon, Mexico, Moldova, Mongolia, Montenegro, Morocco, Myanmar, Namibia, Nicaragua, North Macedonia, Pakistan, Palestine, Paraguay, Republika Srpska, Russia, Saint Vincent and the Grenadines, San Marino, Serbia, Slovakia, Sri Lanka, Syria, Tunisia, Turkmenistan, United Arab Emirates, Uzbekistan, Venezuela, Zimbabwe
5	COVID-19 Vaccine Janssen (JNJ-78436735; Ad26COV2S)	Non-replicating viral vector	Janssen Vaccines (Johnson & Johnson)	the Netherlands, the US	Andorra, Bahrain, Canada, European Union, Faroe Islands, Greenland, Iceland, Liechtenstein, Norway, Saint Vincent and the Grenadines, the US, WHO
6	CoronaVac	Inactivated vaccine (formalin with alum adjuvant)	Sinovac	China	Azerbaijan; Bolivia; Brazil; Cambodia; China; Chile; Colombia; Dominican Republic, Ecuador; Hong Kong SAR, China; Indonesia; Laos; Malaysia; Mexico; Thailand; Tunisia; Turkey; Paraguay; the Philippines; Ukraine; Uruguay; Zimbabwe
7	BBIBP-CorV	Inactivated vaccine	Beijing Institute of Biological Products; China National Pharmaceutical Group (Sinopharm)	China	Argentina; Bahrain; Cambodia; China; Egypt; Hungary; Iraq; Jordan; Laos; Macau SAR, China; Morocco; Nepal; Pakistan; Peru; Senegal; Serbia; Seychelles; UAE; Venezuela; Zimbabwe

(continued)

Number	Name	Vaccine Type	Primary Developers	Country of Origin	Authorization/Approval
8	EpiVacCorona	Peptide vaccine	Federal Budgetary Research Institution State Research Center of Virology and Biotechnology	Russia	Russia, Turkmenistan
9	Convidicea (Ad5-nCoV)	Recombinant vaccine (adenovirus type 5 vector)	CanSino Biologics	China	Mexico, China, Pakistan
10	Covaxin	Inactivated vaccine	Bharat Biotech, ICMR	India	India, Zimbabwe
11	No name announced	Inactivated vaccine	Wuhan Institute of Biological Products; China National Pharmaceutical Group (Sinopharm)	China	China
12	CoviVac	Inactivated vaccine	Chumakov Federal Scientific Center for Research and Development of Immune and Biological Products	Russia	Russia
13	ZF2001	Recombinant vaccine	Anhui Zhifei Longcom Biopharmaceutical, Institute of Microbiology of the Chinese Academy of Sciences	China, Uzbekistan	China, Uzbekistan

Source: Regulatory Affairs Professionals Society (RAPS)¹.

Table 2-5 Authorization/Approval Date of Some Vaccines that Have Been Launched/Approved by Asian Economies

Economies	Authorization /Approval Date	Vaccine Species
United Arab Emirates	9/23/2020	Sinopharm (inactivated vaccine)
	unknown	Wuhan Sinopharm (inactivated Vaccine)
Pakistan	1/15/2021	Oxford University&AstraZeneca (adenovirus vector vaccine)
	1/18/2021	Sinopharm (inactivated vaccine)
	1/24/2021	Satellite V (adenovirus vector vaccine)
	2/12/2021	CanSinoBIO (adenovirus vector vaccine)

¹ Visited: 21/03/2021, Time: 10: 10 AM (PKT), <https://www.raps.org/news-and-articles/news-articles/2020/3/covid-19-vaccine-tracker#2>

(continued)

Economies	Authorization /Approval Date	Vaccine Species
Bahrain	11/3/2020	Sinopharm (inactivated vaccine)
	12/4/2020	Pfizer (mRNA vaccine)
	2/10/2021	Satellite V (adenovirus vector vaccine)
	2/25/2021	Johnson & Johnson (adenovirus vector vaccine)
the Philippines	1/29/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
	2/22/2021	Kexing / CoronaVac (inactivated vaccine)
Kazakstan	2/1/2021	Satellite V (adenovirus vector vaccine)
Korea, Republic of	2/10/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
Kyrgyzstan	2/23/2021	Satellite V (adenovirus vector vaccine)
Cambodia	2/4/2021	Sinopharm (inactivated vaccine)
Kuwait	12/13/2020	Pfizer (mRNA vaccine)
Laos	unknown	Kexing / CoronaVac (inactivated vaccine)
Lebanon	12/27/2020	Pfizer (mRNA vaccine)
Maldives	1/29/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
Malaysia	12/21/2020	Oxford University & AstraZeneca (adenovirus vector vaccine)
	1/11/2021	Pfizer (mRNA vaccine)
	1/14/2021	Kexing / CoronaVac (inactivated vaccine)
Mongolia	1/11/2021	Moderna (mRNA vaccine)
	1/11/2021	Pfizer (mRNA vaccine)
	1/11/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
	2/9/2021	Satellite V (adenovirus vector vaccine)
Myanmar	1/22/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
	2/6/2021	Satellite V (adenovirus vector vaccine)
Nepal	1/21/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
	2/18/2021	Sinopharm (inactivated vaccine)
Japan	2/14/2021	Pfizer (mRNA vaccine)
Saudi Arabia	12/10/2020	Pfizer (mRNA vaccine)
	2/18/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)

(continued)

Economies	Authorization /Approval Date	Vaccine Species
Sri Lanka	1/22/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
Thailand	1/21/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
	2/22/2021	Kexing / CoronaVac (inactivated vaccine)
Turkey	1/14/2021	Kexing / CoronaVac (inactivated vaccine)
Singapore	2/3/2021	Moderna (mRNA vaccine)
Syria	2/22/2021	Satellite V (adenovirus vector vaccine)
Armenia	2/1/2021	Satellite V (adenovirus vector vaccine)
Iraq	12/27/2020	Pfizer (mRNA vaccine)
	1/19/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
	1/19/2021	Sinopharm (inactivated vaccine)
Iran	1/26/2021	Satellite V (adenovirus vector vaccine)
Israel	1/28/2021	Pfizer (mRNA vaccine)
Indonesia	1/11/2021	Kexing / CoronaVac (inactivated vaccine)
Jordan	3/1/2021	Sinopharm (inactivated vaccine)
Vietnam	1/30/2021	Oxford University & AstraZeneca (adenovirus vector vaccine)
Chinese mainland	12/31/2020	Sinopharm (inactivated vaccine)
	2/5/2021	Kexing / CoronaVac (inactivated vaccine)
	2/25/2021	CanSinoBIO (adenovirus vector vaccine)
	2/25/2021	Wuhan Sinopharm (inactivated Vaccine)
Hong Kong SAR, China	2/8/2021	Pfizer (mRNA vaccine)
	2/26/2021	Kexing / CoronaVac (inactivated vaccine)

Source: Caixin database.

Vaccination campaigns against the coronavirus are underway in Asia, the progress on vaccination has been mixed. West Asian countries are leading the way. The government of the United Arab Emirates approved Chinese vaccines for emergency use in September 2020. The UAE, Israel, Saudi Arabia, Kuwait, China, Singapore have started their vaccination programmes in December 2020. India launched its nationwide COVID-19 vaccination programme in

January 2021. In Southeast Asia, Indonesia and Singapore have started vaccination campaigns by January 2021. Japan, Korea, Kazakhstan, Malaysia, Pakistan and several Southeast Asian countries began inoculating their populations in February 2021. By the end of February 2021, the vaccinated population in Israel and the UAE has exceeded 55 percent and 35 percent respectively, among the highest in the world. According to Our World in Data, as of March 21, 2021,

3.8 doses have been administered per 100 people in Asia. The biggest challenge is not the development and authorization of the vaccines but the cold chain

(cold storage facilities etc) in the deployment of the vaccines.

Table 2-6 Vaccination Status of Some Asian Countries

Country	Period	Cumulated Vaccination	Vaccination (per 100 people)
China	15 Dec, 2020 to 28 Feb, 2021	52,520,000	3.65
India	15 Dec, 2020 to 6 March, 2021	20,990,000	1.52
Indonesia	1 Jan, 2021 to 7 March, 2021	4,020,000	1.47
Japan	17 Feb, 2021 to 5 March, 2021	46,469	0.04
Kazakhstan	31 Jan. 2021 to 24 Feb, 2021	22,294	0.12
Malaysia	23 Feb, 2021 to 5 March, 2021	112,914	0.35
Pakistan	2 Feb, 2021 to 21 Feb, 2021	72,882	0.03
Qatar	22 Dec, 2020 to 7 March, 2021	327,000	11.35
Saudi Arabia	6 Jan, 2021 to 7 March, 2021	1,330,000	3.83
Singapore	11 Jan, 2021 to 4 March, 2021	565,000	9.66
Korea, Republic of	25 Feb, 2021 to 6 March, 2021	565,000	0.62
Thailand	27 Feb, 2021 to 2 March, 2021	7,262	0.01
Turkey	13 Jan, 2021 to 6 March, 2021	9,920,000	11.76

Source: Our World in Data, 2021.

2.2.5 Recovery Actions and Initiatives

Asian economies¹ have taken a number of actions and initiatives at the individual and at collective level to overcome the negative health related consequences. China has achieved several health-related SDGs. However, China still faces health challenges. To address the health challenges, in October 2016, the government of China has announced “Healthy China 2030” (HC 2030) as a health and development agenda and proposed the four core principles of healthy priority, innovation and reform, scientific development, and fairness and justice. HC 2030 has potential to gain the benefits for the rest of the world.

In 2012, the Singapore government launched a comprehensive “Healthcare 2020 Masterplan” for its

citizens. Its goals are to improve access, affordability and quality of healthcare services for Singaporeans. In 2014, Singapore government launched a healthy living master plan to promote healthy living as accessible, natural, and effortless healthcare facilities. Singapore's healthcare system has been characterized by having high coverage of essential services and low out-of-pocket spending. The government of Singapore has launched a mobile phone application “TraceTogether” that alerts an individual to maintain a significant distance. The application records number of encounters/meetings, etc., and it stored 21 days of information. Ministry of health and other relevant authorities can easily trace with those persons to whom an infected person has an interaction². Korea and Singapore have maintained

1 Discussing each and every action and initiative for every country is not possible, so we will try to discuss some of the Asian economies.

2 <https://www.mobihealthnews.com/news/apac/singapore-government-launches-new-app-contact-tracing-combat-spread-covid-19#:~:text=>

one of the lowest per-capita COVID-19 mortality rates in the world.

“Saudi Arabia Vision 2030” aims to drive the digital transformation of health systems and encourage new partnerships between public and private sectors for improved clinical and financial outcomes. It helps to stimulate the number of health services in Saudi Arabia, and is a critical ingredient of achieving SDGs 2030. Vision 2030 also helps improve population health and emphasizes achieving the SDG-3¹ that “ensure healthy lives and promote well-being for all at all ages” (Daher-Nashif and Bawadi, 2020).

Pakistan has come up with the “National Health Vision (NHV)”² to improve the health of all Pakistanis, particularly women and children, through universal access to affordable quality essential health services, and delivered through the resilient and responsive health system, ready to attain sustainable development goals and fulfil its other global health responsibilities. The vision reflects that the government is committed to investing in the health sector as its top priority.

Malaysian government has restricted interaction, imposes strict measures at airport, bus stations and hospitals, etc, also introduced “Movement Control Order” in mid March 2020 to control COVID-19 expansion. On top of this, Ministry of Health introduced virtual health advisory to facilitate patients.

In April 2020, ASEAN leaders agreed to established the COVID-19 ASEAN Response Fund under which medical supplies and other important protectives could be procured³. One of ASEAN’s main COVID-19 initiatives is the ASEAN Comprehensive Recovery Framework (ACRF), which serves as the region’s consolidated exit strategy from the COVID-19

crisis. The ACRF and its Implementation Plan was adopted at the 37 ASEAN Summit in November 2020⁴. At the same Summit, ASEAN members decided to take steps towards the establishment of an ASEAN travel corridor arrangement framework to facilitate essential business travels within ASEAN, while prioritising public health safety⁵.

2.3 Infrastructure and Trade

2.3.1 Infrastructure and Trade Landscape

Infrastructure provides an important path to economic growth. Though significant improvement has been made in power, transport, telecommunications, and other types of infrastructure in Asia, the infrastructure gap in Asia remains huge, especially against the backdrop of ballooning population and fast development of new technology. According to *Global Infrastructure Outlook*⁶, Figure 2-6 shows a picture about the infrastructure investment gap in Asia. The current investment trend is far below the basic required investment, let alone SDGs investment needs. The long term (until 2040) analysis shows that in 2031 investment need with and without SDGs may start to converge. However, the investment gap would remain.

The World Bank data (2018) shows that all the population in the countries had 100 percent access to electricity except Pakistan and India. The water situation was also bad for some countries. Pakistan had a poor water infrastructure, only a fifth of the population had access to clean drinking water. Half of the population in India had access to clean drinking water, and Vietnam also had a poor infrastructure of water access for its population.

in%20contact%20with%20TraceTogether%20works%20by%20exchanging%20short%20distance%20Bluetooth%20signals%20between%20phones,locally%20on%20each%20user's%20phone.

1 https://www.who.int/health-topics/sustainable-development-goals#tab=tab_1

2 National Health Vision (2016–2025), https://extranet.who.int/countryplanningcycles/sites/default/files/planning_cycle_repository/pakistan/national_health_vision_2016-25_30-08-2016.pdf

3 https://asean.org/storage/53-Finalised-and-APPROVED-TOR_COVID-19-ASEAN-Response-Fund.pdf

4 Overall, ASEAN’s recovery efforts will focus on five broad strategies: enhancing health systems; strengthening human security; maximising the potential of intra-asean market and broader economic integration; accelerating inclusive digital transformation; advancing towards a more sustainable and resilient future. https://asean.org/storage/2020/11/2-FINAL-ACRF_adopted-37th-ASEAN-Summit_12112020.pdf

5 https://asean.org/storage/2020/11/5-ASEAN-Declaration-on-an-ASEAN-Travel-Corridor-Arrangement_FINAL.pdf

6 <https://outlook.gihub.org/region/Asia>

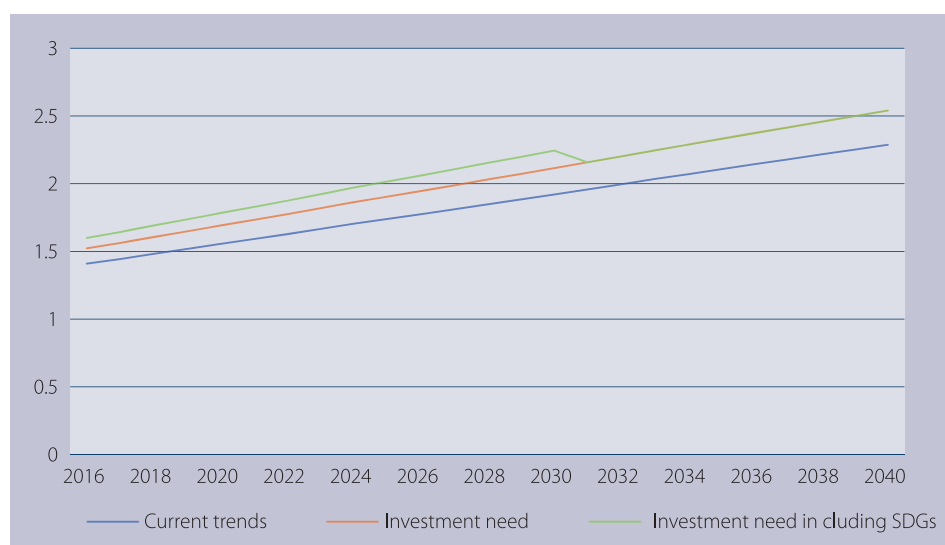


Figure 2-6 Asia Infrastructure Investment Gap (USD trillion)

Source: Global Infrastructure Outlook.

Table 2-7 Asia Infrastructure Investment Need (USD trillion)

	2016	2017	2018	2019	2020	2021	2022	2023
Current trends	1.41	1.44	1.48	1.52	1.56	1.59	1.63	1.67
Investment need	1.52	1.56	1.61	1.65	1.69	1.73	1.77	1.82
Investment need including SDGs	1.60	1.64	1.69	1.74	1.78	1.83	1.87	1.92

	2024	2025	2026	2027	2028	2029	2030	2031
Current trends	1.70	1.74	1.77	1.81	1.85	1.88	1.92	1.96
Investment need	1.86	1.90	1.95	1.99	2.03	2.07	2.11	2.16
Investment need including SDGs	1.97	2.01	2.06	2.10	2.15	2.20	2.24	2.16

	2032	2033	2034	2035	2036	2037	2038	2039	2040
Current trends	1.99	2.03	2.07	2.11	2.14	2.18	2.22	2.25	2.29
Investment need	2.20	2.25	2.29	2.33	2.37	2.41	2.46	2.50	2.54
Investment need including SDGs	2.20	2.25	2.29	2.33	2.37	2.41	2.46	2.50	2.54

Source: Global Infrastructure Outlook.

Facing the significant gap in infrastructure investment, Asian countries have made progress in

increasing investment. Figure 2-7 shows the trend of gross fixed capital, a proxy for infrastructure investment,

as the share of GDP in Asian countries, has been rising steadily since 2000, from 28 percent to around 34 percent in 2018.

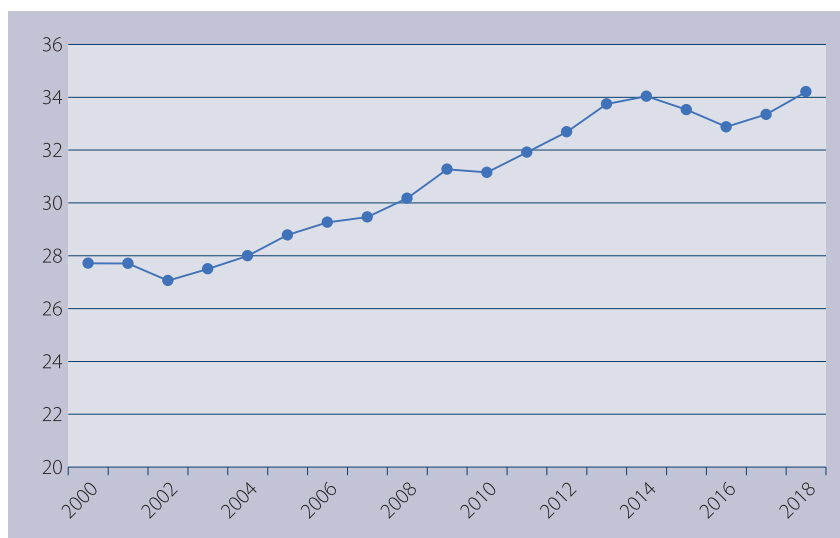


Figure 2-7 Asia Gross Fixed Capital (percent of GDP)

Source: World Bank.

Besides physical or hard infrastructure, for example, transportation, telecommunications, power infrastructure, etc., soft infrastructure is also an important impetus to growth, which includes trade and transportation facilitation measures. Various kinds of free trade agreements have played significant roles in Asia to promote regional trade and investment liberalization and facilitation. The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), coming into force at the end of 2018, and the Regional Comprehensive Economic Partnership (RCEP) signed in 2020, are mega and free trade agreements in this region and help sustain free trade and investment recover in the region during and after the pandemic.

2.3.2 Infrastructure and Trade Facilitation Measures

The physical accumulation of capital is a significantly important determinant of country's growth (Solow, 1956; Romer, 1986). The study shows, there exists a positive impact of gross fixed capital on GDP (Zahir & Rehman, 2019). Fetahi-Vehapi et al. (2015) concluded that "trade openness is likely to benefit countries with higher gross fixed capital formation". Figure 2-7 shows a promising trend from 2002 to

2014, as well as after 2016, which is significantly contributing to Asia's GDP. The role of infrastructure is critical for triggering the pace of economic growth and uplifting living standards. Moreover, it plays an important and significant role in human development and poverty reduction. It is also critical for foreign direct investment and to promote domestic and international trade. Research shows that good quality and improved infrastructure can significantly increase productivity and encourage FDI (Asiedu, 2002; Wekesa et al., 2016; Shah, 2013; Rehman et al., 2011). Vijil and Wagner (2012) have found that the export performance is based on the infrastructure of the exporting country. Whereas, infrastructure such as roads and railways become crucial when it comes to landlocked countries (Limão and Venables, 2001).

The quality of infrastructure not only reduces costs but also facilitates the transportation of goods and services at a quick pace. Figure 2-8 shows that the quality of infrastructure is defined in seven points whereas for the best quality donated by 7, for moderate quality by 4 and poor quality by 1. The infrastructure is considered as the second pillar of the Global Competitive Index. Table 2-8 shows that Singapore, Japan and Korea have the best quality

infrastructure as a pillar of competitiveness and the global ranking out of 155 countries are 2, 4 and 8 respectively. Infrastructure quality not only promotes trade but is highly attractive for investment. Countries

are seeking to augment the efficiency in productivity to strengthen economic stability and accelerate the pace of growth. The region is also investing in modern technologies, education, health, and other infrastructure

Table 2-8 Infrastructure Global Ranking, 2018

Country	Rank
China	46
India	66
Indonesia	52
Japan	4
Kazakhstan	68
Korea, Republic of	8
Malaysia	22
Pakistan	110
Qatar (2016)	23
Saudi Arabia	29
Singapore	2
Thailand	43
Vietnam	79

Source: GCI, WEF, 2018.

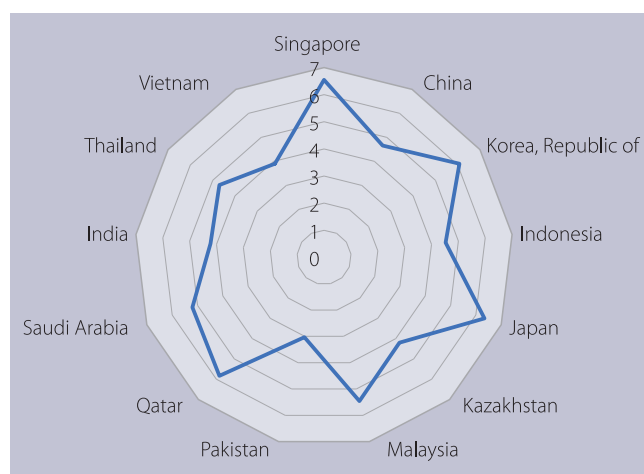


Figure 2-8 Infrastructure Value

To transport goods and services, an important infrastructure is the rail network within countries. The rail infrastructure directly affects regional development; most economic activities heavily depend on rail transport, especially goods'

movement. Figure 2-9 shows the rail lines stretch data from World Bank, where India and China have the longest rail lines infrastructure and Vietnam has the shortest rail lines infrastructure. The data of China's Railway Statistical Bulletin 2019 shows that China's

total rail line mileage has reached 140,000 km in 2019, of which 35,400 km of high-speed rail line was in

operation, more than a quarter of the total rail line mileage.

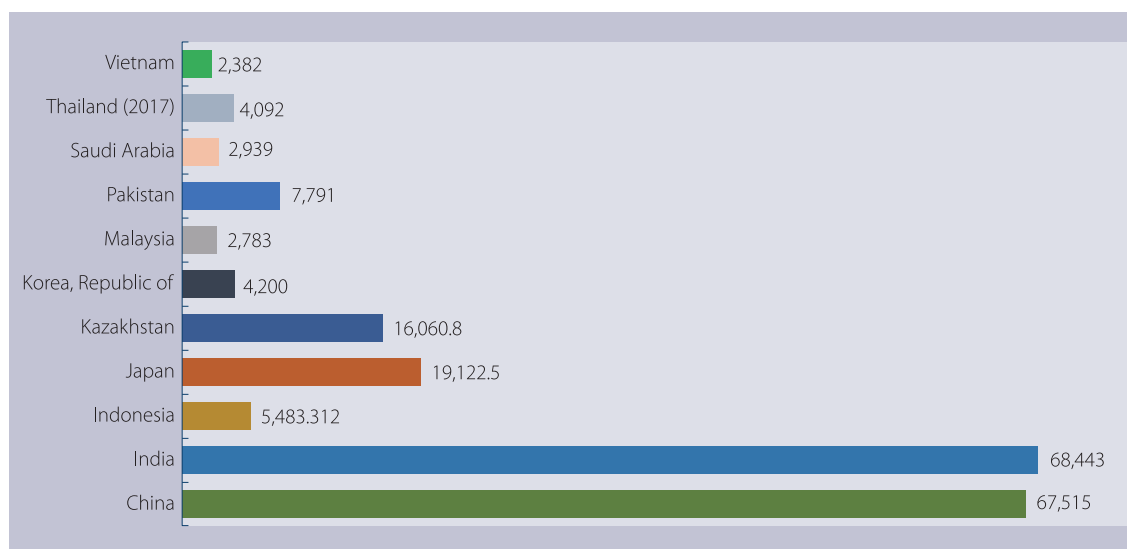


Figure 2-9 Rail Lines (total route, KM)

Source: World Bank, WDI, 2020.

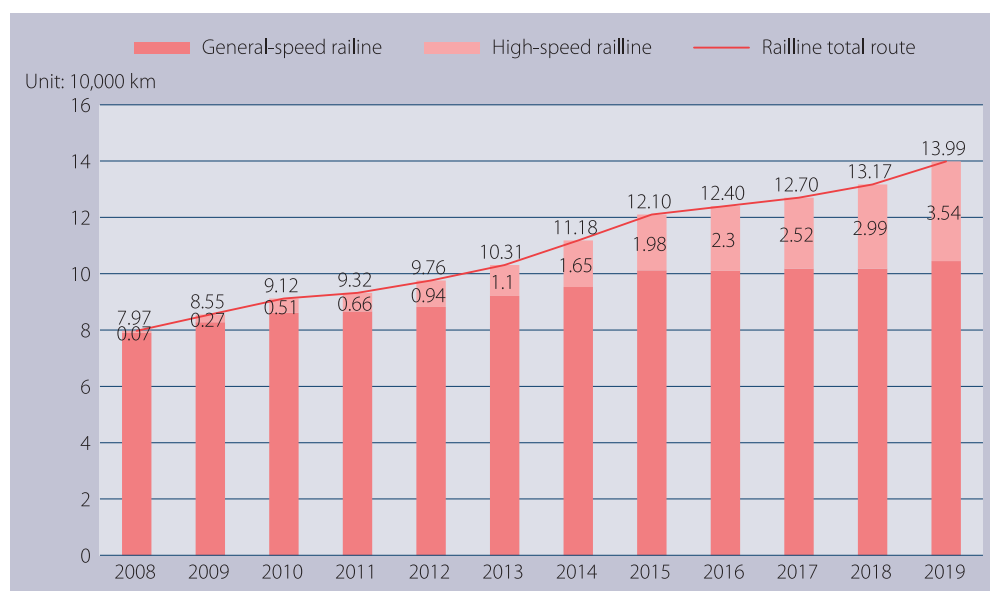


Figure 2-10 China's Rail Lines (Total Route) and High-speed Rail Lines, 2008 - 2019

Source: China's Railway Statistics Bulletin, 2019.

In terms of power infrastructure, multiple subregions in Asia have achieved power grid interconnection. A single ring network covering Kazakhstan, Uzbekistan, Kyrgyzstan and Tajikistan has been formed in Central Asia. In South Asia, there are transmission lines connecting Nepal with India and

Bhutan with India. In Southeast Asia, most countries in the Greater Mekong Subregion have achieved power grid interconnection, such as between Laos, Thailand and Vietnam, and between Malaysia, Thailand and Singapore. In the Middle East, the Gulf Cooperation Council actively promotes cross-border grid

interconnection, which has been achieved between Saudi Arabia, Kuwait, Qatar, Bahrain, the UAE and Oman.

There is no doubt that infrastructure plays a critical role to promote bilateral trade relationships, but gaining access to the market depends on regulatory measures. Only tariff liberalization is not enough for providing market access, the non-tariff measures (NTM) that create a barrier to market access should be addressed on a priority basis. Table 2-9 shows the global ranking of countries by the prevalence of non-trade barriers and the value of their non-trade barriers from the WEF's *Global Competitiveness Report 2017-2018*. Figure 2-11 is Value of Prevalence of Non-Trade Barriers (1-7). The higher the ranking, the stronger the restrictions on non-trade barriers. Among the countries, Singapore has implemented strong restrictions on its non-trade barriers, ranking the first among 137 economies, whereas Pakistan and Vietnam have higher non-trade barriers. However, with the implementation of the CPTPP and the signing of the RCEP, the non-trade barriers of East Asian countries will be significantly reduced.

Table 2-9 Prevalence of Non-Trade Barriers (GCI ranking)

Country	Rank/137	Value (1-7)
China	58	4.5
India	54	4.5
Indonesia	79	4.3
Japan	59	4.5
Kazakhstan	65	4.4
Korea, Republic of	84	4.2
Malaysia	34	4.8
Pakistan	106	3.9
Qatar	8	5.3
Saudi Arabia	55	4.5
Singapore	1	5.9
Thailand	67	4.4
Vietnam	109	3.9

Source: WEF, *The Global Competitiveness Report 2017-2018*.

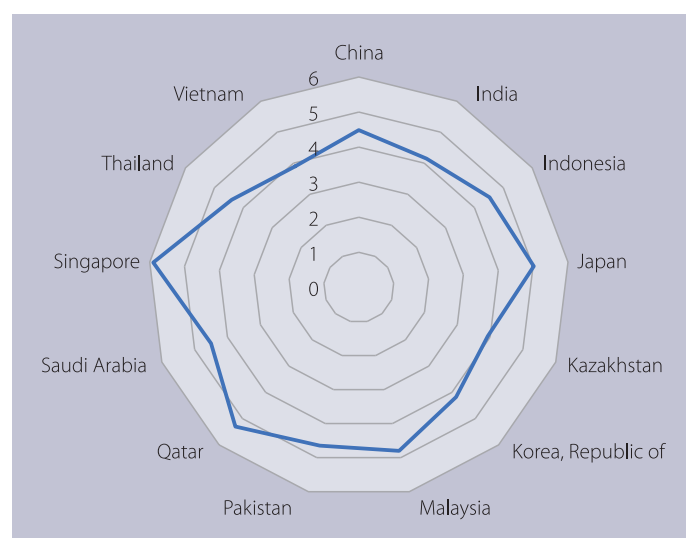


Figure 2-11 Value of Prevalence of Non-Trade Barriers (1-7)

Source: WEF, *The Global Competitiveness Report 2017-2018*.

2.3.3 PPP and Infrastructure Financing

The infrastructure investments are financed through various strategies, including both traditional sources of finances (mostly from the development expenditure, financing assistance, government guarantees, tax

exemption or reduction), and non-traditional sources of finance like attracting Foreign Direct Investment (FDI), tapping the international bond market and having conducive Public Private Partnership (PPP) model.

Figure 2-12 demonstrates the Private Participation in Infrastructure (PPI) for the electricity sector. It shows that Indonesia has heavily invested in electricity. The sum of three consecutive years (2017, 2018, and 2019) was USD 12,550 million and investment in road infrastructure was USD 6,070 million (See Column 2-2).

Indonesia is followed by Vietnam, whose sum of the three consecutive years (2018-2020) was USD 8,149 million. Malaysia and Kazakhstan have the lowest investment in electricity infrastructure that is USD 606 million and USD 672 million (sum of the three consecutive year 2018-2020).

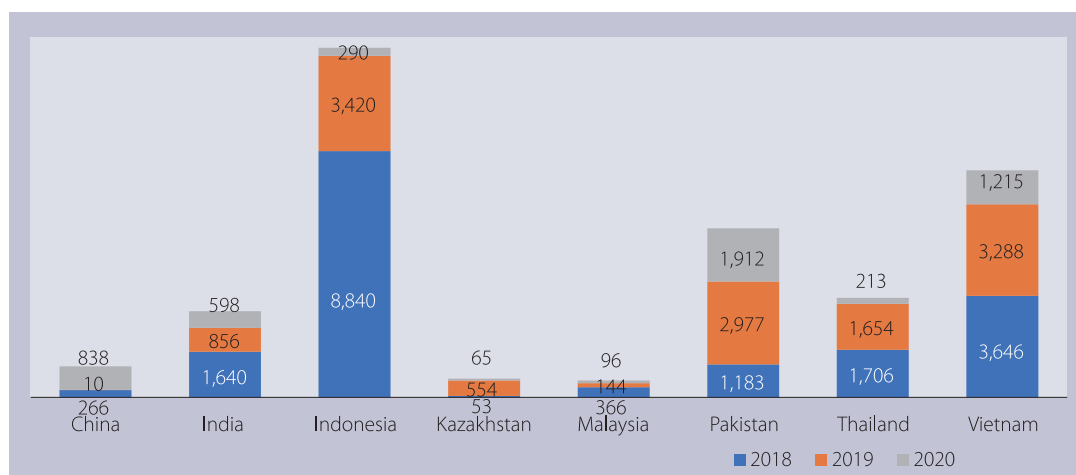


Figure 2-12 PPI in Electricity (USD million)

Source: Author Calculation; World Development Indicators, 2021.

Note: Indonesia and Malaysia: • 2017 • 2018 • 2019

Column 2-2 Private Participation in Infrastructure Investment

	Year	Roads	Airports	Ports
China	2016	815	53 (2008)	282 (2011)
	2017	5,508	198 (2017)	4,024 (2012)
	2018	24,274	1,200 (2018)	399 (2018)
	2019	14,756	261 (2014)	304 (2013)
	2020	768	12 (2015)	745 (2014)
India	2016	2,484.22	584 (2013)	994.1 (2014)
	2017	3,061.49	289 (2017)	109 (2015)
	2018	6,422.88	2,359 (2018)	139 (2016)
	2019	3,334.78	2,618 (2019)	185 (2018)
	2020	1,065.86	n/a	518 (2019)
Indonesia		372 (2006)		
		290 (2007)		
		2,662 (2012)		
		462 (2016)		
		2,904 (2018)		

(continued)

	Year	Roads	Airports	Ports
Kazakhstan	2016			
	2017		31	75
	2018	740		
	2019			
	2020			
Malaysia	2016	381 (2013)	281 (2003)	343 (2004)
	2017		253.3 (2010)	13 (2006)
	2018			151 (2007)
	2019			1,543 (2017)
	2020			
Pakistan	2016			581 (2007)
	2017			305 (2008)
	2018			1,200 (2010)
	2019			240 (2019)
	2020			
Thailand	2016		439 (2004)	
	2017			
	2018			
	2019			
	2020			
Vietnam	2016	133 (2006)		365 (2008)
	2017	276 (2013)		200 (2009)
	2018	4,038 (2019)		155 (2010)
	2019			4.5 (2016)
	2020			

Source: World Development Indicators, 2021

2.3.4 Recovery Actions and Initiatives

In terms of regional infrastructure connectivity, China's "Belt and Road Initiative" has been deeply synergized with the development plans of many Asian countries, such as Mongolia's "Steppe Road" plan, Sri Lanka's "Vision 2030", and Indonesia's "Global Maritime Axis" strategy, and a series of large-scale infrastructure projects are steadily moving forward (See Column 2-3). In 2020, financed by the ADB, a

COVID-19 Test Laboratory named Fire Eye was established in the Philippines by Beijing Genomics Institute, to equip the country better in its fight against the pandemic. And in 2020, the multilateral fund—Multilateral Development Finance Cooperation Centre (MCDF) for Belt and Road Infrastructure (BRI)¹ was established, with six countries donating USD 180 million. In their Moscow Declaration November 2020, the state leaders of the Shanghai Cooperation

1 https://www.zawya.com/mena/en/business/story/BRI_Saudi_Arabia_Egypt_support_new_multilateral_fund_for_Belt_and_Road_infrastructure_projects-ZAWYA20200714130744/

Organization have concurred on the importance of further developing transport cooperation in international highway and rail routes, multimodal transport corridors and logistics centres, etc. The SCO is going to coordinate on integrated transport management.

Column 2-3 List of Selected Connectivity Infrastructure Projects in Asia under the “Belt and Road Initiative” since 2019

Country	Name and Progress	Partners	Related Strategy
the Philippines	COVID 19 Laboratory Huo-Yan (“Fire Eye”): established	Funded by Asian Development Bank, operated by Beijing Genomics Institute	regional and international cooperation against the pandemic
Timor-Leste	Dili to Ainaro Road Development Corridor, the second line: construction started	Loaned by the World Bank, constructed by China Wuyi Co.,Ltd.	Timor-Leste Road Network Upgrading Sector Project
Myanmar	The Kyaukpyu Deep Sea Port: concession agreement reached	China and Myanmar jointly invest in the establishment of a local company to develop, construct, and operate the port in the form of a concession.	The Kyaukpyu Special Economic Zone, China-Myanmar Economic Corridor
Sri Lanka	Port City Colombo: land reclamation completed	China Communications Construction and the Sri Lankan government jointly invest, develop and construct.	Sri Lanka’s “Vision 2030” and its “Great Western Province” national strategy
Pakistan	Lahore Orange Line Metro Train Project: open for business	Financed by the Export-Import Bank of China, jointly constructed by the China National Railway Group Corporation and China North Industries Corporation	China-Pakistan Economic Corridor
Mongolia	Ulaanbaatar Airport Expressway: opened to traffic	Invested by Mongolian government, constructed by China Railway Group	Mongolia’s “Steppe Road” Program
Bangladesh	The Karnaphuli River Bottom Tunnel Project: the left line tunnel completed and the right line tunnel to bore	Financed by the Export-Import Bank of China, constructed by China Communications Construction and implemented by China Road and Bridge	Chittagong “One City Two Towns” goal and the Bangladesh-China-India-Myanmar Economic Corridor
Nepal	Shangcui Shuli Hydropower Station: in operation	Financed by the Export-Import Bank of China, constructed by China Gezhouba Group Co.	Nepal Power Construction Plan
Indonesia	Jakarta-Bandung Railway: under construction	Financed by China Development Bank, constructed by China-Indonesia joint venture	Indonesia’s “Global Maritime Axis” strategy

(continued)

Country	Name and Progress	Partners	Related Strategy
Laos	China-Laos Kunwan Railway: open to traffic at the end of 2021	Financed by the Export-Import Bank of China, invested and constructed by Lao-China Railway Corporation, China National Railway Group Corporation, China Communications Construction Corporation, and other Chinese companies	Laos' strategy of "Land-locked to Land-linked"

Note: Prepared by BFA Academy based on the information from the website of the Ministry of Commerce of China.

During COVID-19, several trade facilitation measures have been taken by the governments in Asia to shore up the confidence of businesses and maintain the flow of trade for medical supplies and daily necessities¹. The government of China exempted the import of donated supplies for pandemic control and prevention from import duties, import value-added tax and consumption tax. China also encouraged e-commerce to revive cross-border trade within the region.²

Korean government has taken solid measures to facilitate critical products, and tariff concessions and tax relief measures have been created in response to the COVID-19 crisis. India has undertaken all possible facilitation measures to maintain trade flow during the pandemic, further, it simplifies export and import procedure. On the import of essential goods such as medical, hygiene, and pharmaceutical products, the government of India waved off customs duties.

Japanese authorities have simplified the export and import procedures, leading towards paperless trade. Authorities have simplified the declaration form for the import and export of necessary supplies. They facilitated customs clearance procedures, simplified import/export declaration forms for relief supplies, and also relaxed for submission of certificate and other duties in timelines³. Saudi Arabia postponed the collection of customs duties on imports for 30 days and the submission of a bank guarantee for three

months⁴. Whereas to import the essential products such as medical, hygiene, pharmaceutical products and agricultural products, the Singaporean authority has removed import tariffs, other duties and related charges.⁵

2.4 Narrowing Green Deficit

2.4.1 Carbon Dioxide Emissions Landscape

Over the past few decades, Asian economies have witnessed a period of rapid growth. Asia and the Pacific region's share of global GDP has leaped from 26.3 percent in 2000 to 34.9 percent in 2019. According to the estimation of the World Economic Forum, by 2030, Asia and the Pacific region is expected to contribute about 60 percent to the global economic growth and 90 percent of the 2.4 billion new middle-income class around the globe.

Yet the booming economic growth is accompanied by a rapid increase in carbon emissions, which brings about huge climate and environmental pressure. Undeniably, during the prosperous growing period, Asian economies show an upward trend in total carbon emissions. Although it is objectively related to the different stages of development of different economies, increasing carbon emissions in Asia poses a huge challenge to achieve environmental goals of SDGs. Globally speaking, Asia is one of the regions with the heaviest task of carbon dioxide reduction.

¹ <https://unctad.org/news/case-study-chinas-trade-facilitation-responses-covid-19-pandemic>

² <https://www.scmp.com/tech/policy/article/3078951/china-set-46-new-integrated-pilot-zones-cross-border-e-commerce-revive>

³ https://www.wto.org/english/news_e/news20_e/fac_22oct20_e.htm

⁴ <https://www.misa.gov.sa/en/covid-19-gov-initiatives/>

⁵ <https://www.loc.gov/law/foreign-news/article/new-zealand-singapore-new-declaration-on-trade-in-essential-goods-for-combating-the-covid-19-pandemic/>

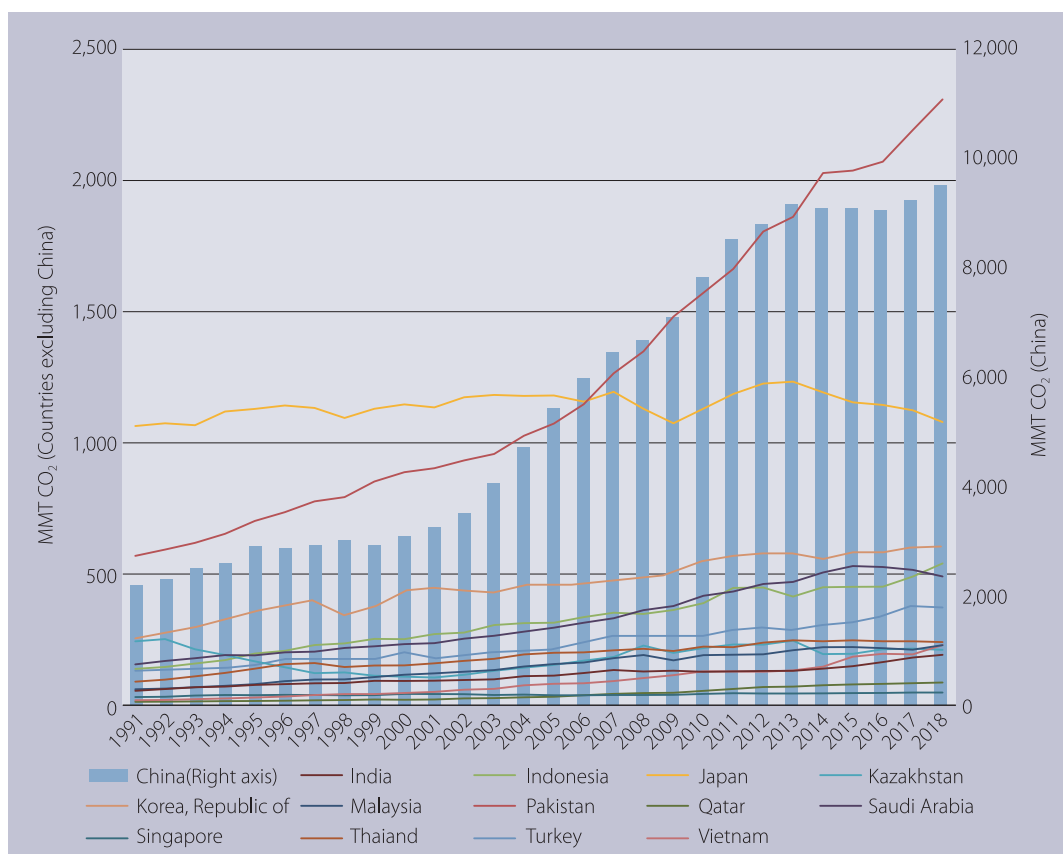


Figure 2-13 Carbon Dioxide Emission from Fuel Combustion

Source: International Energy Agency.

Unit: Million Metric Tons of Carbon Dioxide (MMT CO₂)

Figure 2-13 shows the total carbon dioxide emission, while Figure 2-14 illustrates the per capita carbon emission of selected Asian countries. As a country with a 1.4 billion population, China's total carbon emission ranked the top in Asia, yet the sloping curve started flattening off after 2013. Statistics show that China¹, India, and Japan are among the largest carbon emitters in Asia.

However, their per capita carbon emissions are not high. According to the World Development Indicator 2020, in the year 2016, Qatar, Saudi Arabia, Kazakhstan and Korea ranked higher in terms of per capita carbon emission. The per capita emission levels of China, India and Japan were 7, 2, and 9 MT, respectively (See Figure 2-14), being at relatively low levels among Asian countries.

¹ Shown on the right axis.

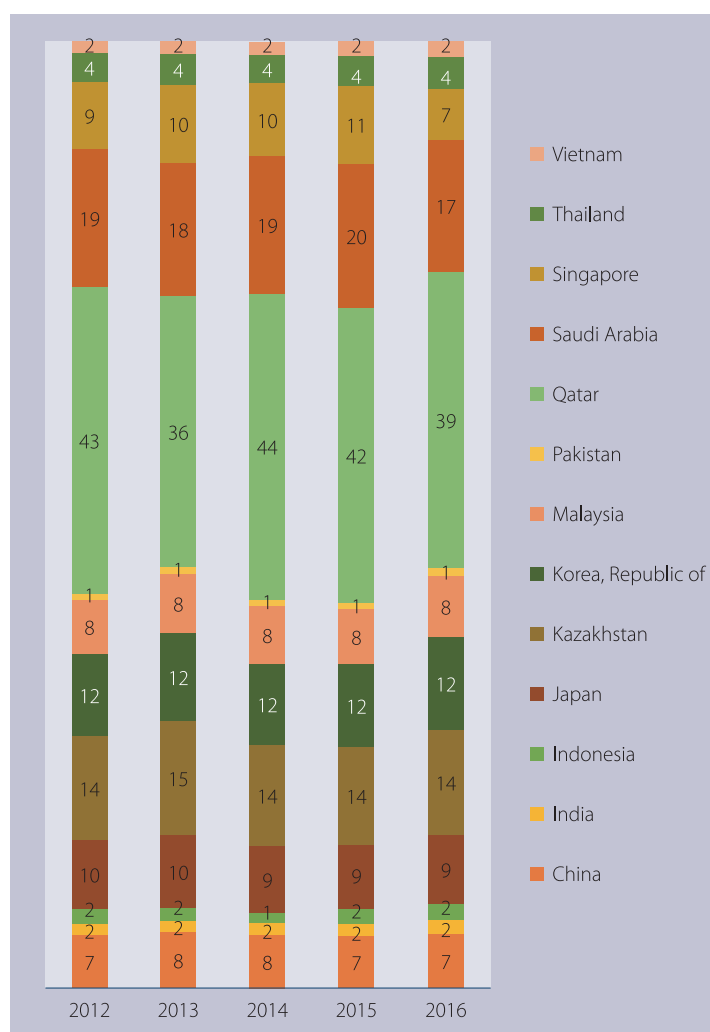


Figure 2-14 Per Capita Carbon Emission

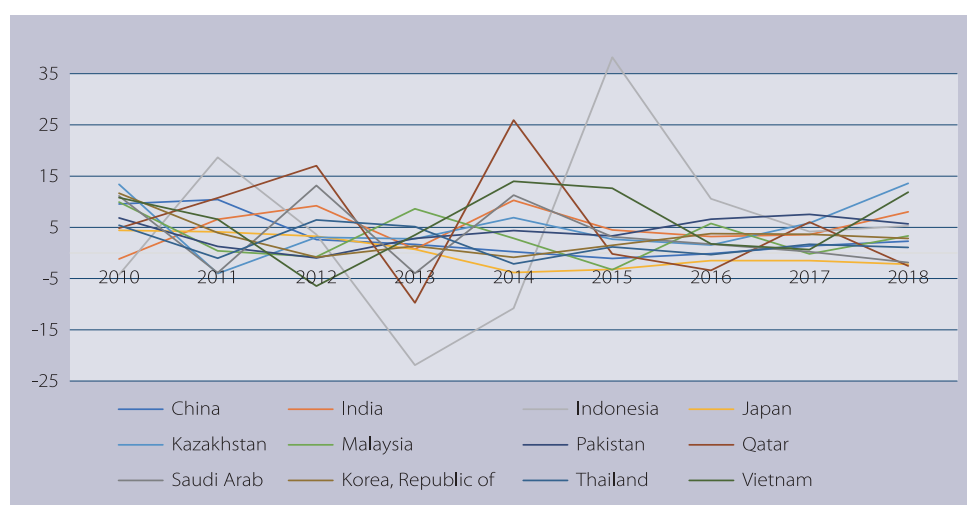


Figure 2-15 Carbon Emission Growth (percent)

Source: International Energy Agency.

From the perspective of sectoral wise emission, electricity production is a major source of carbon emission. As shown in Figure 2-16, on sector-wise emission from Asian economies, electricity sector took a big share in total emission. The share was as high as 64 percent and 63 percent for Qatar and Kazakhstan,

and as low as 34% in Pakistan. The industrial sector comes second in carbon emission. Transport sector carbon emission is also high for some countries, such as Indonesia (31 percent), Malaysia (30 percent) and Pakistan (29 percent).

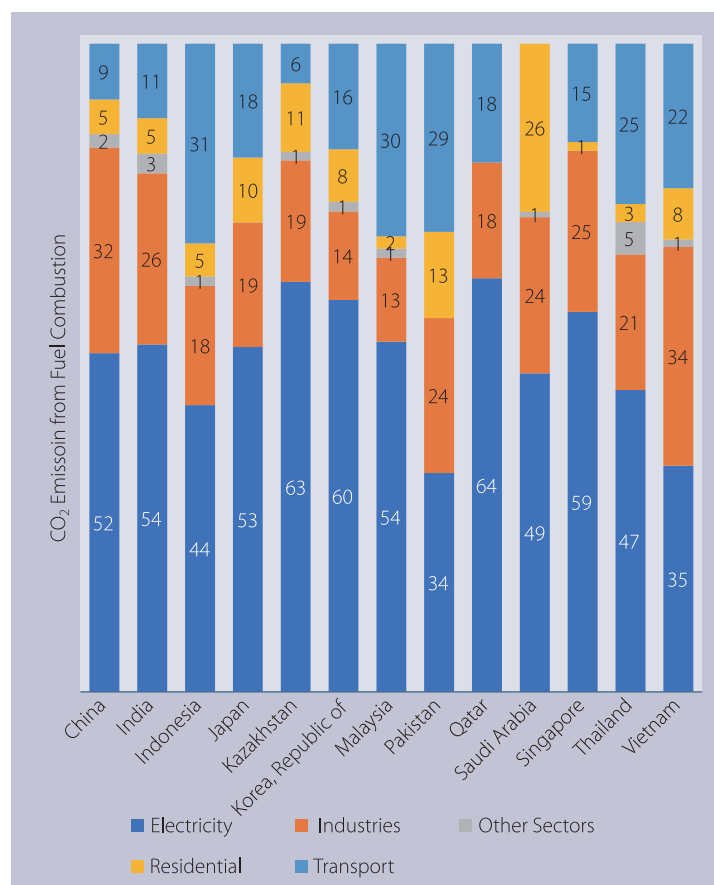


Figure 2-16 Carbon Emission Sector-wise from Asian Economies, 2016

Source: World Bank Development Indicators, 2021.

Under COVID-19, governments took strict measures to break the chain of the pandemic. The policies that came out during the pandemic drastically changed the energy demand, many international borders were closed, people movement were confined which resulted in a reduction of transportation and a change in the pattern of consumption. The forced confinements during the pandemic resulted in a massive decrease in CO₂ emission. The daily global emissions have decreased by 17 percent by early April 2020 compared with the

mean 2019 emission level (Le Quéré, 2020). China, India and Japan all saw significant reductions in their carbon emissions under the pandemic. Between January and April 2020, China's CO₂ emissions fell by 11.5 percent compared to the same period in 2019 (Zheng, 2020). Emissions in April 2020 in India fell by a staggering 40 percent compared with April 2019¹. During April and July 2020, Japan's emission fell by 5.04 percent compared with the same period in 2019. Yet Asian and global emissions are set to rebound quickly owing to the economic recovery post COVID-19.

¹ <https://www.iea.org/articles/global-energy-review-co2-emissions-in-2020>

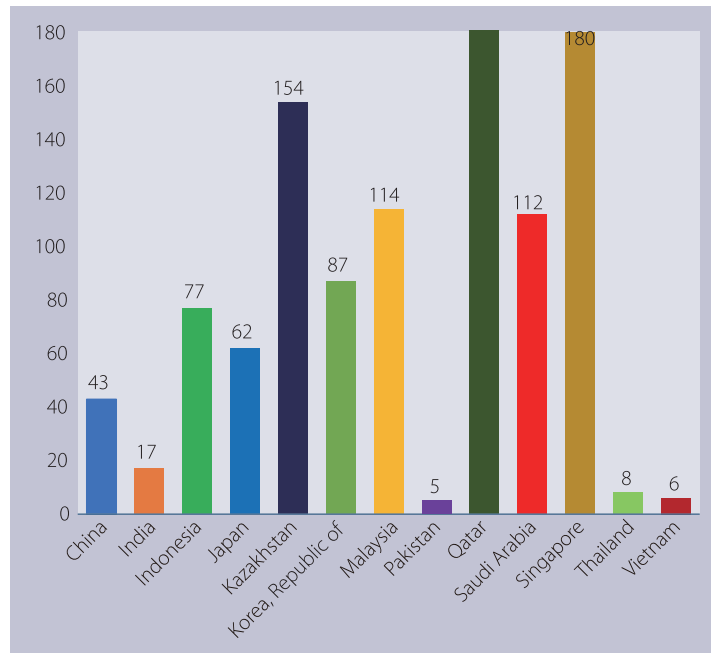


Figure 2-17 Ranking of Global Climate Risk Index

Source: German Watch, 2018.

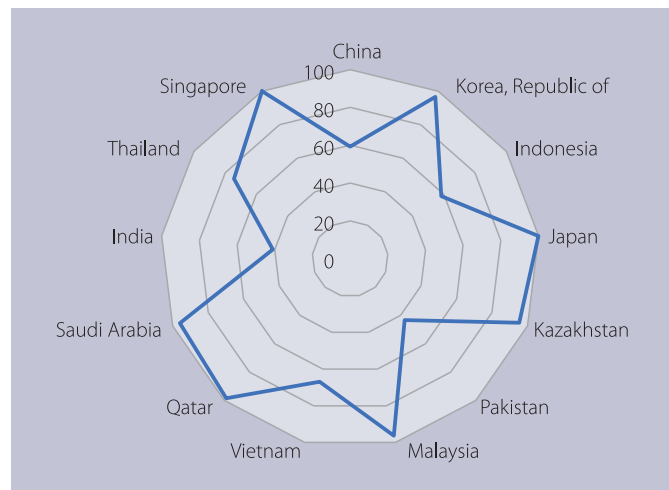


Figure 2-18 Access to Clean Fuels and Technologies for Cooking, 2016

Source: WDI, 2021.

2.4.2 Impacts from Climate Change

Climate change has been the center of debate for more than a decade (Berlie, 2018). People have already observed its effects on the environment: glaciers melting, changes in the weather pattern, extreme temperatures, floods, droughts, forest fire, lake outbursts, and sea-level rise. On top of this, it is also expected that millions of people could be displaced

due to climatic shocks, and humankind may also face ecological collapse.

Figure 2-17 shows the ranking of global climate risk index, where a small number indicates that countries are more vulnerable to climate shocks such as floods and extreme temperature. Pakistan, Vietnam and Thailand were at the top of scale in terms of climate risk, ranking 5, 6, and 8 respectively. Qatar and

Singapore were the least affected countries on the list, ranking 181 and 180 respectively.

Representatives of over 170 states signed the Paris Agreement in 2016 aiming to hold the global average temperature increase to well below 2°C above preindustrial levels and pursue efforts to limit the temperature increase to 1.5°C above preindustrial levels. Stakeholders around the world, including businesses, governments, researchers and civil societies, must advance common climate actions.

According to the statistics of the UN Office for Disaster Risk Reduction¹, during 2000-2019, 7348 disaster events were reported in the world, resulting in 1.23 million deaths. Among them, 6681 disasters climate-related, nearly doubled the number of 3656 during 1980-1999. Asia was the worst-hit region, with 3068 natural disasters during 2000-2019. Due to connectivity of the global environment, climate risks could only be properly handled with the power of inter-regional coordinated actions.

2.4.3 Climate and Disaster Resilience

Since long ago, climate and disaster resilience has also attracted attention from all walks of society, who aim to prepare countries for any disasters. Disasters have severe effects on individuals, societies and the economy. While some of the losses are irreversible or irrecoverable, social protection measures including social funds, social safety nets, participatory development projects, livelihoods actions and other related platforms can serve as useful tools to enhance resilience against climatic disasters.

Institutional arrangements play a significant role to address climate change and to increase disaster risk resilience. Powerful institutional arrangements help to build strong resilience to the climatic shocks and disasters. However, many developing countries, including Pakistan, India, Thailand and Vietnam, are more prone to climatic disasters and have relatively insufficient institutional arrangements.

Several government agencies are working with international organizations to cater to the climate and disaster resilience efforts. Such international organizations include United Nation Environment

Program (UNEP), United Nation Development Program (UNDP), World Bank, Asian Development Bank (ADB), and many others. There are several local level institutions and programs to address climate and disaster resilience on an emergency basis, including special initiatives, social protection measures, relevant ministries and other organizations.

Adaptation policies played a significant role to reduce the adverse climatic impacts. The developed countries appear to be facilitating the developing countries to strengthen their adaptation plans and readiness to economic and climate change (Sarkodie & Strezov, 2019).

While adaptation policies are being developed (IPCC, 2014b), international cooperation appears to facilitate adaptation readiness to climate change, as evidenced in the SDGs (United Nations, 2015).

2.4.4 Financing Adaptation and Mitigation

To address climate change and its adverse impacts, countries around the globe are taking adaptation and mitigation measures, including adopting new and sustainable ways to improve agriculture and livestock production and water conservation, employ clean energy to promote emission reduction, and develop green technology to cater to climate change impacts. Figure 2-18 shows the use of clean fuel and technologies for cooking. It indicates that Pakistan and India had the lowest access to clean fuel and technology for cooking (around 42 percent of total population), compared with Thailand (75 percent) and China (60 percent).

The public and private sectors can play important roles in financing the mitigation and adaptation activities in response to climate change². The Convention, the Kyoto Protocol and the Paris Agreement call for financial assistance from parties with more financial resources to those that are less endowed and more vulnerable. G20 countries have created a Climate Finance Inventory including bilateral and multilateral public climate funds. The initiative has been established to support vulnerable countries for the mitigation and adaptation to climate change³.

Climate investment and finance are to guide and promote more investment and financing activities in

1 The Human Cost of Disasters 2000-2019, the United Nations Office for Disaster Risk Reduction (UNDRR). 2020.

2 <https://unfccc.int/topics/climate-finance/the-big-picture/introduction-to-climate-finance#:~:text=Climate%20finance%20refers%20to%20local,that%20will%20address%20climate%20change.&text=Such%20mobilizati on%20oP%20climate%20finance%20should%20represent%20a%20progression%20beyond%20previous%20efforts.>

3 <https://www.oecd.org/environment/cc/database-climate-fund-inventory.htm>

addressing climate change in order to achieve nationally determined contributions and low-carbon development goals. The demand for climate investment and financing is huge, and large funding gap exists, especially in developing countries. According to the UNEP *Adaptation Gap Report 2020*¹, annual adaptation costs in developing countries alone were currently estimated to be around USD 70 billion, with the expectation of reaching USD 140–300 billion in 2030 and USD 280–500 billion in 2050.

The Green Climate Fund (GCF), the Global Environment Facility (GEF), multilateral and bilateral financial institutions all provide some financial support to address climate change. And many Asian countries have taken the responsibilities in setting up several cooperation funds to deal with climate change. In 2015, the Chinese government invested RMB 20 billion in establishing a South-South Cooperation Assistance Fund (SSCAF), helping developing countries deal with climate change and have green development transformation. In 2016, the Oil and Gas Climate Initiative (OGCI) announced that ten member companies, including Saudi Aramco, will invest a total of USD 1 billion in the next ten years for technological innovation and promote emission reduction. In 2019, Korean President Moon Jae-in promised to provide USD 200 million to the Green Climate Fund, indicating that Korean government wanted to step up its efforts to deal with climate change. Besides, international organizations such as Asian Development Bank and Islamic Development Bank also have their climate change fund and clean energy fund with more than ten years of operation, which have witnessed more than one hundred projects making great achievements in green development.

2.4.5 Recovery Action and Initiatives

The ability of mitigating the impacts of climate change largely depends on the strength of an economy. A country with a good economic foundation and a high speed of economic growth can relatively easily integrate climate policy into its developmental agenda, while a country with poor economic conditions may experience difficulties in initiating or implementing

adaptation policies in its development. However, with significant economic challenges, some of the Asian countries have successfully managed strategies related to mitigation and adaptation for climate variability and extreme events (IPCC, 2014).

In the Central Asia and South Caucasus region, several strategies are being used to reduce the climate change vulnerability, including a governance system for adaptation, disaster risk management, changes in infrastructure and technology, and ecosystem-based strategies. In China, governments are implementing ecosystem-based mitigation and adaptation, in-depth assessment of adaptation, analyzing and planning, long-term energy and public infrastructural investments, water management practices, climate forecasts and introducing resilient and hybrid crop and seed varieties in the agricultural sector (Loucks and van, 2017). Similarly, China is also moving to ban importing waste used for different purposes. Japan's adaptation strategies include planning for sea-level rise and water shortage in response to climate change². The adaptation strategies incorporated by the Indian Government³ include environmental protection, management of water resource, coastal, agriculture, and disaster risk (Nguyen, 2015). ASEAN region is adopting measures to address climate change with tools such as warning systems, water management, coast management, and development planning (Le, 2019; Islam and Kieu, 2020).

In 2020, countries in East Asia, including China, Japan and Republic of Korea, have announced their ambitious goals and action plans to achieve carbon neutrality. On September 22nd, Chinese President Xi Jinping put forward a solemn pledge at the General Debate of the 75th Session of the United Nations General Assembly, "China will scale up its intended Nationally Determined Contributions by adopting more vigorous policies and measures. We aim to have CO₂ emissions peak before 2030 and achieve carbon neutrality before 2060."⁴ At the Climate Ambition Summit held 12 December 2020, President Xi Jinping announced some further commitments for 2030: China will lower its carbon dioxide emissions per unit of GDP by over 65 percent from the 2005 level,

1 https://www.unep.org/resources/adaptation-gap-report-2020?_ga=2.236175297.1597218091.1616153821-387793925.1616153821

2 <https://climateadaptationplatform.com/climate-change-adaptation-in-japan-an-example-to-asian-countries/>

3 <https://www.adaptation-undp.org/explore/india>

4 http://www.xinhuanet.com/english/2020-09/23/c_139388686.htm

increase the share of non-fossil fuels in primary energy consumption to around 25 percent, increase the forest stock volume by 6 billion cubic meters from the 2005 level, and bring its total installed capacity of wind and solar power to over 1.2 billion kilowatts.

On October 26th, during Japanese Prime Minister Yoshihide Suga's first policy address in parliament, he said that dealing with climate change is no longer a constraint on growth. He set out a bolder scheme that Japan will become carbon neutral by 2050 which requires tripling renewables' share of power generation to at least 50 percent¹. The road map calls for average net emissions of zero from new building and home construction by 2030 and for ending all sales of new gasoline-only vehicles by the middle of that decade.

Just two days later, Korean President Moon Jae-in pledged that Korea aims to reach net-zero emissions by 2050. He said that Korea would "replace coal power with renewable energy and create a new market, industry, and jobs."² The government of Korea also announced a post-pandemic policy plan called "Korean New Deal"³, which has three pillars—Digital New Deal, Green New Deal, and Stronger Safety Net, aiming to be the blueprint for Korea for the next 100 years. "Green New Deal" is a "multibillion-dollar plan to invest in green infrastructure, clean energy and electric vehicles."⁴

As some of the largest economies in Asia, China, Japan, and Korea have constructed national initiative framework to address climate change. It's time that the economies start considering circular economy, utilizing innovative financial products such as debt for nature swaps, and establishing mechanism to achieve net zero pledges by government and private sectors. Renewable energy and green infrastructure investment are at the top of the priority list. Similarly, Nationally Determined Contributions (NDCs) pledges should be enhanced by excelling towards net zero announcements.

2.5 Digital Transformation

2.5.1 Digital Technologies Landscape

The usage of digital technologies is paramount and has taken over industries and workplaces from physical to digital. Digital technologies are enabling the wide-ranging identification systems which enhance finance access, healthcare facilities, improved education system, and other critically important services (World Bank, 2018)⁵, access to digital market such as online shopping, mobility services, etc. It is also improving efficiency for public and private sector services. According to the World Bank, over 1.1 billion people don't have an official identity⁶. World Bank's Global Identification for Development (2018) shows that Saudi Arabia has a high concentration of unregistered population that is 60 percent, it is followed by Pakistan and Singapore, which have unregistered population of 38 percent and 37 percent respectively. China (2 percent), Vietnam (4 percent) and Japan (5 percent) have the lower rates of unregistered population. Thailand and Korea don't have any unregistered population.

Internet is the most crucial part of technology and is continuously transforming to connect people and organizing the flow of work and information. The growing number of Internet consumers have a significant impact on productivity and is a vital product of our life. The Internet consumers across the world has grown to 4.313 billion that is more than half of the world's population. Internet access and availability differ depending on economic dynamics. Table 2-10 shows the global rank of technology access; Korea has the second highest concentration of Internet access at household out of 134 countries. Korea is followed by Japan, Singapore, Saudi Arabia and Qatar, whereas the countries with the least Internet at household are Pakistan and India, with the

1 <https://www.carbonbrief.org/daily-brief/south-korea-follows-japan-and-china-in-carbon-neutral-pledge>

2 <https://www.carbonbrief.org/daily-brief/south-korea-follows-japan-and-china-in-carbon-neutral-pledge>

3 https://www.undp.org/content/seoul_policy_center/en/home/presscenter/articles/2019/Collection_of_Examples_from_the_Republic_of_Korea/korean-new-deal-for-the-post-covid-19-era.html

4 https://www.theguardian.com/world/2020/oct/28/south-korea-vows-to-go-carbon-neutral-by-2050-to-fight-climate-emergency?utm_campaign=Carbon%20Brief%20Daily%20Briefing&utm_content=20201028&utm_medium=email&utm_source=Revue%20Daily

5 <https://openknowledge.worldbank.org/handle/10986/31825?show=full>

6 The WBG ID4D global dataset, as of January 2016. This number is an initial broad estimate based on available information for 198 countries. For countries where there are no reliable and timely data on people in possession of IDs available from government web sites or reports estimates are produced using data from other foundational or functional registers, mainly birth registration data and data from the electoral registers.

global ranking of 108 and 100 out of 134.

The situation for Individual internet access is similar. Qatar and Japan are the top rank countries in Table 2-10, World Bank statistics shows that 99.65

percent and 84.58 percent of the individual population in Qatar and Japan respectively have access to the Internet.

Table 2-10 Global Ranking of Technology Access (Out of 134 Economies)

Country	Mobile Tariff	Handset Price	Household with Internet Access	4G mobile network coverage	Internet bandwidth ¹	Internet Access in Schools
China	26	63	77	21	83	29
India	38	55	100	55	87	43*
Indonesia	64	72	70	62	76	100*
Japan	83	13	3	24	84	37*
Kazakhstan	5	45	25	83	62	41
Korea, Republic of	71	32	2	9	65	1
Malaysia	53	70	28	61	51	28
Pakistan	67	102	108	92	97	103*
Qatar	17	1	14	19	36	1
Saudi Arabia	20	44	12	60	13	1
Singapore	7	27	6	1	3	2*
Thailand	72	50	69	38	19	26
Turkey	49	88	37	59	39	57*
Vietnam	51	80	83	57	58	n/a

Source: *The Network Readiness Index 2020*, Portulans Institute (PI).

Singapore ranked first for 4G mobile network coverage and ranked 6 for household Internet access out of 134 economies. Internet access in school became significantly important especially after COVID-19. Table 2-10 shows the global internet access ranking, which indicates that Korea, Qatar, Saudi Arabia and Singapore have the highest levels of Internet access in schools.

2.5.2 Digital Technologies Adoption

The Digital Adoption Index (DAI)² shows the adoption

of digital tools across three stakeholders of an economy, which are people, government, and business. Figure 2-19 shows DAI as a simple average of all sub-indexes which include technologies that are required for the promotion of the digital era. The radar chart shows DAI for 2016, indicating that Japan has the highest capability of adopting digital technology and ranked 0.84/1.0 at government, business and individual levels. Pakistan and Indonesia ranked lower on DAI. Digital platforms are increasing connectivity

¹ Internet bandwidth (kb/s) per Internet user

² The index covers 180 countries on a 0–1 scale, and emphasizes the “supply-side” of digital adoption to maximize coverage and simplify theoretical linkages.

for billions of lives around the world. Figure 2-20 shows the Digital Evolution Index (DEI)¹, which is derived from four key drivers: supply condition, demand conditions, institutional environment, and

innovation and change. It indicates that Singapore has a high level of digitals and ranked as 6th out of 60 countries and score 3.69/4.00 of Digital Evolution Ranking.

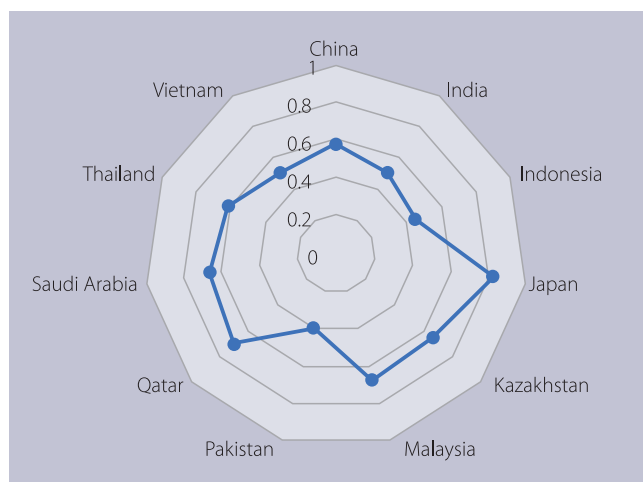


Figure 2-19 Overall Digital Adoption Index, 2016

Source: World Bank DAI, 2016.



Figure 2-20 Digital Evolution Index

Source: Digital Planet, 2017.

Figure 2-21 shows the number of mobile phone subscriber and broadband subscriber per 100 people. Mobile phone and broadband are the major sources of Internet access. Korea has the highest percentage (42.7 people out of every hundred have broadband) of broadband subscribers. Korea is followed by Japan

(32/100) and China (31/100) in broadband connectivity in 2019. Pakistan, India and Indonesia have the lowest broadband subscribers in terms of per hundred people. The figure shows that Thailand has a huge percentage of mobile phone subscribers that is for every hundred of its population there are

¹ https://sites.tufts.edu/digitalplanet/files/2020/03/Digital_Planet_2017_FINAL.pdf

186 mobile subscribers for the year 2019. Thailand is followed by Singapore with 156 mobile subscribers for every hundred. The data also shows that there is a major drop (191/100 in 2011 to 120/100 in 2019) in mobile phone subscribers in Saudi Arabia since 2011.

Similarly, Pakistan and India have the lowest percentage of mobile phones whereas the figure shows a consistent growth of mobile phone users for Pakistan.

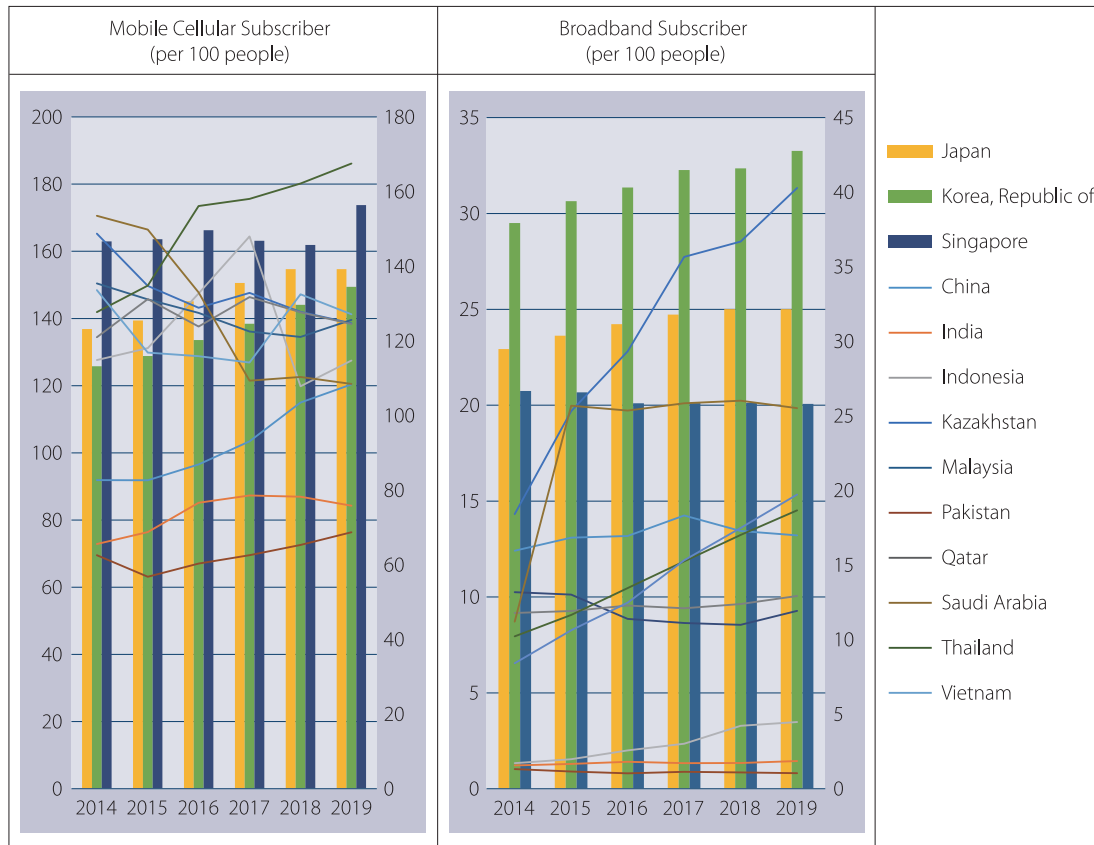


Figure 2-21 Mobile Phone Subscribers and Broadband Subscribers

Note: Right side axis indicates for bars and left side axis for lines/curves.

Source: World Bank, 2021.

2.5.3 Technological Companies Landscape

The United States is operating the world's largest technology companies, but the past few years have seen a boom in Asian technology companies. China has doubled its number of technology companies, and has 9 companies positioned in the world's top 20 tech giants¹, including Alibaba, Tencent, Baidu, Xiaomi, JD.com, etc. India is also making strong progress in technological companies, the top Indian companies are TATA, Myntra.com², etc. Indonesian's top technological companies are Tokopedia (1,001 to

5,000 employees), Traveloka and Shope (up to a maximum of 10,000 employees). EPAM for Kazakhstan (with a maximum capacity of 10,000 employees), Coupang for Korea (annual revenue exceeds USD 5.9 billion) are also large technological companies. NetSol and Ovex Technologies are top software companies in Pakistan. Parsons Corporation and Oracle in Qatar and Saudi Arabia, H3 Dynamics in Singapore, Astra in Thailand, and VIETTEL in Vietnam are also large technological companies.

WEF's *Global Information Technology Report 2016*

¹ <https://www.investopedia.com/articles/markets/032616/5-biggest-chinese-software-companies-chl-teeby.asp>

² <https://www.cnbc.com/2018/12/13/india-best-technology-companies-adobe-nvidia-microsoft-sap-in-top-10.html>

ranked firm-level technology absorption, Japan, Israel, the UAE, Qatar, Singapore and Hong Kong Special Administrative Region of China were in the global top 20. During the past five years, Asian countries such as Indonesia, China, Vietnam and India have accelerated their pace of catching up in digital technology absorption.

2.5.4 Trade in Digital Goods and Services

Digitalization plays a great role in managing international trade by connecting businesses, firms, banks, consumers, and diffusing modern technologies

and facilitating global value chains. It enables digital transactions, online shopping, and many other services, it also increases trust via service delivery that enables digital connectivity. Table 2-11 shows the trade in technology, the most important and critical aspect of this is to have secure Internet access, the table shows that Singapore has the highest percentage of individuals having secure Internet that is 0.12 million out of every million people. The table also shows the trade of information and communications technology as a percentage of total export and import.

Table 2-11 Trade in Technology

Country	Internet application (Secure Internet Servers per million people)	Information and Communications Technology Trade		
		Goods Exports (Percent of Total Exports)	Goods Imports (Percent of Total Imports)	Services Exports (Percent of Total Services)
	2019	2018	2018	2017
China	735	27.3	22.7	12.7
India	389	1.2	9.2	42.4
Indonesia	1,684	2.9	7.7	4
Japan	18,702	8.1	11.9	2.7
Kazakhstan	2,359	0.1	6	1.8
Korea, Republic of	4,544	27.8	14	4.8
Malaysia	6,724	33.1	25.1	7.2
Pakistan	63	0.2	3.9	15.9
Qatar	436	0	5.1	3.5
Saudi Arabia	183	0.1	7.5	1.9
Singapore	122,482	29.6	26.6	6.7
Thailand	1,404	15.6	13.4	0.6
Vietnam	2,597	33.4	25	n/a

Source: World Bank.

Malaysia exported maximum goods of information and communication technology which is 33 percent of total good exports. Malaysia is followed by Singapore 30 percent and China 27 percent. Singapore, Malaysia and Vietnam imported 27

percent, 25 percent and 25 percent goods of information and communication technology respectively in 2018. India's ICT service export accounted for 42.4 percent of its total services export in 2017.

2.5.5 COVID-19 and Digitalization Drive

All around the globe, severe measures have been taken to control the pandemic, lockdowns have been imposed to avoid people's interaction, due to these restrictive measures people increased online activities¹. Due to COVID-19, digitalization has shifted upward and provided opportunities to Information Communication Technologies (ICT) products and services and enabled traditional businesses to transform and adopt new technologies. Conversely, the given scenario is not the same across or within countries. It took a reasonable period for developed countries to have adequate ICT infrastructure, sound e-commerce ecosystem and well-connected distribution network. Whereas the low-income countries are facing uneven availability of network, infrastructure and ecosystem. However, the digitalization during COVID-19 played the role of unsung heroes.

COVID-19 has sent millions of people around the world to work from home, which created an immediate challenge for many organizations especially in those countries where Internet access is very low. China is a leading example, it motivated over 800 million² people to online shopping and payments and offered them full-service. During the pandemic, governments, health authorities, and technology companies around the world have been collaborating to contain the COVID-19 pandemic and racing to address the staggering needs of their societies and economies. But the speed, scale, and scope of the response of China's digital ecosystems have been unmatched³.

COVID-19 has accelerated the digitalization across India; the country adopted contactless digital technology, improved digital governance and increased the use of robots and drones, increased the frequency of online education, shopping and

payment, etc.

It has sped up the space of digitalization in Indonesia. "At the frontline of the COVID-19 response, cities in Indonesia have embraced the need for agile digital data platforms so they can quickly provide support to citizens as the pandemic rages on"^{4 5}.

Over 90 percent of import procedures in Japan has been computerized and digitalized by the government of Japan before the COVID-19. During the pandemic, Japan started to accept the electronic versions of customs documents and other relevant documents whereas original copies were required earlier. The government of Japan published COVID-19 related information, press releases and other important guidance such as information on disease control and prevention and relief packages, via an official website,

Korea introduces various digital responses to the pandemic: remote education, working from home, and smart city resilience. Due to COVID-19, Malaysian digital activities have grown up by 20 percent across the country and e-commerce alone is expected to account for nearly 40 percent of the digital economy⁶.

A study⁷ shows that, 73 percent of Singapore businesses are accelerating their pace of digitalisation in response to COVID-19 pandemic, their digitalisation initiatives include launching digital products, introducing digital payments, and embracing e-commerce and automation.

In response to the pandemic, the government of Pakistan has launched a digital healthcare platform educating people about the COVID-19 healthcare measures. All COVID-19 related information and cases across the country are published via a centralized monitoring dashboard by the government of Pakistan. Pakistan also launched a digital transformation with digital initiatives such as online education, home-based work and online transactions.

Qatar and Saudi Arabia also implemented

1 Online activities: online shopping, social media use, online classes, webinar and teleconferencing, etc.

2 How Chinese Digital Ecosystems Battled COVID-19, <https://www.bcg.com/publications/2020/how-chinese-digital-ecosystems-battled-covid-19>

3 <https://www.bcg.com/publications/2020/how-chinese-digital-ecosystems-battled-covid-19>

4 <https://blogs.worldbank.org/opendata/how-digital-data-helped-indonesia-respond-covid-19>

5 <https://cabar.asia/en/forced-digitalization-of-public-services-in-kazakhstan-during-the-covid-19-pandemic>

6 <https://blogs.lse.ac.uk/seac/2020/10/20/the-impact-of-covid-19-on-sme-digitalisation-in-malaysia/>

7 <https://www.businesstimes.com.sg/government-economy/73-of-singapore-businesses-speeding-up-digitalisation-amid-covid-19-study>

lockdown for public and private services and restricted people movement due to the pandemic and transforms via technological solutions. COVID-19 has become a key accelerator for Thailand and Vietnam to transform to digitalization in many organizations that must ensure their work continues during this difficult time. Vietnam has put its high penetration of mobile phone (150 percent) and the Internet (70 percent) to great use¹.

The COVID-19 also pushed Kazakhstan for massive changes to digitalization. Kazakhstan introduced restrictions following the rest of the world during COVID-19 and experienced a surge of online activities. Online purchases, payments as well as courier delivery of food and other products have gained popularity, 80 percent of Kazakhstan's public activities have become on-line².

2.5.6 Recovery Action and Initiatives

COVID-19 pandemic motivated Asian economies to hasten digital action and initiatives to stimulate the economic recovery, promote the digital transformation and fully realize the value of the digital economy. These actions and initiatives involve digital infrastructure construction, digital industrialization development, digital governance and international digital cooperation, etc.

In 2020, China accelerated the construction of new infrastructure, such as 5G networks, which laid a more solid foundation for the vigorous development of digital economy. According to data from the Ministry of Industry and Information Technology of China, China built about 580,000 5G base stations in 2020, the number of 5G terminal connections has exceeded 200 million, enabling 5G coverage in all cities in China.

One of the three pillars of "Korean New Deal" launched in 2020 is Digital New Deal. Korea government also promoted the e-Government platform during COVID-19 and several other digital measures to facilitate the functioning of the government³. The government announced an economic development plan in July 2020, and

decided to spend more than USD 100 billion in the next five years to promote digital economy and green economy, in response to the impact of COVID-19 and facilitating the upgrading of Korea's economy.

At the end of 2019, the Japanese government included particular budget for the "Digital New Deal", expecting to keep up with the world's frontier in the fields of informatization, intelligence, and fundamental research. In September 2020, when Japanese Prime Minister Naoto Kan took office, he made it a priority to promote the digitalization of administrative affairs and proposed to establish a "Digital Bureau". Japan government hoped that the "Digital Bureau" could lead the digitalization process of the whole society.

Indian Prime Minister Narendra Modi has been paying close attention to the "Digital India"⁴ initiative, which aims to boost India's economic and social digital transformation from three aspects: digital infrastructure construction, digital government services, and digital education. Under the pandemic, Indian roadside shops (kirana) started digitalized services, and the online retail and e-health industry witnessed an explosive growth. The Indian government launched a large-scale incentive scheme to attract foreign investment. Many US technology companies, including Google, Amazon, and Facebook, have successively announced investment plans into the digital services company "Jio Platforms", India's largest communication company.

"Vision 2030" of Saudi Arabia has classified digitalization as a key area to prioritize for rapid growth. To enhance vital digital services, the relevant Ministries of Saudi Arabia have built a plan to cooperate with many other government entities to strengthen their communications infrastructure. Saudi Arabia is also working on a digital infrastructure that provides a means of using digital technologies; telework, e-commerce, remote learning and telemedicine to prevent the spread of COVID-19 infections while maintaining socio-economic

1 <https://blogs.worldbank.org/eastasiapacific/can-covid-19-catalyze-vietnams-digital-transformation>

2 <https://cabar.asia/en/forced-digitalization-of-public-services-in-kazakhstan-during-the-covid-19-pandemic>

3 Korea's new e-government in today's digital economy: <https://unctad.org/meeting/koreas-new-e-government-todays-digital-economy>

4 <https://www.unescap.org/sites/default/files/E-Government-for-Women-in-Asia-Pacific.pdf>

activities¹.

The Singapore government has accelerated the digital transformation after the pandemic, and is committed to further expanding the scope of digital services. Currently, 94 percent of government-related transactions in Singapore are completed by electronic ways. To facilitate the digital process, the Singapore government distributes funds to assist enterprises in digital transformation, as well as allocates resources to support scientific research in the next five years, helping technology enterprises seize innovation opportunities.

In addition, Pakistan and Saudi Arabia, along some of the Middle Eastern countries have launched Digital Cooperation Organization (DCO) ² to accelerate the adoption of digitalization in every aspect of their economy. DCO aims to enable digitalization to stabilize their economy, enhance cooperation and strengthen mutual interest. The government of Indonesia shifted to online system. The Population and Civil Registration Office of Maros, South Sulawesi, for example, now allows service users to print

citizenship documents at home after registering through a smartphone APP.

The ASEAN Digital Integration Framework (DIF) was adopted by ASEAN in 2018 and became a comprehensive guidance document in the field of digital economy in ASEAN. The ASEAN DIF identifies six priority areas for the immediate term to accelerate digital integration in ASEAN, including facilitating seamless trade, protecting data while supporting digital trade and innovation, enabling seamless digital payments, broadening digital talent base, fostering entrepreneurship, and coordinating actions. The ASEAN Coordinating Committee on Electronic Commerce (ACCEC) was designated by ASEAN to serve as the coordinating sectoral body for the ASEAN DIF. In order to fully implement the ASEAN DIF, in 2019 ASEAN formulated the "ASEAN Digital Integration Framework Action Plan (DIFAP) 2019-2025". DIFAP 2019-2025, based on the six priority areas identified in the ASEAN DIF, have identified dozens of specific initiatives, as well as their respective outputs, timelines and implementing bodies.

1 <https://www.itu.int/en/myitu/News/2020/07/24/18/49/Saudi-Arabia-deploying-ICTs-against-COVID-19>

2 <https://www.gulftoday.ae/business/2020/11/26/saudi-launches-digital-cooperation-organisation-with-middle-east-neighbours-pakistan>

Chapter III

A Survey on Sustainable Development in Asia and the World

The global economy has been hit hard by the COVID-19 pandemic. Global GDP is expected to shrink by 3.5 percent in 2020 and around 80 to 90 million people will be reduced to extreme poverty, according to the International Monetary Fund (IMF) *World Economic Outlook* released in January 2021.

More worrisome still, the pandemic has highlighted the vulnerability of public health systems around the world, unbalanced global development, absent global public goods, and the persisting environmental and climate challenges. These problems are inextricably linked to sustainability. As the UN Secretary General, Guterres noted at the high-level meeting of the UN Security Council in February 2021, the pandemic is a severe setback to the *2030 Agenda for Sustainable Development*. How we return to sustainable development as we look towards a post-pandemic recovery will be of vital importance for all nations.

The *2030 Agenda* recognized the role of the business sector and called on all businesses to apply their creativity and innovation to solving sustainable development challenges¹. As the dominant micro-entities in national economy, businesses should facilitate the delivery of sustainable development goals by integrating them into their corporate strategies, fulfilling their social responsibilities, and providing solutions for sustainable development.

To glean insights into the recovery and sustainability challenges confronted by businesses, the Boao Forum for Asia, the Central Asia Regional Economic Cooperation (CAREC) Institute, and Deloitte jointly launched the “Survey on Sustainable Growth in Asia in a Fast Changing World” at the beginning of 2021. The survey covered nearly 70 businesses (See Figures 3-1 and 3-2) from 7 industries, including the productive services, traditional labor-intensive manufacturing,

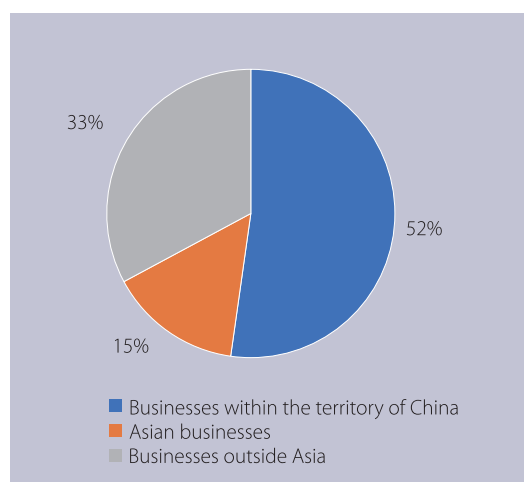


Figure 3-1 Geographic Locations of the Businesses Surveyed

Source: Deloitte Research, BFA Institute.

Note: Other Figures in this Chapter have the same sources with Figure 3-1, unless otherwise specified.

1 United Nations. *Transforming Our World: The 2030 Agenda for Sustainable Development*, 2015-09.

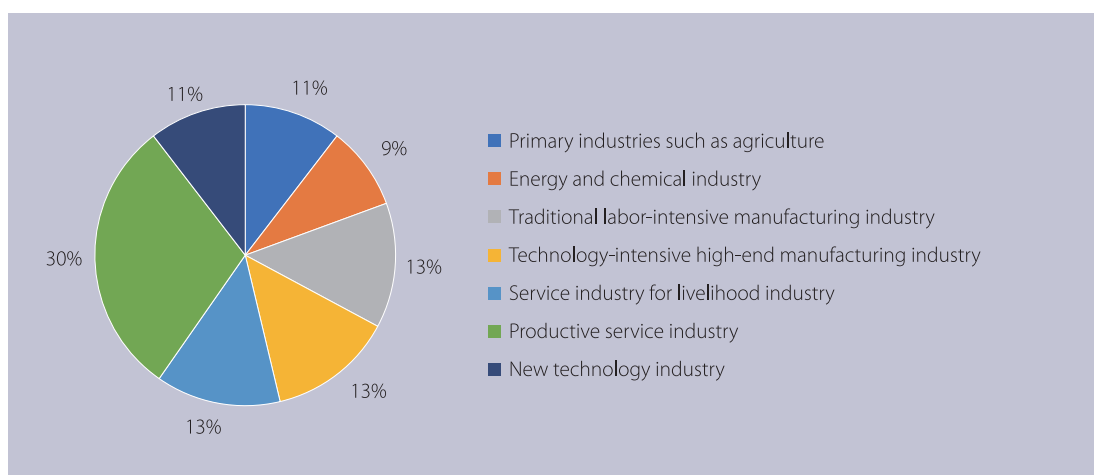


Figure 3-2 Industries that the Businesses Surveyed Operate in

technology-intensive high-end manufacturing, and service industries related to livelihood. Approaching from multiple dimensions such as national policies, economic environment, and corporate strategy, the survey tries to understand how businesses predict the economic recovery and development in China, Asia, and even the world at large and how they understand sustainable development. It seeks to find a practical way forward to support the global sustainable recovery from businesses' perspective.

On the whole, effective pandemic control remains a decisive factor in the recovery. Businesses, a powerful economic force, also play an irreplaceable role in sustainable development. Yet, our findings show they lack a full understanding of sustainable development goals, which calls for greater government guidance and incentives. The government should therefore establish effective communication channels and achieve sustainable development goals together with businesses.

3.1 A Global Economic Recovery Hinges on Pandemic Control

3.1.1 Worldwide: The Pandemic Remains the Biggest Variable for Recovery

Over half of the business owners are neutral about the prospect of a global recovery as measured by GDP growth, and nearly one quarter are pessimistic (See Figure 3-3), indicating much uncertainty about what

lies ahead. Most respondents believe that quick moves to vaccinate and improve health services and infrastructure and gradual easing of lockdown measures will be the main drivers of global economic recovery (See Figure 3-4).

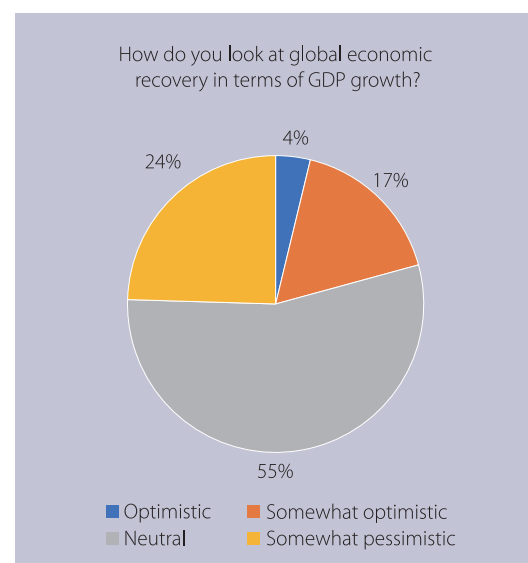


Figure 3-3 Businesses' Expectation for Global Economy

The World Health Organization (WHO) reports that more than 200 vaccines are under development. Take the Pfizer-BioNTech vaccine as an example, its Phase III clinical trials showed an efficacy of up to 95 percent. The progress of research and efficacy of vaccines have gone

way beyond market expectations, which has greatly boosted the confidence of businesses and households in

investment and spending. The IMF hence forecasts a global economic growth of 5.5 percent in 2021.

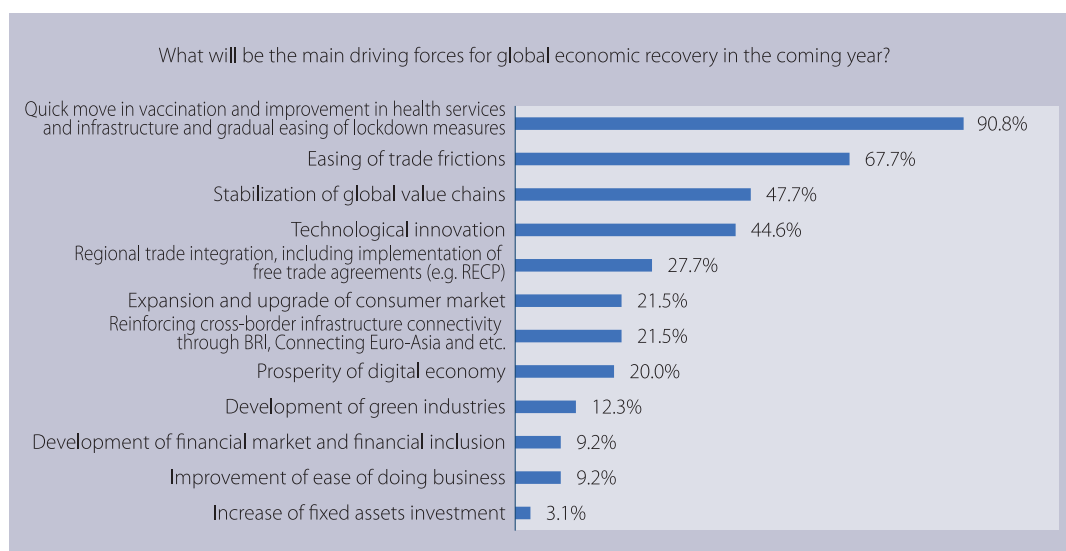


Figure 3-4 Prediction about Global Economic Growth Drivers

Furthermore, **all respondents consider the continued impact of COVID-19 as the biggest threat to global economy** (See Figure 3-5). Vaccinations are happening in all countries, but the speed of their rollout is being slowed by a hesitant public. The risk of a resurgence also looms large as more contagious virus variants have appeared in

countries including UK, South Africa, Brazil and Japan. Many governments have been frustrated by the recurrent outbreaks as their pandemic and economic stimulus policies often fail to bring about the desirable and immediate results. Effective pandemic control remains a decisive factor in determining the short-term economic recovery.

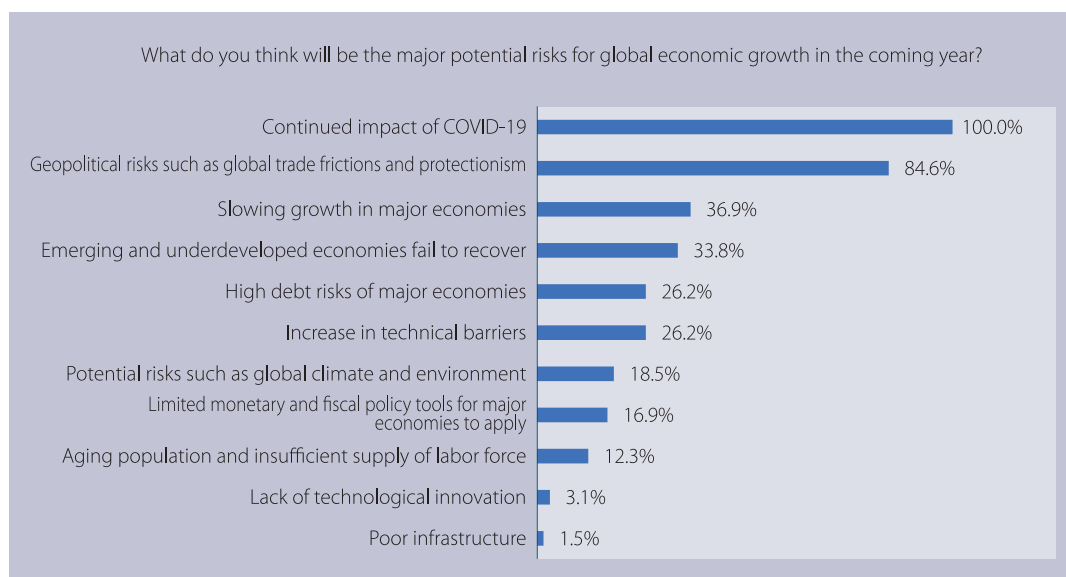


Figure 3-5 Views on the Risks for Global Economic Growth

Trade friction is seen as the other key variable. The direction of globalization will have a profound impact on world economy. The pandemic has instigated an upsurge in deglobalization, unilateralism, and isolationism. Geopolitical conflicts and trade frictions have further hindered the sustained and healthy development of the economy. Judging by the diplomatic policies advocated by US President Joe Biden during his election campaign, the US will look to reshape its relations with allies. This means the Biden administration may not necessarily curb the current slide toward deglobalization, and may even encourage regional and collective protectionism, casting another shadow over global trade and economic recovery. Conversely, easing trade frictions and putting globalization back on track will catalyze the global recovery process.

3.1.2 Asia: Regional Economic and Trade Cooperation Provides a Major Boost to the Economy

More than 60 percent of business owners are optimistic about Asia's economic recovery (See Figure 3-6). **Strong anti-pandemic measures and regional integration are believed to be the primary drivers of Asia's economic recovery in the coming year** (See Figure 3-7). Particularly, new regional cooperation initiatives, in addition to effective pandemic control and economic revival in some Asian economies, will also play an important role in boosting regional growth.

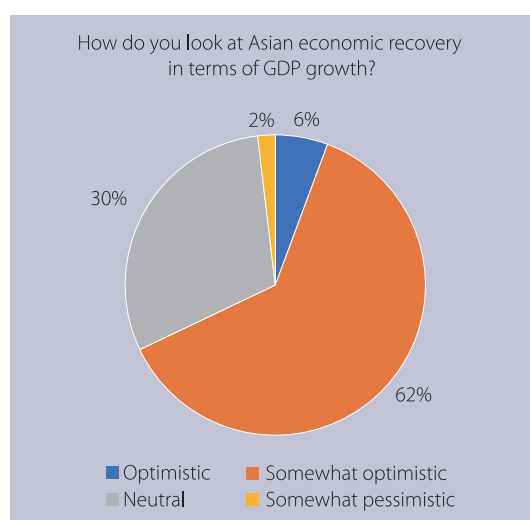


Figure 3-6 Businesses' Expectation for Asian Economy

As deglobalization gains momentum from the raging pandemic, regionalization rose as a strong supplement to globalization. Asia has seen accelerated regional economic integration in recent years, evidenced by the success of the Belt and Road Initiative, effectiveness of the Comprehensive and Progressive Trans-Pacific Partnership Agreement (CPTPP), and execution of the Regional Comprehensive Economic Partnership (RCEP). These initiatives not only bring confidence and strength to multilateral trade systems, but also facilitate the building of global supply chains and industries, accelerating economic recovery in Asia.

Negative factors weighing on Asia's economic recovery include continued impact of COVID-19, emerging and underdeveloped economies failing to recover, as well as geopolitical risks such as global trade frictions and protectionism (See Figure 3-8). For businesses, the overlapping regional free-trade agreements create heavy administrative burdens and make benefiting from regional economic and trade programs more elusive. For example, Asian free-trade agreements contain incongruent rules about place of origin, creating all kinds of understanding and application difficulties for businesses. Our survey also shows that the perceived gains from the Asian free-trade agreement network have yet to be raised.

Over half of the respondents believe that Southeast Asia will become the continent's fastest-growing region. They are also confident about the future of new technologies, technology-intensive high-end manufacturing, and productive services industries. With over 600 million people, a favorable geographical location, an open and inclusive regime, and deep regional integration, Southeast Asia is the promised land for digital economy. The sector there grew by 33 percent annually from 2015 to 2019 on average, with its contribution to GDP ballooning from 1.3 percent to 3.7 percent, according to the *e-Economy SEA 2020 Report* released by Google et al. in December 2020.

Nevertheless, many emerging economies in Southeast Asia have been drained by the pandemic. According to IMF's *Asia-Pacific Economic Outlook Report* in October 2020, the real GDP of Asian emerging and developing economies (excluding China) is estimated to have contracted by more than 6 percent in 2020. These economies need to further build up their resilience and capacity to withstand risks to respond to the growing uncertainties.

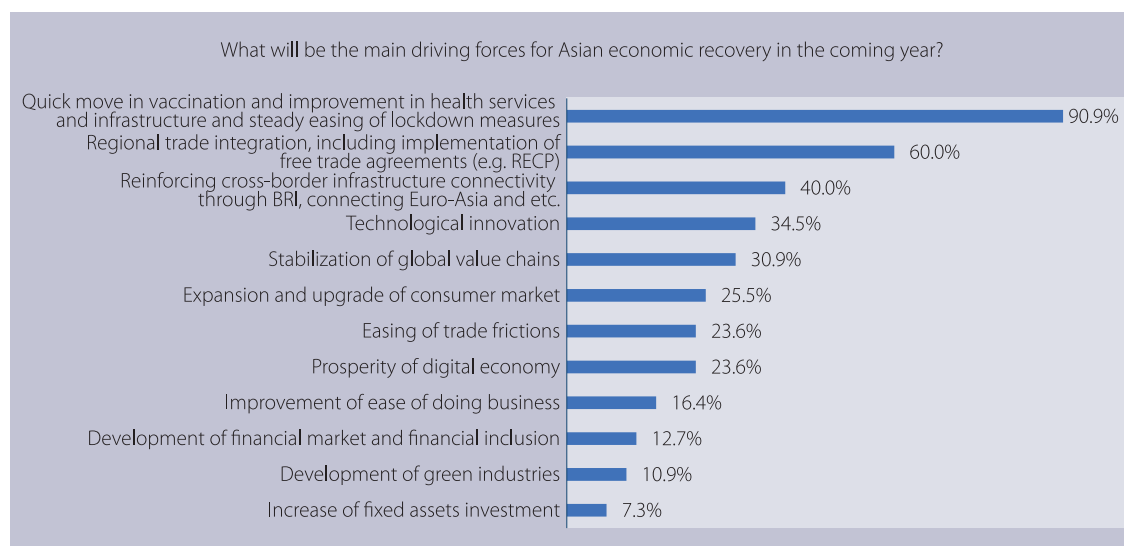


Figure 3-7 Prediction about Asian Economic Growth Drivers

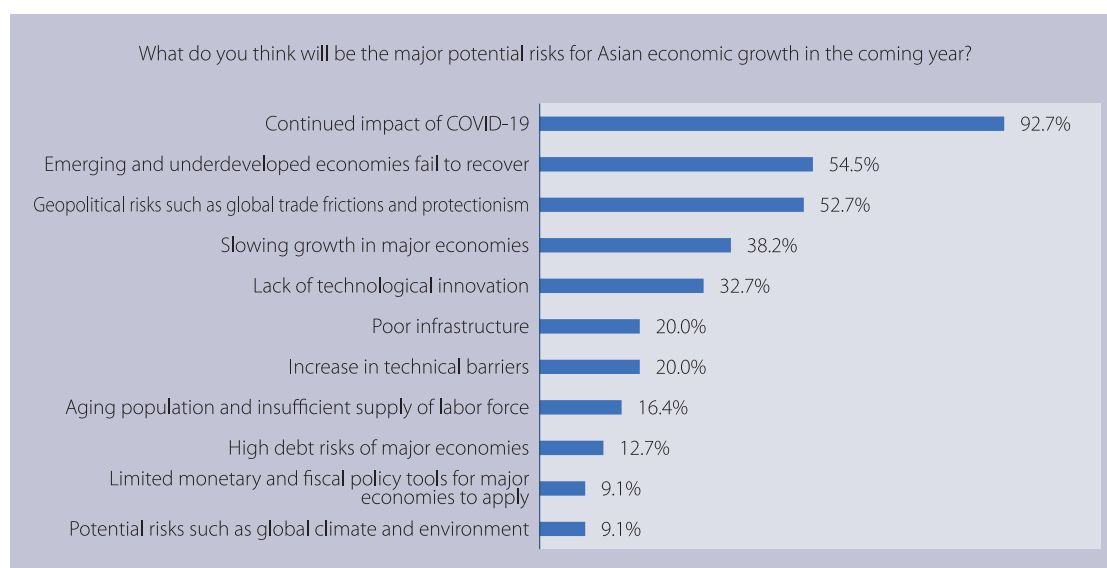


Figure 3-8 Views on the Risks for Asian Economic Growth

3.1.3 China: New Development Landscape Helps Ensure Stable and Sustainable Growth, while the Risk of Power Competition with the US Lingers

China showed how resilient its economy is when it shrugged off the shock of COVID-19, and was among the first to emerge from the pandemic, and has since continued to power global recovery. According to China's National Bureau of Statistics, China's GDP rose 2.3 percent year-on-year and became the only major economy to register growth in 2020. Most

respondents are therefore optimistic about China's economic outlook (See Figure 3-9).

Next to effective pandemic control, businesses believe expansion and upgrading of consumer market as well as technological innovation are two other primary drivers of China's sustainable growth (See Figure 3-10). The Chinese government has unveiled the "Dual Circulation" development strategy, which emphasizes a strong domestic economy with international engagement playing a

supplementary and complementary role. Prioritizing the domestic market and tech innovation is expected to help China achieve higher quality and more efficient, equitable, and sustainable development and provide a strong boost to upgrading its economy.

However, along with the shock from COVID-19, trade tension may once again alter the course of China's economy. **Over 80 percent of businesses see geopolitical risks such as global trade frictions and protectionism as the biggest potential threats to China's economic growth** (See Figure 3-11). For one, the pandemic has brought severe challenges to the implementation of China-US phase-one economic and trade agreement, adding to the uncertainties surrounding China-US trade relations in 2021. Second, the selective multilateralism championed by the new Biden administration also clouds and complicates the relations between the two nations.

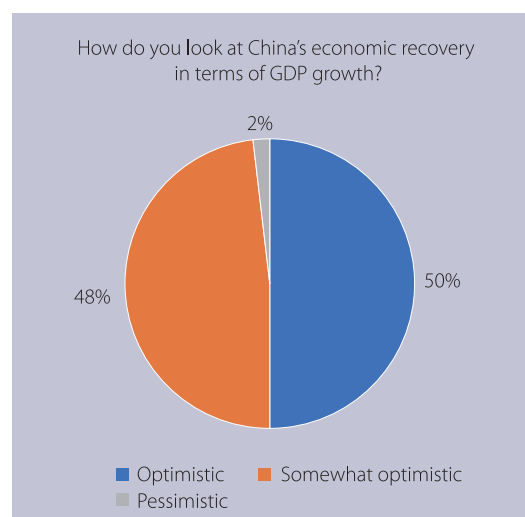


Figure 3-9 Businesses' Expectation for China's Economy

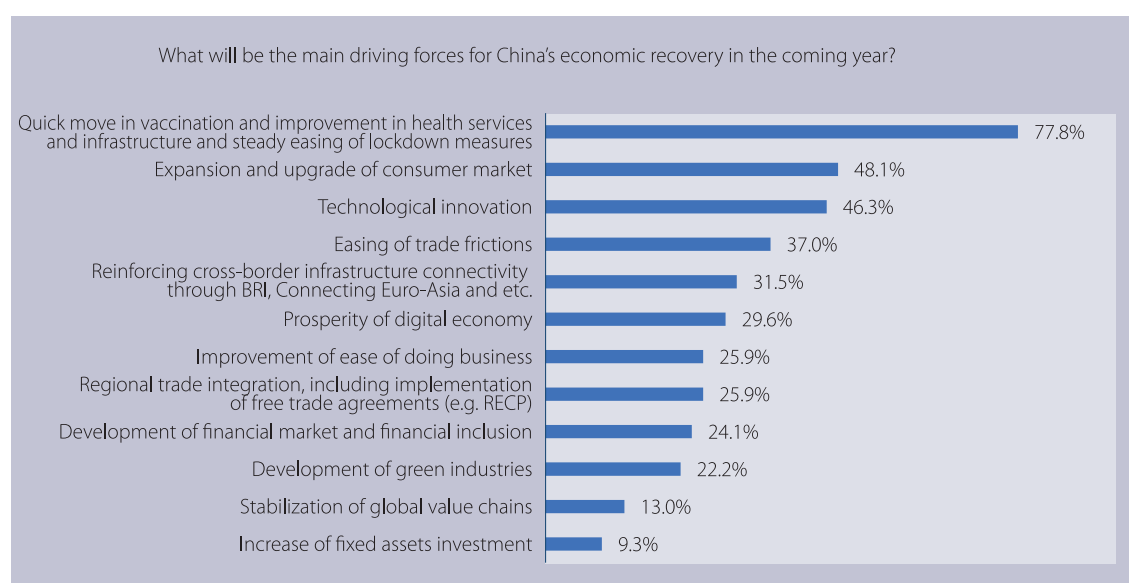


Figure 3-10 Prediction about China's Economic Growth Drivers

Rising technical barrier and insufficient tech innovation also present major risks. The survey results reveal not only the importance of cutting-edge technology to the surveyed businesses, but also China's current deficiency in tech innovation. Therefore, to achieve sustainable economic growth in

the post-COVID era, China must accelerate its implementation of the new development strategy, more effectively tap its vast domestic market, and give full play to tech innovation, the key growth driver.

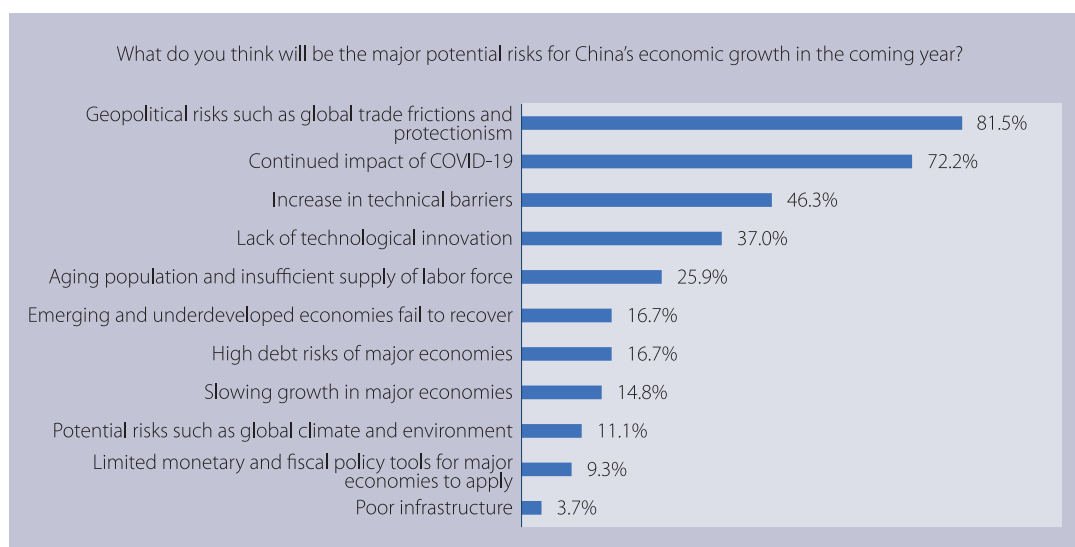


Figure 3-11 Views on the Risks for China's Economic Growth

3.2 Organizations and Sustainable Growth

In January 2016, the *2030 Agenda for Sustainable Development* officially came into force as a call to action for all countries to achieve 17 Sustainable Development Goals (SDGs) by 2030. The goals include no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice and strong institutions; and partnerships for the goals.

The sudden outbreak of COVID-19 has alerted the world that low-probability events, such as environmental crisis, climate change, epidemics and war, would bring devastating harm to global progress once they occur. Both governments and organizations should attach sufficient importance to the agenda for sustainable development, to avoid the next black swan.

Given the negative impact of COVID-19 on SDGs and economic recovery, we will dive deep into the survey results regarding “good health and well-being”, “affordable and clean energy”, “industry,

innovation and infrastructure”, and “climate action”. The survey indicates that organizations generally have a vague understanding of SDGs — most of them focus merely on SDGs directly related to business performance or those frequently discussed, with fewer to align business development with the enhancement of social well-being. Meanwhile, the government has a greater role to play in encouraging organizations to achieve SDGs.

3.2.1 Good Health and Well-being

The targets for “good health and well-being” (SDG-3), as set in the United Nations' *2030 Agenda for Sustainable Development*, is to end the spread of AIDS, tuberculosis, malaria and other communicable diseases by 2030. The purpose behind the SDG-3 is to achieve universal health coverage, including access to safe and effective medicines and vaccines for all, with the focus on facilitating vaccine research and development and affordable medicines.

Over 80 percent of the surveyed organizations agree that their respective government has made sufficient investment into universal access to health care and access to safe and effective medicines and vaccines for all, and nearly 100 percent of the respondents believe that essential public health services are easily accessible in their respective countries (See Figure 3-12). This result is constrained by the limited number of host countries

of the businesses surveyed, and also indicates that organizations highly recognize government efforts in achieving the SDG-3. On the other hand, the respondents are also well aware of the unprecedented health and well-being challenges faced by countries during the pandemic. They have identified shortages of medical staff, slow process in developing COVID-19 vaccine, and a shortfall in COVID-19 case reporting and tracking as the main challenges in pandemic containment in their respective countries (See Figure 3-13).

The COVID-19 pandemic has exposed vulnerabilities in global public health system, with many European states seeking help from neighboring countries due to limited medical resources. Japan ranks first for hospital beds with an average of 13 for every 1,000 people. However, 35,000 people across Japan, who tested positive for COVID-19, had to stay at home, and many people died while waiting to be admitted to hospital.

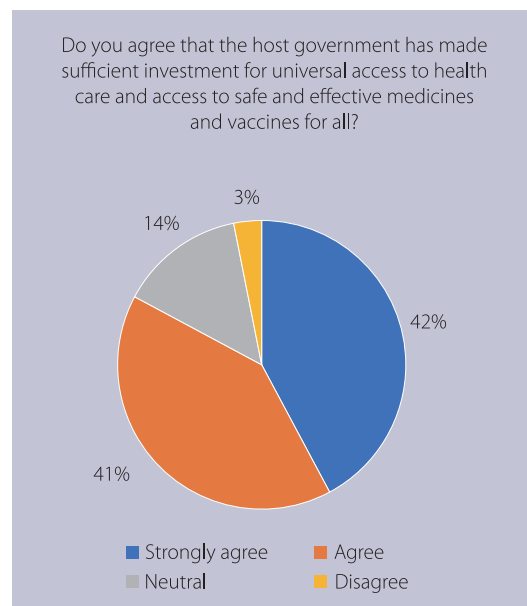


Figure 3-12 The respondents' View on Anti-pandemic Efforts by Host Countries

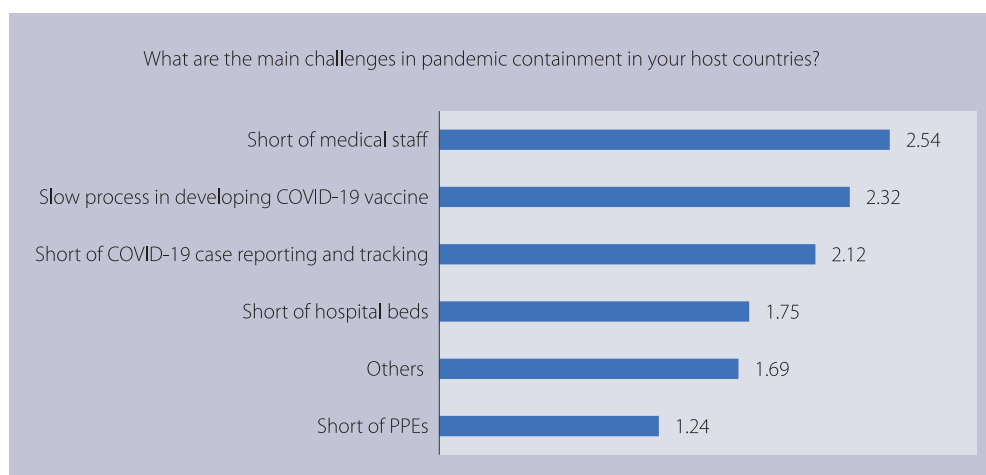


Figure 3-13 Main Challenges in Pandemic Containment

The acceleration of vaccination reveals a disturbing trend of unequal global vaccine distribution, thereby slowing down the SDG-3. In terms of vaccination coverage, middle- and high-income countries are significantly ahead of low-income countries. In Israel, as of March 23, more than 60 percent of the population have been vaccinated, surpassing the universal immunization coverage target of 60 percent. However, the vaccination pace has been slow in low-income countries, with some very lowest-income countries initially getting only 25

doses of vaccine, and most of them have not yet started vaccination. The resulting north-south divide in public health will hinder global economic recovery and significantly affect global sustainable development in the long term.

The pandemic sounds the alarm for all countries to focus on the management of public health emergencies for their residents' health and well-being. It can be seen from the survey that basic medical insurance provided by the government and organizations for residents and employees generally

does not cover sudden infectious diseases, and most organizations do not have the corresponding emergency response mechanism. The coverage of commercial insurance provided by organizations for employees is 67.7 percent, and there is still room for expansion compared with 90.8 percent of national insurance coverage. In this regard, it is imperative for organizations to underline the importance of health insurance in employee welfare and work with the government in strengthening national health insurance, so as to cope with increasing uncertainties and risks.

3.2.2 Affordable and Clean Energy

The targets for “affordable and clean energy”, as set in the United Nation’s *2030 Agenda for Sustainable Development*, is to ensure universal access to affordable energy services through proactively investing in clean energy sources such as solar, wind and geothermal, while adopting cost-effective standards for a wider range of technologies. It is therefore necessary to expand related infrastructure

and upgrade technologies.

Energy is the corner stone of economic and social development. In order to achieve sustainable economic development in the post-pandemic era, countries need to optimize energy consumption structure by promoting clean energy sources under the premise of secure energy supply. The technological innovations and policy incentives by various countries have led to reduced cost of clean energy sources such as solar, wind and geothermal. The world energy system is experiencing consumption structure adjustment that prioritizes the use of clean and low-carbon energy, thus increasing the share of renewable energy in global primary energy consumption by 4 percentage points in the past decade (See Figure 3-14). In 2019, renewable energy consumption has seen record growth, marking a milestone in global energy transformation. **In order to achieve the goal of affordable and clean energy, the government and organizations need to work together in promoting broader application of new energy sources.**

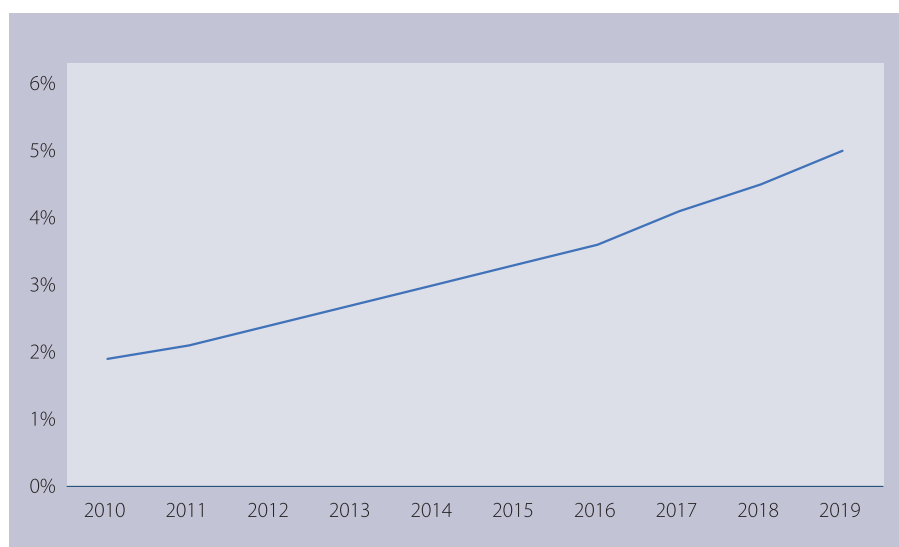


Figure 3-14 Shares of Renewable Energy in Global Primary Energy Consumption, 2010-2019

Source: BP Statistical Review of World Energy.

In our survey, however, more than half of the organizations report that their main source of electricity remains thermal power under the traditional power domain, followed by hydropower.

This shows that governments could still do more to promote technological innovation and infrastructure investment in the new energy power sector (See Figure 3-15).

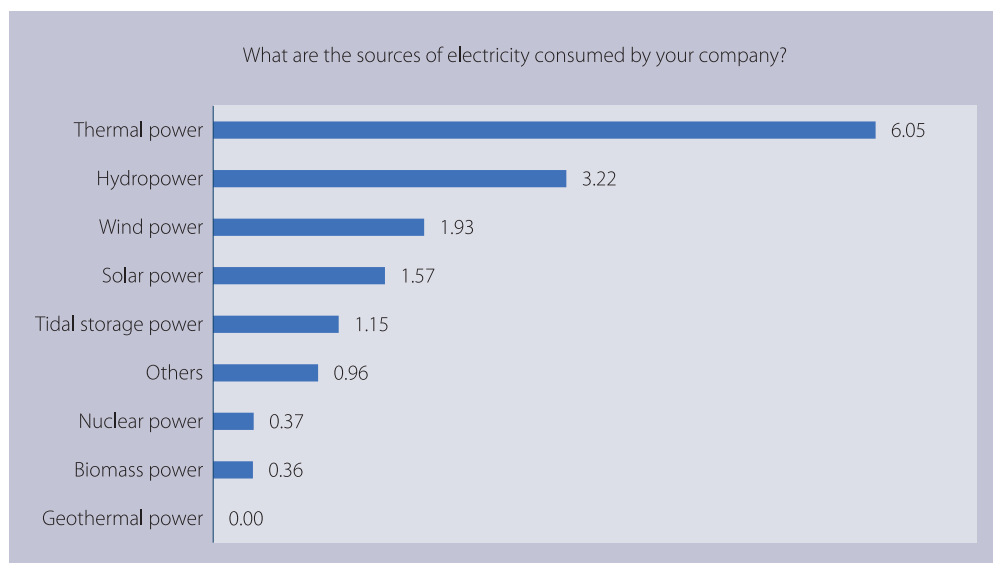


Figure 3-15 Sources of Electricity for Organizations

As major energy consumers, organizations could significantly boost the transformation of energy consumption through the simplest actions. Meanwhile, **with the performance of energy consumption directly tied to business performance, most organizations have already developed and implemented related measures for energy management and conservation.** This partly reflects

that organizations recognize the need to efficiently use clean energy. But they tend to act in consideration of achieving business results, without realizing how their actions would impact energy-related SDGs (See Figure 3-16). In our survey, nearly a quarter of organizations say they have not yet used new energy vehicles for example (See Figure 3-17), highlighting the need to enhance awareness in this regard.

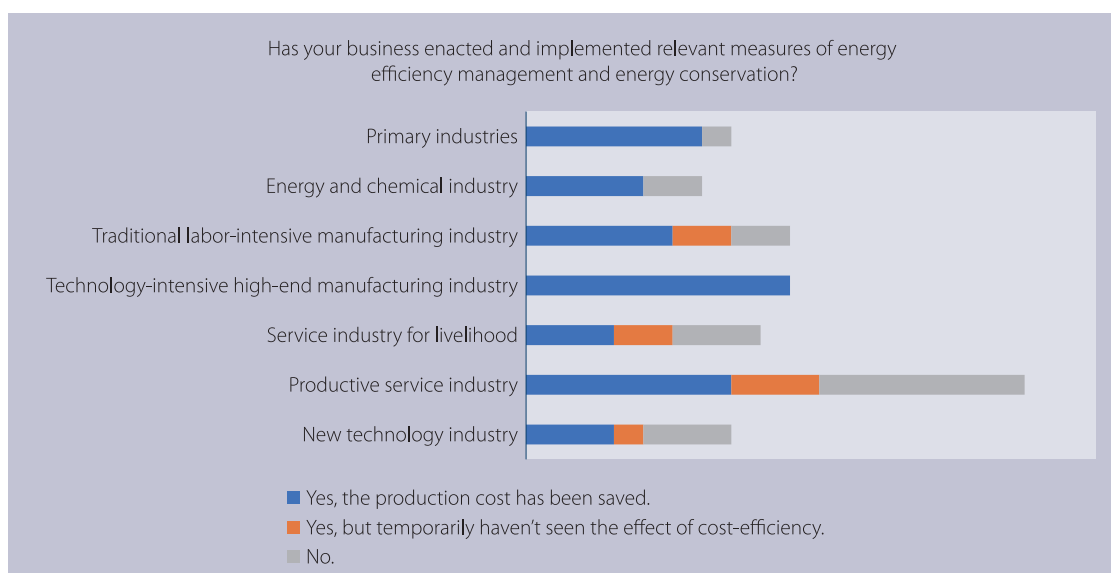


Figure 3-16 Implementation of Energy Management and Conservation Measures among Organizations

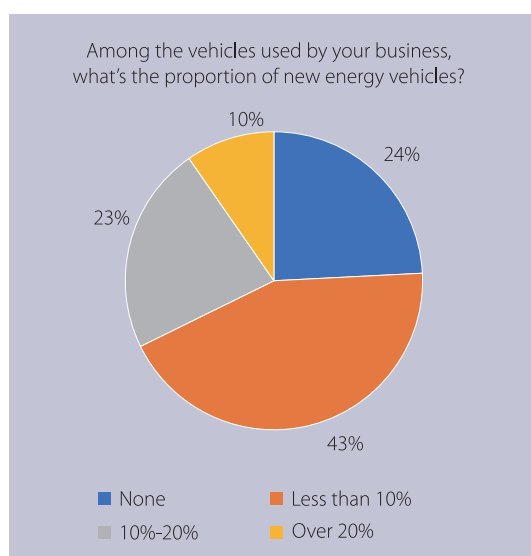


Figure 3-17 Proportion of New Energy Vehicles Used by Organizations

Through further analysis, we find that the use of new energy vehicles by organizations is constrained by insufficient new energy vehicle charging infrastructure (See Figure 3-18). Most organizations indicate that the total amount of charging stations is not sufficient and the spatial distribution of charging stations is unreasonable. **In view of this, to help organizations achieve energy transformation, governments need not only to enhance organizations awareness of the importance of energy sustainability goals, but also to actively improve infrastructure construction in this regard, so as to build a better environment in which organizations can transform their energy consumption.**

3.2.3 Industry, Innovation and Infrastructure

Continuous investment in infrastructure and innovation is a key driving force for social development. As mentioned

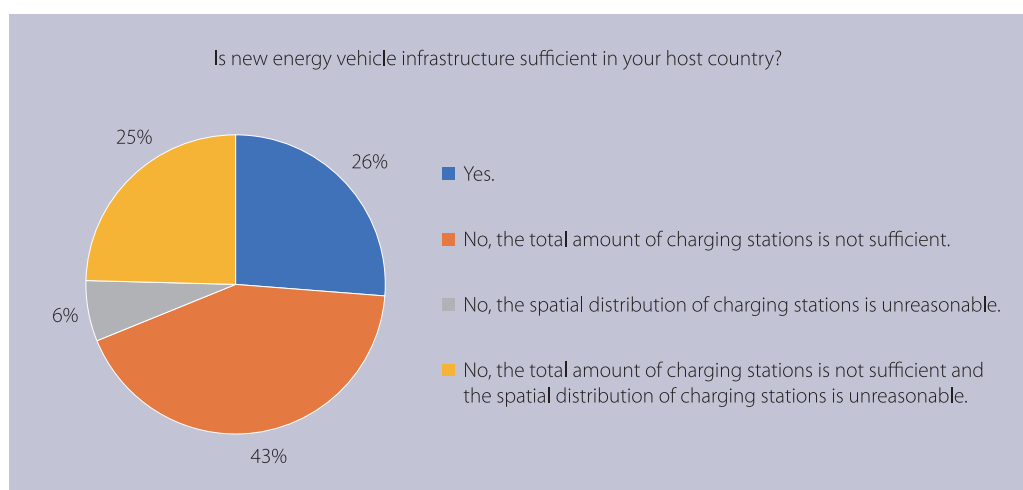


Figure 3-18 Status of New Energy Vehicle Infrastructure Construction in Host Countries

in the United Nations *2030 Agenda for Sustainable Development*, technological progress is key to developing long-term solutions to economic and environmental challenges. Efforts like creating new jobs and improving efficiencies, promoting sustainable industry development, and investing in scientific innovation will all help drive us towards sustainable development.

Though the COVID-19 pandemic has significantly disrupted the global economy, it has also accelerated world's pace of transition into the

era of digital economy. To comply with prevention and control measures while ensuring proper functioning of social economy, emerging business formats that feature contactless service, such as remote working, e-commerce, telemedicine, online education and virtual entertainment, grew rapidly from the crisis, providing a strong impetus for economic recovery around the world. In its research report, WTO indicates that the pandemic has clearly showed that e-commerce cannot only serve as an important tool or solution for consumers, but also

support the development of small businesses. E-commerce, through strengthening the country's competitive edge, will also become a key driver of both domestic economic growth and international trade. Undoubtedly, digital technology will be critical infrastructure that drives industry development and scientific innovation in the future.

While underscoring the strong resilience of digital economy, the pandemic has also revealed the problems and challenges that exist along the digital transformation journey. Governments need to enhance infrastructure construction to further strengthen the foundation for digital transformation. According to our survey, 5G is generally available in nearly all countries surveyed (See Figure 3-19), but satisfaction of organizations towards the Internet services provided by their host countries has yet to be improved. Going forward, while continuing to step up efforts to enhance new infrastructure construction, governments also need to focus on the demands and feedback of organizations to better facilitate their digital transformation.

On the business side, drivers for and the pace of digital transformation vary among industries. In the second half of 2020, the adoption of remote work arrangement and teleconferencing increased rapidly, with over 80 percent of organizations reporting that more than 50 percent of their meetings were conducted virtually. From an industry perspective, the level of business digitalization varies significantly among

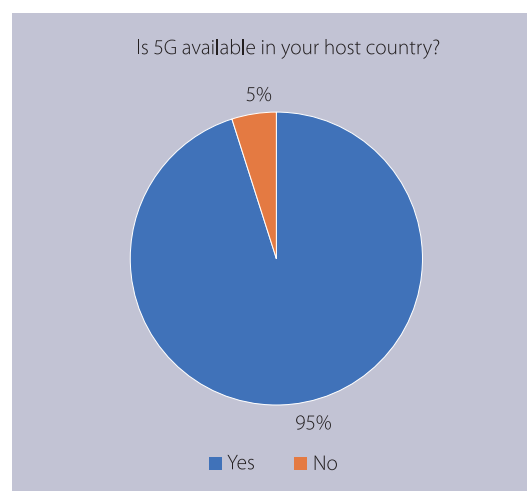


Figure 3-19 Availability of 5G Service in Host Countries

sectors, with technology-intensive high-end manufacturing industries and new technology industries leading the way (See Figure 3-20). This is because digitalization gaps have already existed among different industries. For example, digital transformation of traditional labor-intensive manufacturing industries may be constrained by relatively weak digital infrastructure. Furthermore, an industry's inherent attributes determine its alignment with digital transformation, thereby affecting organizations' motivation to digitalize their business.

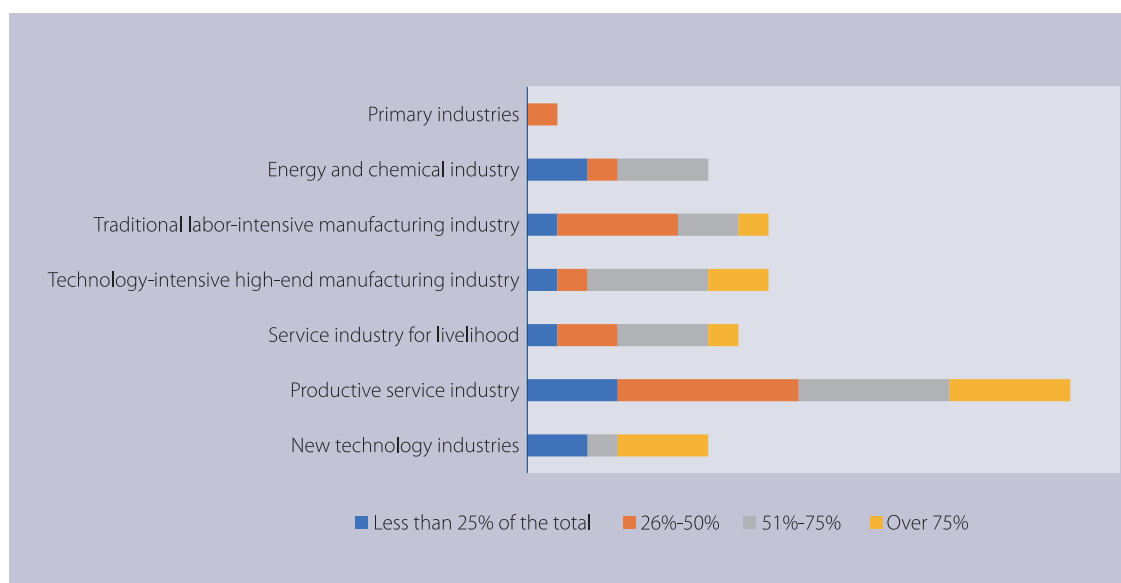


Figure 3-20 Proportion of Digitalized Business by Industry

There is no denying that digital economy will become one of the most important drivers of the global economy's sustainable recovery. Organizations should fully recognize the positive link between their own digital transformations and the sustainable development of the global economy, and actively utilize the incentives and support provided by governments to push their own businesses to go virtual.

3.2.4 Climate Action

The impact of climate change has already been felt by

all countries across the globe. Global CO₂ emissions have nearly doubled over the past 30 years (See Figure 21), and global warming is creating a lasting impact on the Earth's climate system. The United Nations *2030 Agenda for Sustainable Development* seeks to strengthen the capabilities of vulnerable inland and island countries to withstand risks, and is committed to enhancing public awareness. Countries around the world need to include capacity building into their national policies and strategies, foster stronger political will, and adopt technological measures.

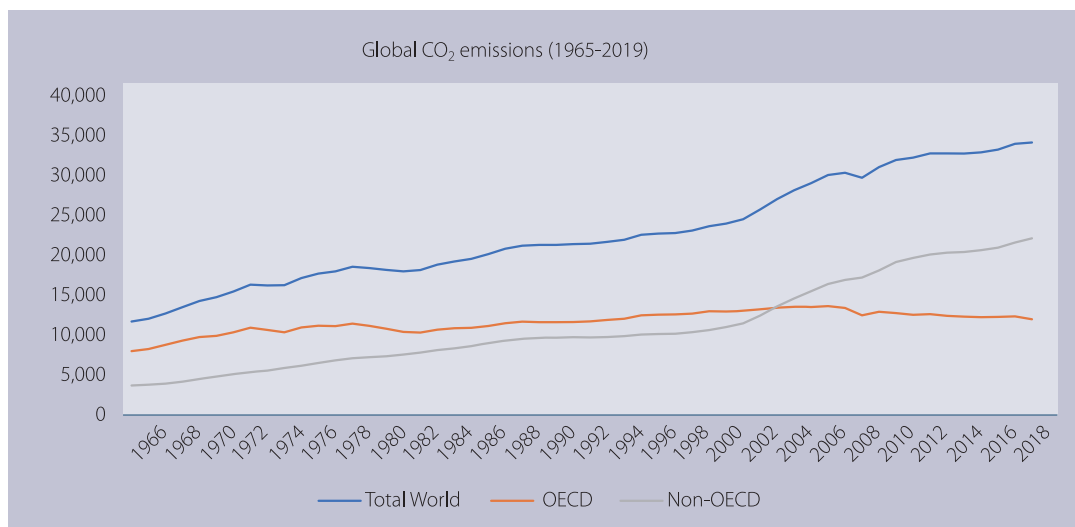


Figure 3-21 Global CO₂ Emissions

Source: Wind, Deloitte Research.

As a result of long-term publicity by international institutions and organizations, climate change has become an issue of great concern for organizations. Results of our survey show that over 80 percent of respondent say they are familiar with the general tenets of the Paris Climate Accord and the commitments made by major economies. At the same time, pressures arising from environmental regulations also push organizations to recognize that they should proactively set goals and targets in their climate plans, engage in actions to address climate change, and reduce the environmental pressures they face in pursuing sustained development. (See Figure 3-22 and Figure 3-23)

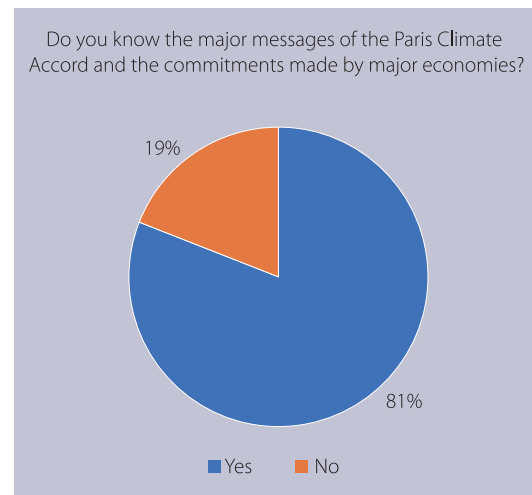


Figure 3-22 Organizations' Understanding of the Paris Climate Accord

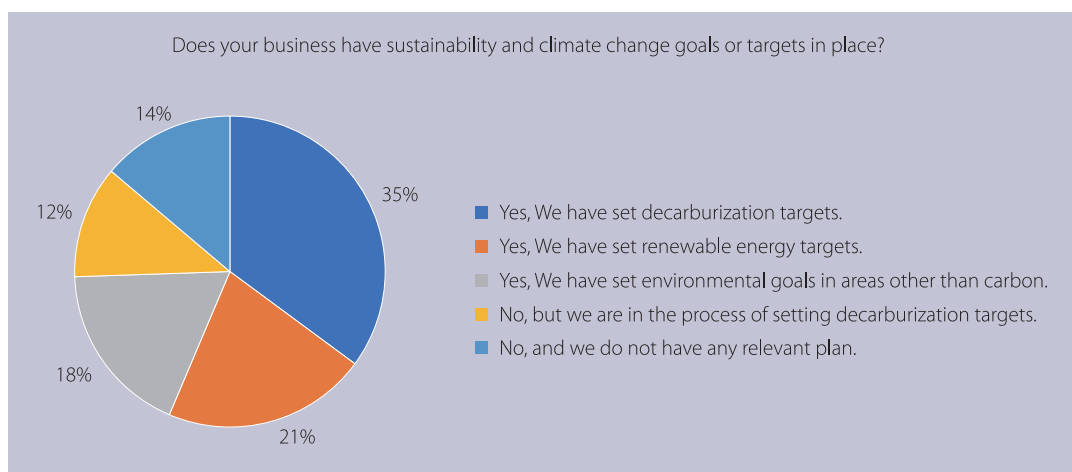


Figure 3-23 Goals and Targets Set by Organizations in Addressing Climate Change

According to the survey, more than half of the organizations have already set decarbonization targets. To address sustainability and climate change, most organizations choose to undertake simple actions, such as encouraging more environmentally sustainable practices among employees, and using more sustainable materials in production and daily work, etc., which are within organizations' scope.

These measures are low cost and easy to roll out, but have a relatively limited effect. Purchasing renewable energy and promoting on-site distributed renewable energy projects could generate significant results, but would also increase organizations' cost and present certain risks, thus chosen by less organizations (See Figure 3-24).

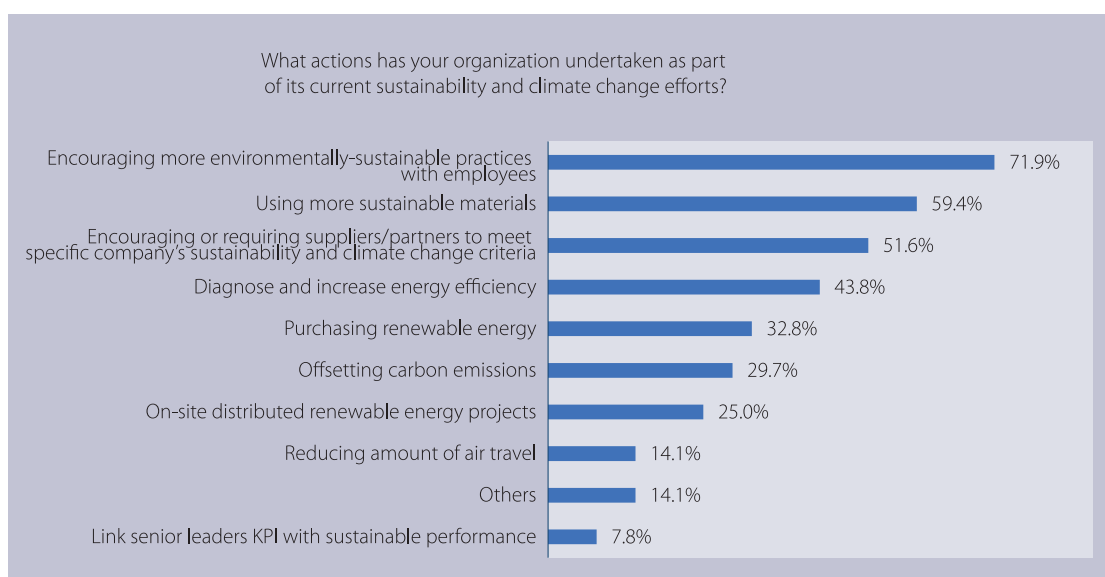


Figure 3-24 Actions Taken by Organizations in Addressing Sustainability and Climate Change

The survey findings reflect **the various challenges faced by organizations in pursuing sustainability objectives and addressing climate change**. For example, as it is hard to measure impact, organizations would not be able to have a clear cost-benefit analysis of their efforts around energy conservation and emissions reductions, which is discouraging for them to a certain extent. Furthermore, they would have little incentive to develop dedicated cost-benefit solutions to sustainability and climate change, and thus would be

unlikely to engage subject matter specialists to help achieve related goals (See Figure 3-25). In this regard, governments could implement measures including provision of innovation subsidies to help reduce capital pressures of organizations in transforming towards green production. Leading organizations in areas such as green technology innovation, clean production, and enhancement of energy use efficiency should share their success stories, and set the standard and example for other organizations to follow.



Figure 3-25 Challenges of Organizations in Taking Concrete Sustainability and Climate Change Efforts

3.2.5 Awareness of "Social Enterprise" yet to Improve

The survey finds that organizations have considered certain SDGs in business adjustment. **However, sustainability awareness among organizations remain low in general, with most focusing only on SDGs directly related to business performance or those hotly discussed. They are yet to improve their awareness of "social enterprise",** which commits organizations to aligning business development with the enhancement of social wellbeing.

Nearly 90 percent of organizations have set or plan to set decarbonization, renewable energy or other targets related to climate change. However, more than 70 percent of organizations say they have never issued nor are planning to issue green bonds to finance their investment. Through Google Trends'

analysis of top search trends of the keywords "green bond", "new infrastructure", "digital economy", and "climate change" in each quarter from 2016 to 2020 (See Figure 3-26), we find that search volume of "climate change" is significantly higher than other sustainability-related keywords. This shows that organizations tend to be interested in hot topics, and lack a full, systematic understanding of SDGs.

Based on their understanding of sustainability, some organizations are deliberately planning to expand their business to sectors including new energy, new retail, new infrastructure and low carbon development (See Figure 3-27), with expectations to contribute to SDGs while driving their own sustainable recovery. As organizations begin to transform their business model, governments should monitor the progress and provide guidance as appropriate.

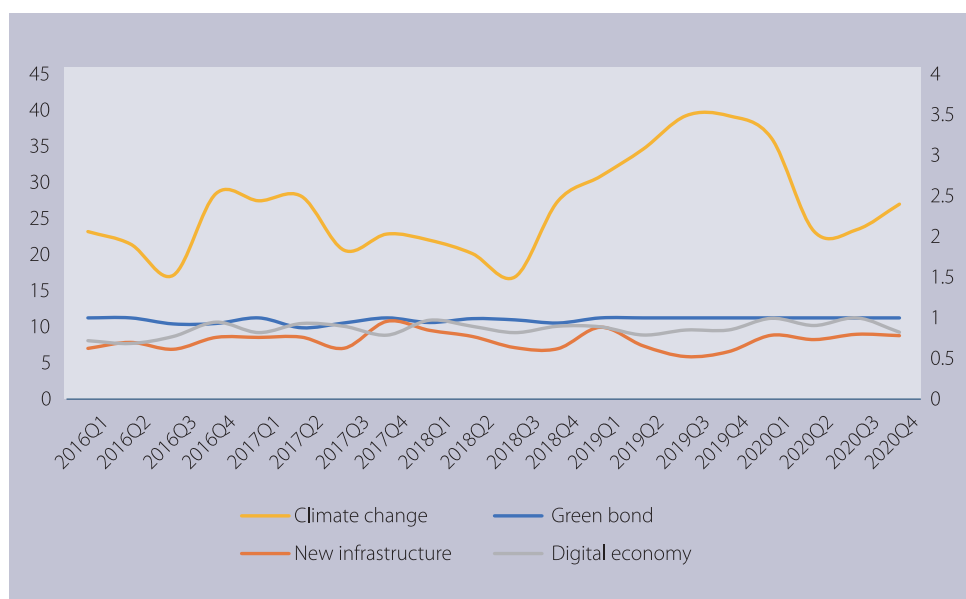


Figure 3-26 Top Search Trends by Keyword Worldwide, 2016-2020

Source: Google Trends, Deloitte Research.

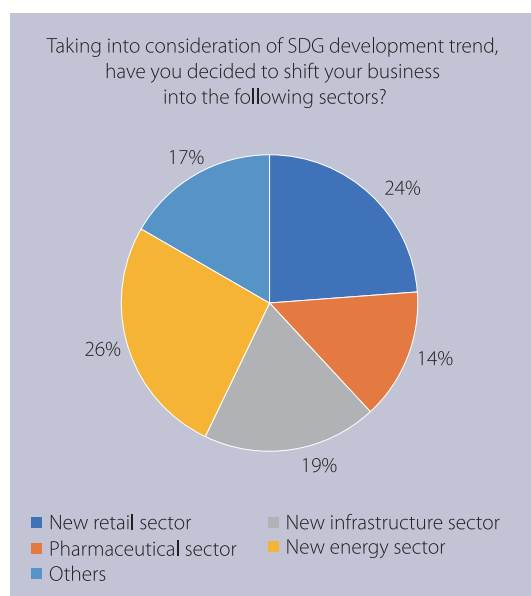


Figure 3-27 Organizations' Plans to Shift Business

3.3 Outlooks

3.3.1 Enterprises: Actively Implement the Sustainable Development

Through our analysis, we can find that a sustainable recovery represents the current direction of global

economic development in the post-epidemic era, and enterprises have much significant potential to develop more sustainability. Enterprises believe that they have advantages in promoting industrialization, strengthening infrastructure construction and innovation, providing quality education, and promoting good health and well-being (See Figure 3-28). On the one hand, enterprises are the main body of technological innovation and play an important role in promoting innovation, driving economic growth and increasing employment. On the other hand, higher-level development goals of "social enterprises" encourage enterprises to do something in energy conservation and emission reduction, gender equality, education assistance and so on. However, through the investigation, it is found that there are lingering challenges within businesses, such as insufficient understanding of sustainable development goals and insufficient actions. In the future, enterprises should strengthen their understanding of sustainable development goals, give full play to their own advantages, identify the areas of convergence between their own operations and national goals, and actively promote the global SDGs while realizing their own sustainable development.

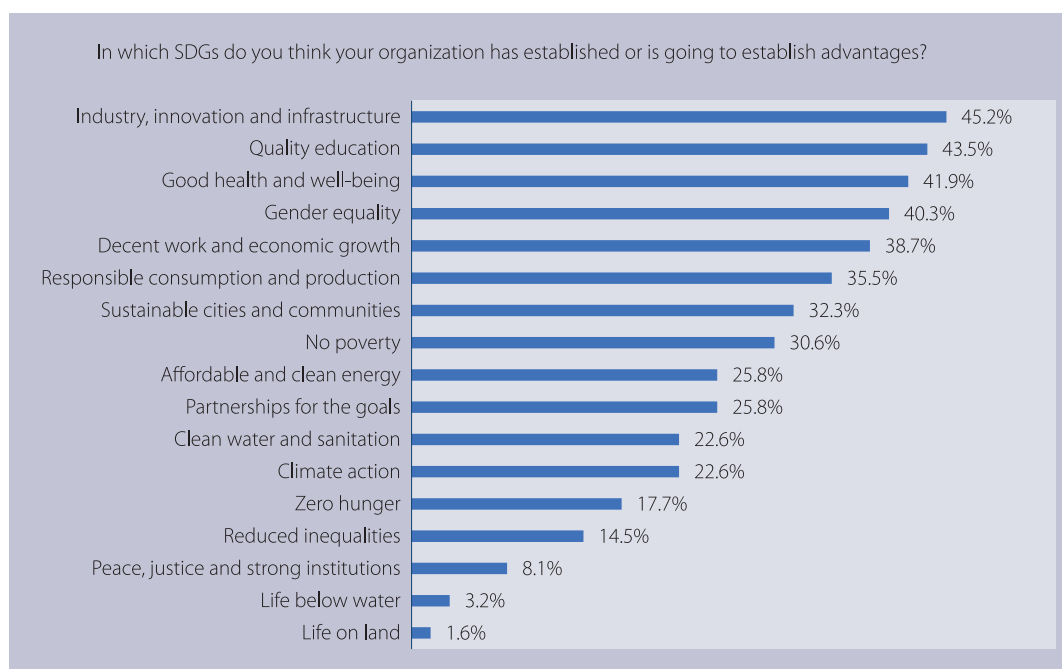


Figure 3-28 SDGs Where Organizations Have Advantages

3.3.2 Government: Help Enterprises to Achieve Sustainable Development Together

Naturally the primary motive for almost all enterprises is to realize profits. Therefore, in the process of encouraging enterprises to participate in the sustainable development agenda, the government should give corresponding support. According to the survey, the most desirable support for enterprises is to obtain the

latest information and policy interpretation in a timely manner, dialogue opportunities with relevant subjects, and supply chain support (See Figure 3-29), while policy support, risk sharing mechanisms and a lack of funds are the biggest constraints faced by enterprises when investing in sustainable development goals (See Figure 3-30). This provides a direction for the government's aid policy for enterprises in the future.

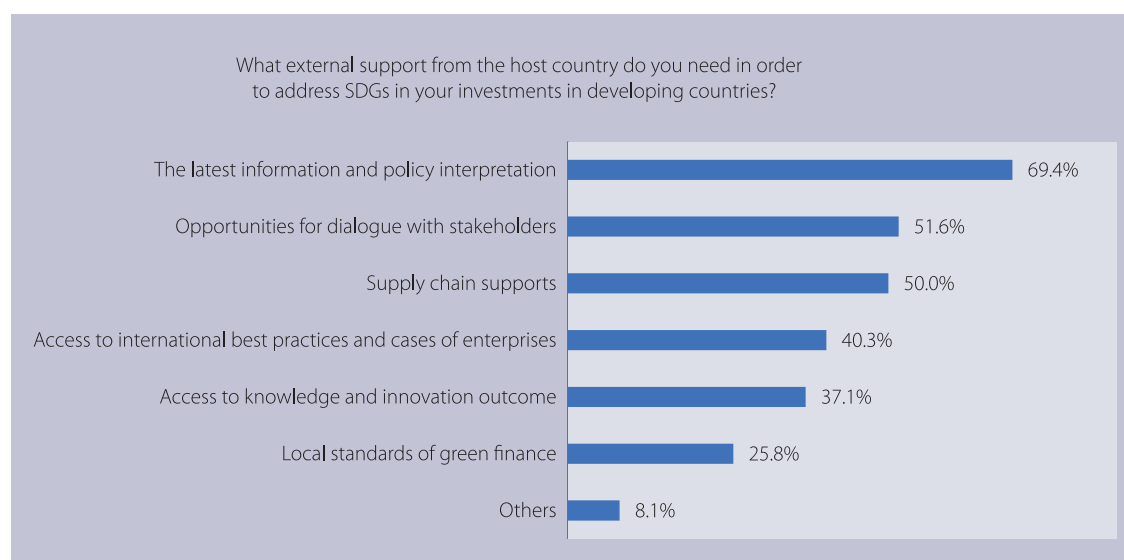


Figure 3-29 External Support Businesses Expect to Gain from the Host Country

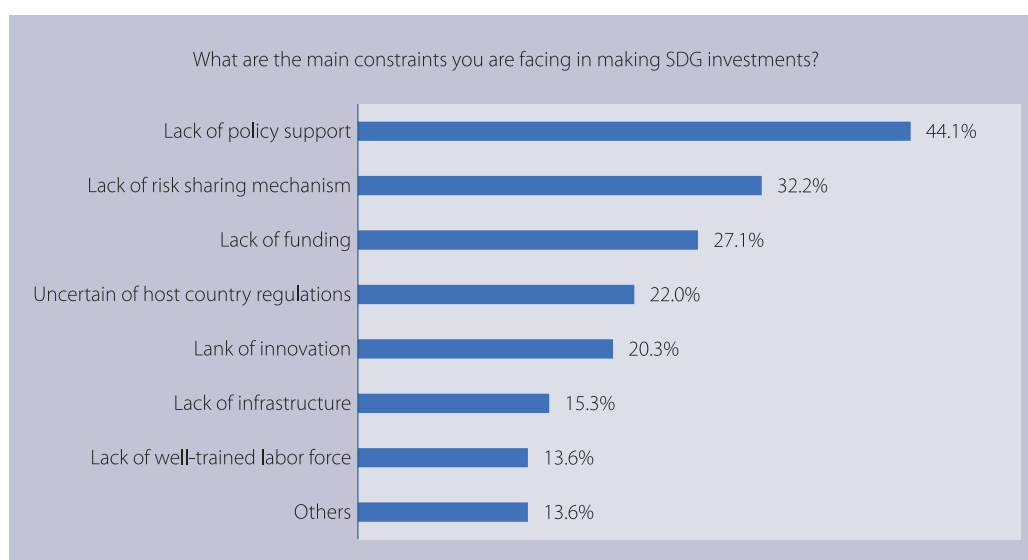


Figure 3-30 Main Constraints Businesses Face in Making SDG Investments

Government should strengthen infrastructure construction that is compatible with the sustainable development goal and provide convenience for enterprises to develop more sustainability. On the other hand, the government can alleviate the financial pressures from sustainable transformation of enterprises and establish a risk sharing mechanism between government and business by means of subsidies and setting up funds. In addition, it is necessary for the government to establish a good communication mechanism with enterprises, help enterprises solve the problem of information asymmetry, effectively understand the difficulties and needs of enterprises, and give full play to the vitality of enterprises in sustainable development.

3.4 Case Study

3.4.1 Hyundai Motor Group: Hydrogen Ecosystem Powers Energy Mix Transition

The global energy system is fast transitioning to a renewable model built on a mix of solar, wind, and hydrogen power. In September 2020, President Xi Jinping pledged that China would peak carbon emissions by 2030 and achieve carbon neutrality by 2060. One month later, President Moon Jae-in announced that Korea will be carbon neutral by 2050. This signals that both the Chinese and Korean governments are taking active measures to address

climate change, including the aim of switching from coal to cleaner energy sources.

Hyundai, an influential car maker in the world, has long recognized that clean energy promises not only new opportunities for the auto industry, but also solutions to climate change and environmental protection. The company embarked on its journey towards a “hydrogen society” in 1998. In recent years, Hyundai has been leveraging its existing capabilities and cutting-edge hydrogen technologies to develop hydrogen fuel cells as a new business line. Utilizing fuel cell electric vehicles (FCEVs), Hyundai aspires to build a hydrogen ecosphere that promotes energy transition.

In 2018, Hyundai unveiled its 7.6 trillion-won mid- and long-term development roadmap FCEV Vision 2030, in which the company plans to produce 500,000 FCEVs and 700,000 fuel-cell systems annually by 2030. Of the fuel-cell systems, 500,000 will be used on the FCEVs and 200,000 on buses, trucks, vessels, trains, and other transport and logistics applications as well as power generation to help build the hydrogen society. To achieve this target, Hyundai will invest about RMB47 billion.

As a responsible leader in the new energy vehicle industry, Hyundai also strengthens the cooperation and development of hydrogen energy in China and plans to start mass producing hydrogen fuel cells from the latter half of 2022. Looking forward, it will continue

to increase its investment and production capacity, share its experience with Chinese government, peers, and experts, and cooperate with multiple stakeholders in building on ecosystem and standards for the hydrogen energy industry to follow. Hyundai seeks to promote a carbon neutral world with more

new energy vehicles and make greater contribution to China's green development through the hydrogen sector.

So far Hyundai's hydrogen business mainly comprises passenger FCEVs, commercial FCEVs, and matching products (See Figure 3-31).

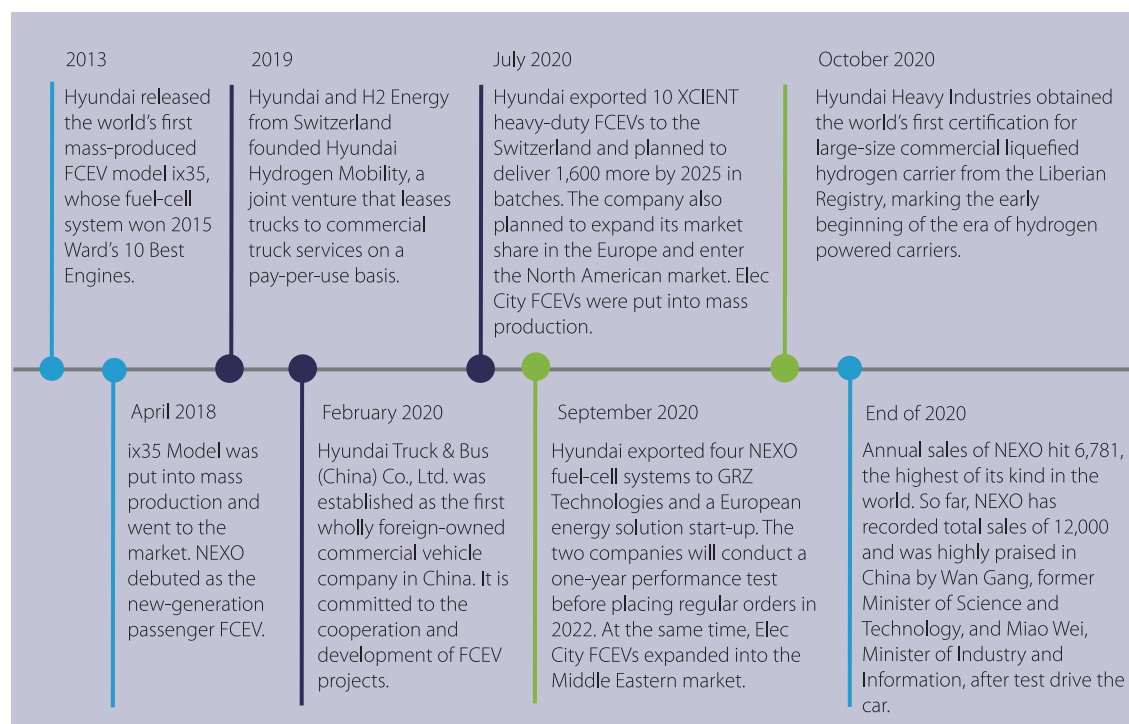


Figure 3-31 Hyundai's Hydrogen Business

3.4.2 Merck: Businesses Should Re-examine Their Social Responsibilities after the Pandemic

The challenges posed by COVID-19 have been unprecedented. It has made people rethink the role of businesses in our society and prompts businesses to re-examine their social responsibilities.

Since its entry into the Chinese market, Merck has been committed to corporate citizenship, fulfilling its social responsibilities through programs in patient assistance, health education, energy efficiency and environmental protection, poverty alleviation and educational support, and scientific literacy. Contributing to society as a responsible company is now part of Merck's corporate culture.

In response to COVID-19, Merck provided test reagents, equipment, and technical solutions to support global coronavirus research and vaccine development, contributing to more than 50 vaccine

development projects worldwide. Upon the initial outbreak in China, Merck donated 15,000 professional protective masks and over RMB600,000 worth of reagents for scientific research to the front-line medical staff at five designated hospitals in Wuhan through its global procurement network. It later made another donation worth RMB3 million, in the form of cash and medical supplies, to support China in an all-out fight against COVID-19. The pandemic reminds Merck that only through the concerted efforts of the business sector, research institutes, and communities, can we overcome public health crises.

Merck values its responsibility to help society and prioritizes the health and safety of its employees. During the pandemic, Merck still maintained close contact with staff in China through remote tools, and rapidly allocated resources to protect them and their families, especially those in Wuhan who received the

strongest degree of support from the company.

Merck believes that corporate sustainability must be approached from two dimensions: innovation and digitalization. There is a general need to transition from energy-intensive growth to technological and digital innovation-driven growth. As a technology company and a leading innovator, Merck has always performed its responsibilities of scientific exploration. From advanced genome editing, to breakthroughs in curing challenging diseases, and the R&D and applications of new-generation OLED materials, Merck promotes sustainable development of humanity and the planet through technological innovation. In addition, the company manages to mitigate the impact of its business operation on the environment via a line of actions, including sustainable water management, GHG emission reduction, and waste prevention.

Digitalization requires businesses to rethink their development model. In the past, many only pursued production and sales goals; now sustainability considerations have added a new, and even more important, dimension to business development. This requires changes in corporate mindset and priorities. For example, the biopharmaceutical industry needs to think hard on how to balance sustainability goals with corporate targets and commercial profitability with social benefits.

3.4.3 JD: Digital Technologies Drive Urban Sustainability

JD Technology, a business group under JD.com, designed a smart city operating system to underpin intelligent cities. Equipped with cutting-edge

technologies, such as JD Urban Spatio-Temporal Data Engine, federated learning with digital gateway, and Monet visualization platform, the system creates output through the modular spatio-temporal AI algorithm that enables efficient and secure “dialogue” within a city’s mass data. The system will help cities cut operating costs, perform granular governance, and contribute to sustainable development.

The system was used to build China’s first “command center” for the modern governance of Nantong, a city in Jiangsu province and one of the First Pilot Cities for Modern Urban Governance in China. That command center integrates the features of a public service hotline, digital urban management, and grid service management, and operates as part of Nantong Big Data Management Bureau. The center connects data silos, bringing together billions of data points from 75 government departments. It displays traffic, public security, environmental pollution, and other information in real time on a large screen. Upon the occurrence of any emergency, the center will send instructions to the responsible departments, enabling quick response. Beyond the screen, the command center is also available on PCs, mobiles, and tablets, where officers stay abreast of what’s going on in the city, in order to make technologically informed decisions, and exercise remote instruction and control.

As the CTO of Nantong in charge of smart city building, JD Technology also tailored a “control cabin”—a mobile client that allows officers to make rational administration decisions in a timely manner after viewing the economic development, investment invitation, and real-time videos of the city.

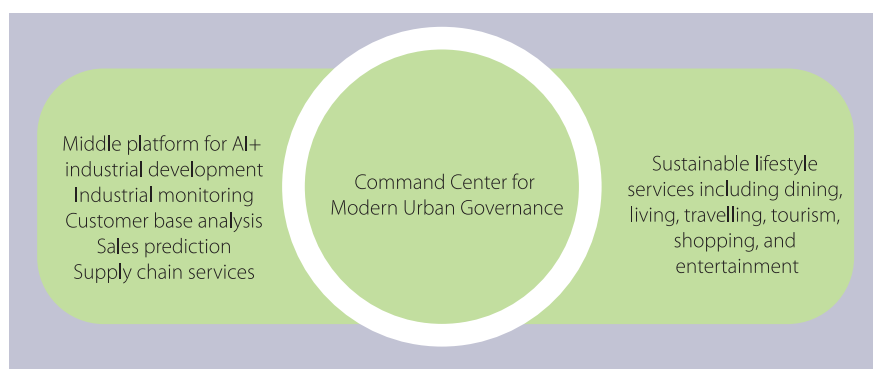


Figure 3-32 “One Core Two Wings” Architecture for the Urban Operating System of Nantong

JD Technology proposed a “One Core Two Wings” architecture for the urban operating system (See Figure 3-32) to assist the government in building an intelligent city that efficiently delivers sound governance, economic prosperity, and public well-being. Production and consumption are served separately by the wings and further integrated dynamically through their underlying linkage. Under the architecture, there are many applications for

urban governance, industrial development, and lifestyle services. Data generated by these applications will flow back to the operating system, so that the government may review its efficiency and optimize administrative measures accordingly. That will create a flywheel effect and a virtuous cycle whereby the citizens, government and industries feed on each other.



Chapter IV

Recommended Actions toward Sustainable Recovery

COVID-19 has put our health, economy, and sustainable development in jeopardy. More than 2.6 million lives have been lost; the economy and employment suffered the hardest hit since the Great Depression in the 1930s. According to the estimation of the World Bank and the UN, the pandemic would create 119 million to 124 million “new poor”¹ (60 percent of which in South Asia) and 83 million to 132 million undernourished people. This will make it much harder to eliminate poverty and hunger—the first and second sustainable development goals (SDGs). As vaccination accelerates worldwide, distributional inequality becomes another issue. More than 335 million doses of vaccines have been administered in 144 economies, but 76 percent of them concentrated in 10 countries, the World Health Organization (WHO) reported on March 12, 2021. Carbon emission is also bouncing back after a seven percent drop² caused by the global GDP contraction in 2020, a year that saw few green projects in national economic stimulus packages. In the foreword of *World Cities Report 2020*³, UN Secretary-General António Guterres pointed out that in a world shadowed by the coronavirus, we cannot go back to business as usual, but need to “take the opportunity to build back better” and achieve a sustainable, inclusive, and green recovery for people

and the planet.

The *2030 Agenda for Sustainable Development* is an ambitious systematic program, as its 17 SDGs are interconnected and the efforts spent on one will bolster the others. In the pandemic and the post-pandemic era, addressing the deficits in healthcare, infrastructure, green development, and digital economy will greatly promote sustainable recovery and bring the 17 SDGs back on track. To address these four deficits, we should stand on the side of multilateralism and narrow the global governance deficit.

Global economic recovery hinges on pandemic control, which is thus a top priority for governments. With the accelerated rollout of vaccines and the reopening of the world, governments, businesses, the public, and the international communities should join hands to reduce the development deficits and propel sustainable recovery. Many resilient Asian economies rebounded in the second half of 2020 thanks to their earlier virus containment and sweeping economic policy responses. If Asia places the four development deficits high on its post-pandemic agenda, it will facilitate a regional and even global economic recovery. We recommend the following actions.

1 The difference between the poor population with and without the presence of the COVID-19 is calculated by the international poverty line of USD1.9 per day.

2 <https://www.globalcarbonproject.org/carbonbudget/20/highlights.htm>

3 https://unhabitat.org/sites/default/files/2020/10/wcr_2020_report.pdf. “We cannot go back to business as usual. Cities and communities are demanding that those in authority take the opportunity to build back better. To emerge stronger, we need a sustainable, inclusive and green recovery for people and the planet.”

4.1 Governments Should Develop Priorities

Many Asian governments lack the financial resources and resolve needed to achieve sustainable development—a long-term, systematic program. In terms of financial resources, these governments, especially those in the less developed economies, are constrained and, further, incapable of utilizing public funds efficiently or mobilizing private capital. They are even cutting investment in SDGs as their fiscal deficits and debts mount amid the pandemic. In terms of resolve, they have been indecisive in implementing the *2030 Agenda* and are not giving due weight or details to sustainability topics when formulating national development plans. To cope with the pandemic, some Asian governments have introduced bailouts, but primarily for emergencies and traditional industries, rather than for green transformation.

Asian governments are recommended to establish and strengthen institutional safeguards for implementing the *2030 Agenda*; take actions to better mobilize resources nationwide for rational resource distribution and debt repayment, and direct more funds to healthcare, green projects, digital development, and similar areas, especially those that build digital, green infrastructure; provide a social safety net that protects all citizens; encourage sustainability investment from the entire society, including businesses through improved laws and regulations, preferential policies, better government services, and extensive publicity and guidance; innovate cooperation models and actively promote the public-private partnership (PPP) model; incorporate ESG factors and climate actions into mainstream evaluation; and develop a mechanism to prevent and control risks that threaten sustainable development. To narrow the development deficit, Asian governments are suggested to act on the following priorities:

(1) Creating a complete healthcare system

① Creating a complete healthcare system in each Asian economy that deals with emergencies, medical treatment, and public health to meet people's diversified, all-around health needs that have shifted beyond traditional disease curing; integrating the healthcare system (big hospitals with small ones, rural hospitals with urban ones); and making the system more accessible, equitable, and responsive.

② Increasing investment in healthcare infrastructure. Improving the infrastructure for public health emergencies, and upgrading existing healthcare infrastructure and improving the quality of new infrastructure through information technology and other means. The most urgently needed healthcare infrastructure must be built at the community level, especially in rural and remote areas.

③ Considering stocking up materials, facilities, and technologies for addressing major pandemics such as the COVID-19 or other public health emergencies, as well as the mechanism for the R&D, production, allocation, and conversion of these stocks; clarifying the stock categories, minimum quantities, and other requirements for institutions, individuals, and systems of different levels, types, and regions.

④ Further developing the health industry in such areas as systems, equipment, and human resources to support an aging population and meet higher-level, more diversified health needs. Existing healthcare system must be made more accessible at the community level. And the entire society should also be mobilized to deploy services such as elderly care, long-term care, rehabilitation, and hospice care.

⑤ Capitalizing on the opportunities from the digital reform in health and healthcare; strengthening digital healthcare with legal, institutional, and political safeguards; enhancing the digital link between different institutions and systems; creating corresponding protocols, standards, and interfaces for digital health; ensuring the maximum accessibility of digital medical services.

⑥ Strengthening micro governance, raising healthcare data availability so that appropriate plans can be carried out; improving healthcare governance at local, community and city level; developing a synergy with volunteer organizations, third parties, and charities in preventing and controlling major infectious diseases and chronic illnesses.

(2) Filling the gap in infrastructure

① Filling the gap in climate-friendly infrastructure and systematically building more infrastructure that can withstand disasters and climate change, in addition to strengthening healthcare infrastructure.

② Taking measures to enhance the resilience of infrastructure that supports economic activities and supply chains; strengthening cross-border infrastructure connectivity; increasing investment in telecommunications

infrastructure, including new infrastructure featuring 5G, AI, big data centers, and new energy.

③ In addition to physical infrastructure, promoting soft infrastructure, such as FTAs.

④ Creating a fairer, equitable, and non-discriminatory marketplace to maintain leading digital vibrancy; improving digital infrastructure for better connectivity.

(3) Enhancing climate governance for green transition

① Creating incentives and pressures to motivate different stakeholders toward green development; cascading national green transition goals to local governments and authorities; investing more resources into climate-friendly and green programs through transfer payments, carbon trading, and other arrangements.

② Delegating implementation of the incentive schemes to local level to ensure that government-supported reforms can be advanced; making sure the governance of businesses and financial systems reflects and reinforces the reforms.

③ Creating more green jobs by encouraging post-pandemic investment in renewable energy, circular economy, and climate-smart agriculture; increasing employment opportunities by reducing air pollution, preventing environmental degradation, and improving natural area management.

④ Seizing the investment opportunities from economic recovery to set more ambitious nationally determined contributions (NDCs); launching supporting policies to shorten the distance to the emission reduction targets pledged in the Paris Agreement.

⑤ Further strengthening research and innovation in clean energy, energy storage, sustainable transport, green building, forestry carbon sink, carbon capture, usage, and storage (CCUS), and other technologies; promoting green transformation in such key sectors as energy, transport, and manufacturing; advocating a green lifestyle covering clothing, food, housing, and transport.

(4) Building a more inclusive digital economy

Asia should take the opportunity to speed up digital development, create new advantages in the digital economy, and promote inclusive growth by:

① Turning the pandemic into an opportunity to accelerate digital economy; using digital technology as an important tool that addresses the pandemic and

promotes economic recovery; unlocking the potential for economic and social development; finding the way of inclusive development.

② Increasing investment in digital infrastructure to reduce users' cost; maximizing the availability of broadband and other digital infrastructure services; bridging the digital gap through a more inclusive digital economy where the elderly, disabled, less educated, low-paid, and other disadvantaged groups have equal access.

③ Advancing digital financial inclusion; developing modern payment systems and regulatory sandboxes; promoting digital banks and fintech.

④ Facilitating digital and smart public management and urban development; improving emergency response ability and granular management.

⑤ Providing a fair, competitive, and anti-monopoly environment for players in the digital economy; improving rules on data governance for stronger privacy and personal data protection.

⑥ Enhancing digital literacy training, especially digital economy-related skill training for people losing jobs during the pandemic.

4.2 Businesses Should Act with Awareness

In the post-pandemic era, economies across the world share the common goal of sustainable recovery. In achieving this goal, businesses can make a difference as key stakeholders, since they play a cornerstone role in promoting economic growth, innovation, and employment through production and technology innovation.

According to responses to the survey conducted by the Boao Forum for Asia, businesses believe that the most critical variable to sustainable recovery is the speedy rollout of vaccines worldwide, better healthcare services and infrastructure, and gradual relaxation of lockdown measures. They expect to see a gradual return to normal global trade and fewer trade frictions. They regard themselves as having inherent advantages in advancing sustainable development from such aspects as industrialization, infrastructure and innovation, high-quality education, and healthcare and well-being. Now most businesses begin their transition to the new economy. But many of them have no idea how they could contribute to

the SDGs that are not closely related to their inherent strengths, such as eliminating hunger, narrowing gaps, and maintaining biodiversity.

During the pandemic, many businesses went a long way in pandemic control, vaccine development, supply chain stabilization, and job retention. Yet under mounting existential threats, some businesses are too occupied to consider their long-term development, let alone the seemingly distant SDGs. Compared to their European and American counterparts, Asian businesses have in general a limited understanding of the SDGs. Many see their contributions to sustainable development as merely fulfilling their social responsibility and have never reflected on climate change and stranded asset risks. Nevertheless, businesses that have received government support and assistance during the pandemic, from major airlines to small- and medium-sized businesses, now have stronger social awareness and risk understanding, realizing that sustainability risks have become a real threat, and each of them has a part to play.

Asian businesses are suggested to take the following actions with awareness:

(1) Appreciating that sustainable development is not only a social responsibility for global citizens, but also a precondition for their own sustainability. It is critical to their medium- and long-term strategies and poses both potential threats and opportunities.

(2) Assuming social responsibilities; aligning their development plans with local sustainability policies; capitalizing on governments' guiding policies and risk-sharing mechanisms; seizing opportunities and preventing risks in transitioning toward new economic sectors that are necessary for sustainable development.

(3) Making innovation and R&D the primary productive forces; promoting the innovative applications of information, digital, smart, and low-carbon technologies; attracting internal and external venture capital.

(4) Seeking to meet all-around health needs by searching business opportunities across the industrial chain, from traditional drugs, medical devices and equipment, to special health needs.

(5) Learning about the green industry, standards applicable to green credits and debts, and green disclosure requirements; actively participating in carbon trading; attracting ESG investments.

(6) Strengthening internal management and introducing risk prevention arrangements to address the physical and capital risks posed by climate change; strengthening risks analysis and control for green development; thoroughly analyzing the risks of supply chain transfer that may be resulted from the green actions of other businesses in the supply chain; moving toward a green global value chain.

(7) Strengthening employee training on infectious disease prevention, digital skills, and green lifestyles. Offering a mix of in-office and remote work to create more flexible jobs.

4.3 Global and Regional Actions Should Be Coordinated

The COVID-19 pandemic has uncovered not only the vulnerabilities in the global public health system but, more importantly, an enormous global governance deficit. Global governance, i.e., actions, responses, and cooperation on the global level, is necessary for coping with both short-term shocks such as the pandemic and resulting economic contraction, as well as medium- and long-term challenges including the climate change and AI governance. Deficit in global governance, the first barrier to sustainable recovery across the world, could only be addressed by multilateralism. Therefore, more effective multilateral mechanisms that strengthen multilateral organizations such as WTO and WHO, and more active regional cooperation will better adapt the world to major changes, including the current pandemic control and sustainable recovery.

At the beginning of 2021, the G20 meetings released important signals of addressing the pandemic and economic shocks through multilateral cooperation. The WTO welcomed its new Director-General after a six-month leadership gap. And the new US administration decided to rejoin the Paris Agreement and halt its withdrawal from the WHO. All these showed that multilateralism continues to be a widespread belief yet with still wider space for enhancement.

To reduce the health deficit, the world should prioritize vaccination and the establishment of mutual health data recognition arrangements.

The pandemic has slowed down in 2021. Nevertheless, it is still an arduous task to put the

pandemic under control. More contagious virus variants have emerged in several countries, resulting in resurgence and throwing grave doubt on existing vaccines.

Since March, although many countries have accelerated vaccination, the woefully inadequate vaccine supply accentuates inequality in distribution. To make vaccines a real public good available across the world, the COVID-19 Vaccines Global Access (COVAX) initiative co-led by the Global Alliance for Vaccines and Immunisation (GAVI), the WHO, and the Coalition for Epidemic Preparedness Innovations, and participated by over 190 economies should facilitate the distribution of vaccines to poorer economies. GAVI may be authorized to make prudent and equitable distribution of vaccines to low-income and developing countries.

As the vaccinated population continues to grow, the United States, the European Union and Asian countries including Korea, Thailand, Singapore, Malaysia, and Israel are exploring the feasibility of a “vaccine passport” to facilitate cross-border travel, especially the tourism industry, while China has proposed an international health data recognition mechanism. In either case, WHO should play a coordinating role.

Countries should boost cooperation in pandemic control; support the UN and the WHO in their key roles in improving global public health governance; strengthen information and experience sharing; and provide prompt assistance to countries and regions that are less able to fight the pandemic. In addition, international organizations and institutions, state health authorities, research institutions, businesses, and individuals should all collaborate in pandemic diagnosis and treatment and the development, financial support, and production of vaccines, as part of their efforts for building a healthy global community.

Vaccines, however, will not see off the COVID-19 entirely, and the virus may persist for a long time. *The Economist* recently coined the term “new coronormal” and called for the governments to think about how we can learn to live with the virus. That prospect would require a long-term mechanism in emergency prevention and control, vaccination, response to new variants, and treatment of patients.

To narrow the deficits in infrastructure, green

development, and digital economy, global governance platforms and international organizations will have a vital role to play in urging countries to commit to and implement international agreements and initiatives. **First**, Infrastructure will be constantly and increasingly connected through strengthened alignment between different regional programs—the Belt and Road initiative of China, the Master Plan on ASEAN Connectivity 2025, the EU strategy on connecting Europe and Asia, as well as initiatives of the Eurasian Economic Union. **Second**, the United Nations Framework Convention on Climate Change, Convention on Biological Diversity, and Paris Agreement should further press the parties to meet their obligations to green development and climate change, including setting their carbon peak and carbon neutrality schedules and integrating green industry with financial standards. Developed countries should also provide more financial, technological, and capacity-building supports to developing countries, for instance, by increasing the proportion of green funding in official development assistance. In addition, G20 should promote the building of a global financial security net, including supporting a new round of IMF special drawing rights (SDRs) allocation and ensuring the debt sustainability of low- and middle-income countries. **Third**, stakeholders should advance WTO reforms to reshape the global trade and investment order, especially international rules on e-commerce/digital trade in the digital era. They should also contribute more paid-in capital to multilateral development banks, facilitate their cooperation with the private sector, provide credit enhancement for more infrastructure investment, and no longer finance new high-emission projects. At the same time, it should continue to offer member economies capacity-building supports. OECD, another global actor, needs to facilitate dialogue on regulating the development of digital economy for a more level playing ground that distributes revenues across the countries fairly. In building a digital corridor, developing countries must also focus on cross-border issues, taxation, and digital divide.

Further, countries can exchange experiences on voluntary national reviews (VNRs) as part of their efforts to implement the *2030 Agenda* and evaluate its

effectiveness.

Asia should be a major engine for global sustainable recovery. As the first land to emerge from the pandemic, Asia needs to offer more assistance to its neighbors, make concerted efforts in virus prevention and control, and accelerate the vaccination process, thus creating conditions for reopening borders and resuming normal travel. The Regional Comprehensive Economic Partnership Agreement (RCEP) and the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) should be carried out as high-standard rules and practices for free trade and investment. The Asian Development Bank, Asian Infrastructure Investment Bank, New Development Bank, and other regional development

financial institutions and platforms should implement countercyclical regulation during economic downturns, and cooperate closely with financial institutions and funds in Asia that are dedicated to medium- and long-term green investment. Asia should take advantage of its innovation and development of digital technologies to ensure a smooth supply chain in the region, promote the building and operation of cross-border infrastructure; and promote green investment and digital transition. Moreover, Asian countries must further strengthen their cooperation with other developing countries, those in Africa in particular, as well as share their experience and build their capacity in certain fields.

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