GLOBAL DEVELOPMENT REPORT 2023

Global Development at a Crossroads

CENTER FOR INTERNATIONAL KNOWLEDGE
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Foreword

The World at a Crossroads

Cooperation or division? Development or stagnation? These are the choices the world faces as it stands at a crossroads of history.

Global development is facing serious challenges. Geopolitical conflicts are intensifying, protectionism is rising, global consensus is weakening, and growth momentum is decelerating. National security concepts have been overemphasized, global industrial and supply chains have been disrupted, technology diffusion has slowed, and innovation dynamics have been stifled. Global poverty reduction has not received the attention it deserves. Decades of anti-poverty gains have been reversed, and it will be extremely difficult to achieve the goal of eradicating extreme poverty by 2030. There is a huge gap in global financing for development, with developed countries delaying their fulfillment of assistance commitments. Investments in sustainable development such as food, agriculture, health and education have declined and the development gap between the North and South is widening. Developed countries are backtracking on climate policies and the threat of climate change is increasing. All poses a historic challenge to global development.

How we respond to these historic challenges will determine the future of the world. Will economic globalization move towards a better version with a better balance between capital and labor, efficiency and security, or will it fall into fragmentation under the influence of the Cold War mentality? Will greater inclusiveness prevail to promote the global common good, or will national primacy drive global development off the track so that it stalls and becomes ineffective and dysfunctional? Will the emerging market and developing economies (EMDEs) continue to catch up and push global development towards sustained convergence, or will they experience a "developmental reversal" and an increase in global development deficit? Will the global economy make a strong recovery and move towards sustainable long-term growth, or will it decelerate further or even fall into prolonged stagnation? Will 2030 be a year in which humanity celebrates major progress on the Sustainable Development Goals (SDGs) and the beginning of a better future, or will it be a year of regret over a missed opportunity and the vision of a beautiful world just remain a vision?

History has shown that division brings disaster, while cooperation sustains prosperity. The difference in the response towards the Great Depression of the late 1920s and early 1930s and towards the 2008 global financial crisis (GFC) demonstrated that division or cooperation leads to vastly different destiny for humanity. During the Great Depression, the major powers adopted a "beggar-thy-neighbor" policy and resorted to tariff wars and competitive devaluation of their currencies. The result was a huge reversal of globalization, sustained economic downturn, substantial increase in the number of people living in poverty, and exacerbation of social tensions, which became the major economic and social root causes that triggered World War II. On the other hand, in the face of the 2008 GFC, countries at the epicenter of the shock and those on the periphery, developed economies and EMDEs all came together for cooperation. That helped the global economy to recover fairly quickly, with unemployment in the major economies declining rapidly, and the number of people living in poverty decreasing.

In the face of the current challenges, there is only one choice for countries across the world – to make concerted efforts to address the impact of the multiple crises and resolve development problems through development. In September 2021, Chinese President Xi Jinping proposed the Global Development Initiative (GDI) at the 76th Session of the United Nations General Assembly, contributing China's vision for global development and approaches to addressing development deficits and realizing the United Nations 2030 Agenda for Sustainable Development (2030 Agenda). In June 2022, President Xi Jinping emphasized, at the High-level Dialogue on Global Development, that countries needed to jointly build international consensus on promoting development, jointly create an enabling international environment for development, jointly foster new drivers for global development and jointly forge a global development partnership. That would foster a development paradigm featuring benefits for all, balance, coordination, inclusiveness, win-win cooperation and common prosperity.

Issuing a Global Development Report was included in the Chair's Statement and the list of major deliverables at the High-level Dialogue on Global Development chaired by President Xi Jinping. The Global Development Report looks at critical development issues and urgent challenges faced by countries across the world, especially developing countries. It presents policy recommendations for working towards a global community of shared development and accelerating the implementation of the 2030 Agenda.

The *Global Development Report 2023*, themed "Global Development at a Crossroads", analyzes the current situation, the main trends, and possible actions for global development. The Report consists of two parts and 10 chapters. Part I has three chapters. Chapter I reviews the progress and challenges in the implementation of the 2030 Agenda from the three dimensions of people, planet and prosperity. Chapter II summarizes the current "6D" trends in global development, namely, Deceleration (world economic growth faces the risk of deceleration), Divergence (global development shows clear trend of division), Deglobalization (economic globalization is encountering

headwinds), Decarbonization (green and low-carbon development is flourishing), Digitalization (digital transformation has fostered a new momentum for global development), and Destabilization (global development faces increasing uncertainty and instability). Chapter III introduces China's development philosophy and practices of building a global community of shared development and offers recommendations to promote global development and bridge the development deficit through staying committed to development as a priority, a people-centered approach, benefits for all, innovation-driven development, harmony between humanity and nature, and results-oriented actions. China has been promoting global development through its own development, giving momentum to global development cooperation.

Part II focuses on the urgent development issues in seven areas: poverty reduction, food security, public health, financing for development, energy transition, industrialization, and digitalization. The Report proposes that developed countries and developing countries work together – developed countries lead by example and enhance their support and developing countries contribute to the best of their capacity based on their national conditions – to jointly bring poverty reduction back on track, jointly improve global food security, jointly build a more resilient health system and jointly bridge the gap in financing for development, jointly promote green energy and low-carbon development, jointly advance the industrialization of developing countries, and jointly promote inclusive digitalization.

As the world stands at a new starting point, the current volatile situation is simultaneously a challenge and an opportunity. CIKD is ready to work with all for research and exchanges on global development theories and practices, enriching development knowledge, and advancing common and sustainable development.

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Part I General Report

Chapter I

2030 Agenda for Sustainable Development: Progress and Challenges

In September 2015, the 193 UN member states across the globe unanimously adopted "Transforming Our World: The 2030 Agenda for Sustainable Development" (hereinafter referred to as the 2030 Agenda) with great expectations and anticipation. The 2030 Agenda urges all nations to meet 17 sustainable development goals (SDGs) by 2030 to provide all human beings a more affluent material life, a more harmonious society and culture, and a more sustainable natural environment. The SDGs cover the economy, society and the environment, and in the following years, have made some progress despite many difficulties. In particular, significant headway has been made in poverty reduction, health, infrastructure, economic growth, job creation, digital economy, industrialization and urbanization. Climate action and development financing have also seen some positive steps.

However, over the past three years or so, both man-made and natural crises such as the COVID-19 pandemic, major power competition, regional conflicts, global financial market volatility, and frequent extreme weather events, compounded by "black swan" and "gray rhino" events, have exacerbated global development uncertainty and instability, dealing a severe blow to the 2030 Agenda. In his report to the High-Level Political Forum on Sustainable Development in April 2023, UN Secretary-General Antonio Guterres warned that many SDGs were moderately to severely off track, only 12% of the 140 targets were on track, nearly half were making insufficient progress, and some 30% were stagnant or regressing (UN, 2023a). At the current speed of progress, none of the 17 SDGs will be realized as scheduled, and some will not be achieved even within this century (Figure 1-1). "Unless we act now, the 2030 Agenda will become an epitaph for a world that might have been." (Guterres, 2023)

To assess the status quo of global development and identify the directions for accelerating SDGs and promoting common and sustainable development, this chapter reviews the progress and regression of the 2030 Agenda from three dimensions: people, planet and prosperity[1]. The first dimension analyzes the status quo of human development, the second the progress in global ecological protection, and the last the situation of global economic growth. The three dimensions are not only closely connected but are also progressive. The "people" dimension concerns the most fundamental rights and dignity of human beings, including the right to survival, such as freedom from hunger and poverty, and the right to development, such as health and education. The "planet" dimension concerns the sustainable development of people. Having secured the fundamental human rights, it is imperative to consider harmonious coexistence between humanity and nature, and protect the only homeland of humanity for the sustainable development of future generations. "Prosperity" concerns the well-rounded development of people, which is a higher goal and pursuit. Having secured the satisfaction of the basic human needs and harmonious coexistence between humanity and nature, it is necessary to promote economic and social development of a high level and high quality.

1.1 People

The 2030 Agenda is committed to ending poverty and hunger in all their forms and dimensions, and to ensuring that all human beings can fulfil their potential in dignity and equality and in

[1] "Transforming Our World: The 2030 Agenda for Sustainable Development" begins by stating that "This Agenda is a plan of action for people, planet and prosperity."

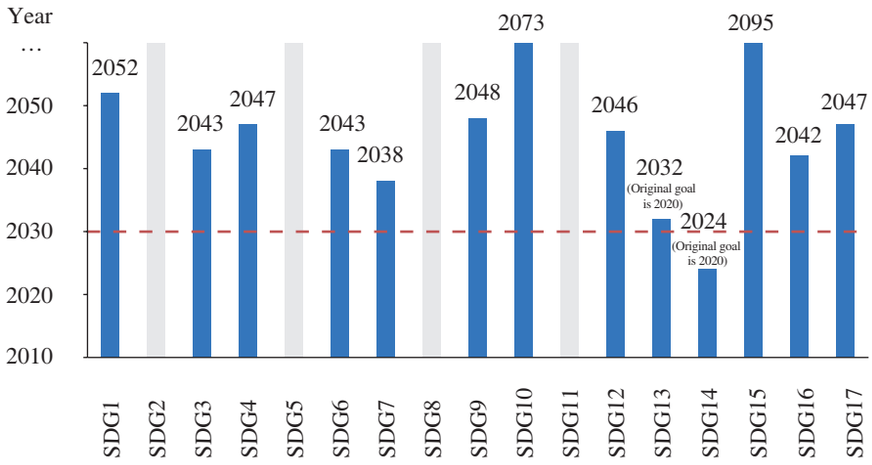

Figure 1-1 Estimated time when 17 SDGs can be realized as per current progress

Notes: 1. This figure assesses the SDG targets that can be quantified and have available data. Their realization time is calculated using the progress rate since 2016.
2. Each of the gray columns means that this goal will not be realized in the 21st century as per current progress.

Source: Calculations based on data from UN agencies

a healthy environment. To that end, all of humanity needs to work together to eradicate extreme poverty, help the vulnerable groups achieve food security, provide equitable and universal access to education, health care and social protection, and ensure the physical, mental and social wellbeing of all.

1.1.1 Global poverty reduction suffers setbacks after years of progress

The declining trend of global poverty has been seriously impacted by the COVID-19 pandemic. After the adoption of the 2030 Agenda, global extreme poverty fell from 10.8% in 2015 to 8.5% in 2019, and the number of people living in poverty decreased from 800 million to 659 million. But the pandemic has dealt a heavy blow to the world's poverty reduction cause. According to World Bank estimates, in 2020 the global extreme poverty rate rose to 9.3%, and the number of people living in poverty increased to 719 million, with an additional 60 million people pushed into poverty. Some improvement was seen in the following two years, with the poverty rate (poor population) falling to 8.8% (690 million people) in 2021 and 8.4% (650 million people) in 2022, before rising slightly to 8.5% (660 million people) in March 2023, back to the pre-COVID level (Figure 1-2).

The poverty reduction challenge has been exacerbated by lack of access to employment and poor job quality. Employment is the driver for the poor to escape poverty and plays a key role in bridging economic growth and poverty eradication (UN, 2005). The global unemployment rate has remained at a relatively high level in recent years as a result of short-term factors, such as COVID-19, the cost-of-living crisis, and geopolitical crises, as well as some medium- to long-term structural factors such as climate-induced natural disasters, frequent extreme weather events, aging populations in the developed world

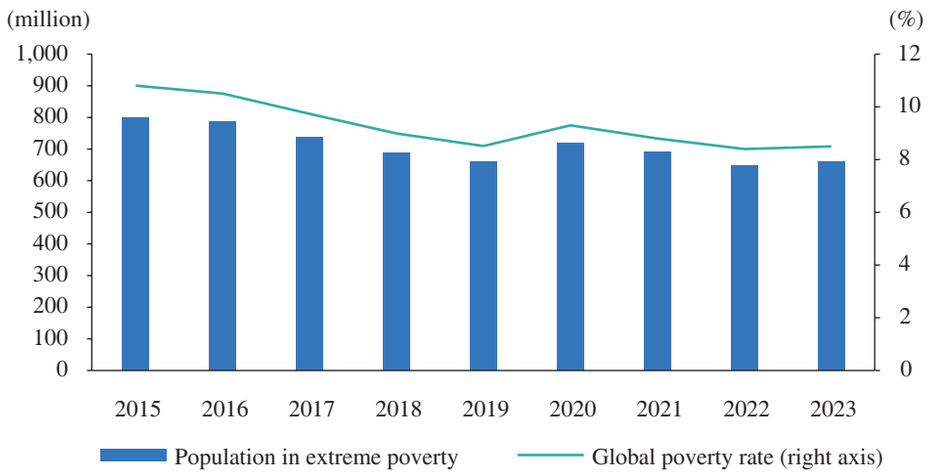

Figure 1-2 Global population in extreme poverty and poverty rate, 2015-2023

Note: The extreme poverty line is US$2.15 per person per day (2017 PPP). The 2022 data are estimates in September 2022. The 2023 data are estimates in March 2023.
Source: World Bank

and many emerging countries, and technological changes such as artificial intelligence. The indicator spiked to 6.9% in 2020, reversing the decline in 2015-2019 (Figure 1-3). Since 2020, the global unemployment rate has shown a declining trend, but still remained above the level before the pandemic. The difficulty in finding employment is particularly acute for young people aged 15-24, whose unemployment rate is three times that of people aged 25 and above. Of the young people, 23.5% are not in employment, education or training (NEET) (ILO, 2023).

Part of the working population has not escaped the poverty trap even with employment. The global working poverty rate fell from 7.8% in 2015 to 6.7% in 2019, but rose to 7.2% in

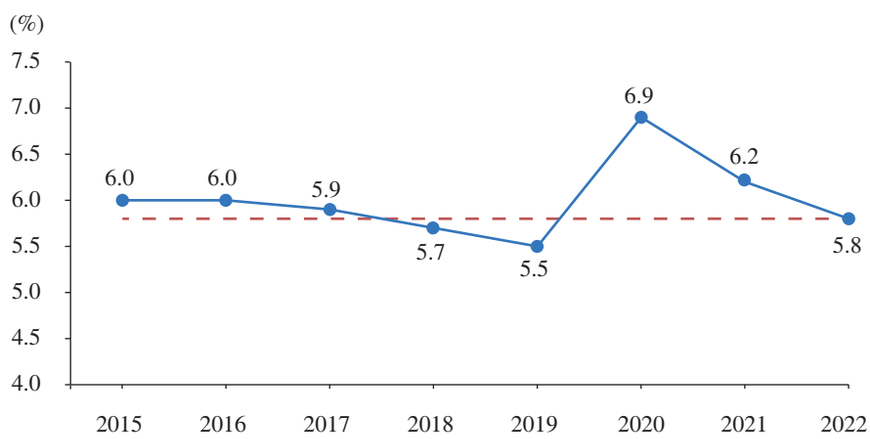

Figure 1-3 Global unemployment rate, 2015-2022

Note: The dotted line shows that the 2022 rate was still above the pre-pandemic level.
Source: ILOSTAT

2020, offsetting the previous progress before falling again after 2021 (Figure 1-4). The indicator is particularly high for low-income countries, with nearly four in 10 employed people living in extreme poverty. Inadequate social security coverage has further exacerbated the plight of the poor. In 2020, the proportion of the global population effectively covered by at least one social protection benefit[1] was 46.9%. But the proportion was just 24.9% in low-income countries compared with 85.4% in high-income countries (ILOSTAT, 2023). Informal employment increased dramatically in the wake of the pandemic (Figure 1-5), with more of the labor force moving into informal employment of poorer quality and inadequate social protection.

1.1.2 Global food insecurity exacerbates

The prevalence of moderate or severe food insecurity[2] has continued to climb. Between 2015 and 2022, global food production increased from 2.59 billion tonnes to 2.79 billion tonnes (FAO, 2023), with an annual growth rate that was faster than the population growth during the same time. However, this positive trend did not prevent food insecurity from exacerbating globally, especially in some developing countries. This was particularly acute in Africa, where nearly 60% of the population were moderately or severely food insecure in 2021. Latin America and the Caribbean (LAC) registered a higher rate than the world

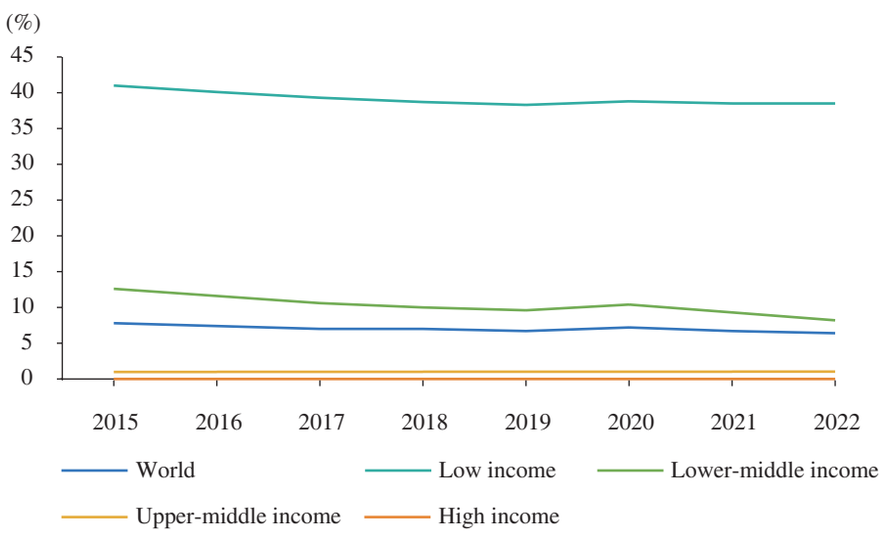

Figure 1-4 Working poverty rate, 2015-2022

Note: The poverty line is US$1.90 per person per day at purchasing power parity in 2017.
Source: ILOSTAT

[1] Examples include child and maternity benefits, or support for the unemployed, persons with disabilities, victims of work-related injuries, and the elderly.

[2] The prevalence of moderate or severe food insecurity refers to the proportion of the population having moderate or severe difficulties in accessing food. The data was collected based on the Food Insecurity Experience Scale (FIES), which is an estimate of the severity of food insecurity experiences at the individual or household level through direct interviews.

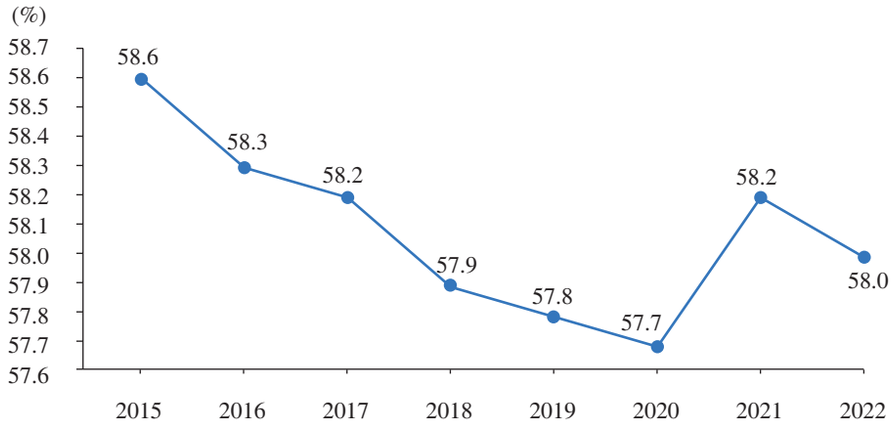

Figure 1-5 Informal employment rate, 2015-2022

Source: ILOSTAT

average, with more than 40% of the population moderately or severely food insecure in 2021 (Figure 1-6). In absolute terms, the moderately or severely food insecure population is concentrated in Africa and Asia. Among the more than 2.3 billion food insecure people globally in 2021, nearly 800 million were in Africa and more than 1.15 billion were in Asia (Figure 1-7).

Global food insecurity has been exacerbated by multiple factors such as disruptions to supply chains. After the COVID-19 outbreak, food supply chains were successively affected by anti-pandemic embargoes, declining demand and rising prices (Figure 1-8), while factors such as intensifying regional conflicts, rising prices of agricultural inputs like fertilizers (Figure 1-9), frequent extreme weather events, and turbulences in the international financial market also had a

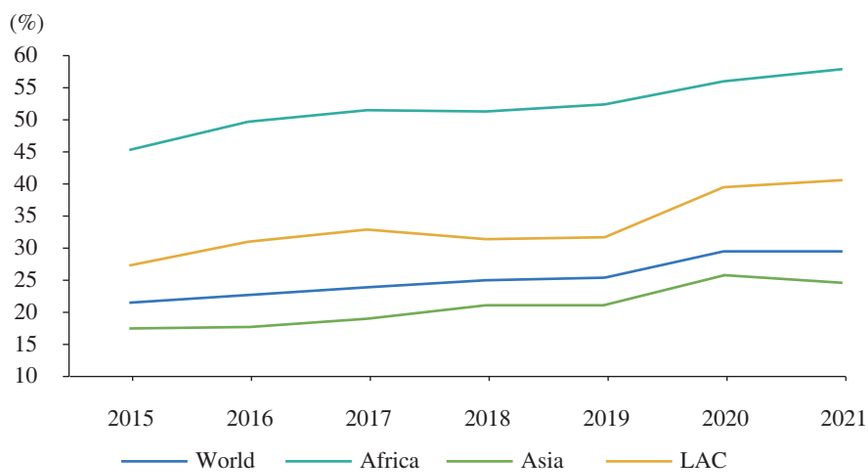

Figure 1-6 Prevalence of moderate or severe food insecurity in the global population, 2015-2021

Source: FAOSTAT

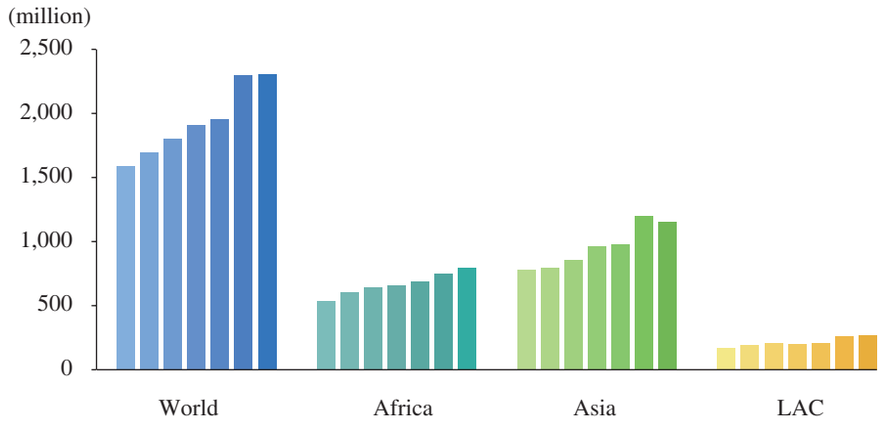

Figure 1-7 Number of moderately or severely food insecure people, 2015-2021

Note: The bars of the same color represent the years of 2015-2021 from left to right.
Source: FAOSTAT

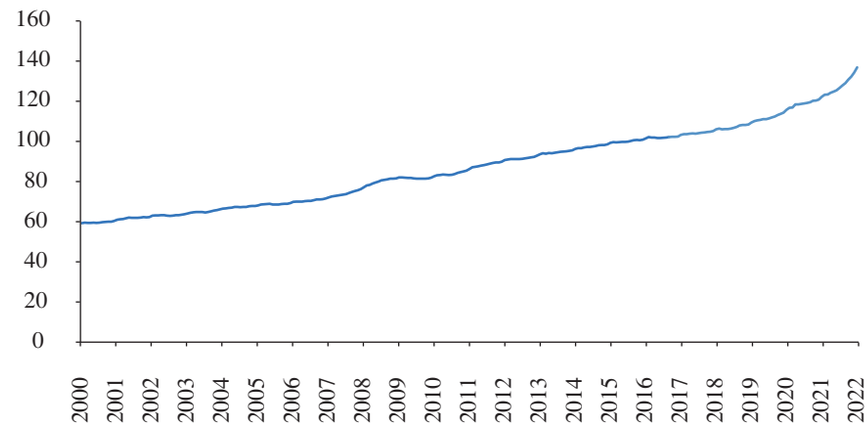

Figure 1-8 Consumer Price Index, 2000-2022 (2015=100)

Source: FAOSTAT

negative impact on the production, trade and consumption of food and jeopardized food security. Climate change has caused a slowdown in global agricultural productivity growth, thus affecting people's survival and food security (IPCC, 2023). As climate change intensifies in the future, its negative impact on food security will further magnify.

Global prevalence of undernourishment[1] has rebounded. After the adoption of the 2030

[1] The prevalence of undernourishment is defined as the proportion of the population whose habitual food consumption is insufficient to provide the level of dietary energy needed to sustain a normal life, and is one of the indicators used to measure SDG 2.1, which is to eradicate hunger and ensure that all people, especially the poor and vulnerable, including infants, have access to safe, nutritious and sufficient food throughout the year by 2030.

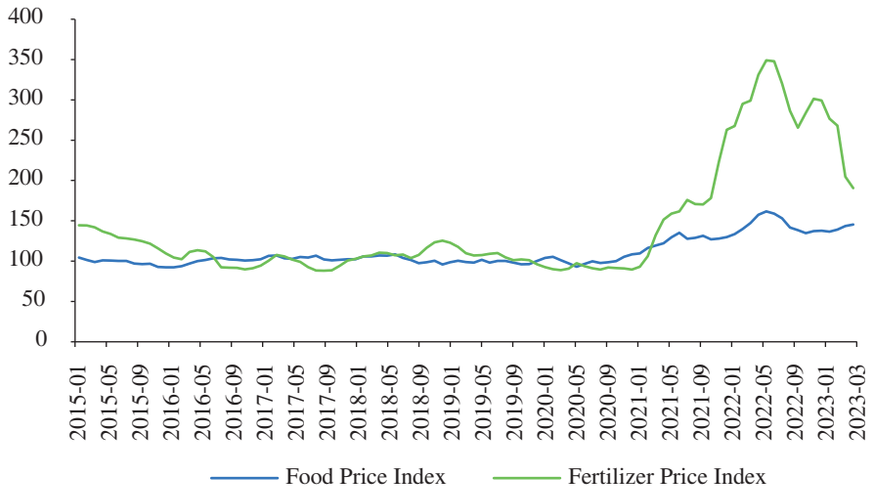

Figure 1-9 Food Price Index and Fertilizer Price Index, Jan. 2015-Mar. 2023 (2016=100)

Note: The Food Price Index includes the price indices for cereals, vegetable oils, meat, seafood, sugar and other food such as apples (non-citrus fruit), bananas, broad beans (legumes), fishmeal, groundnuts, milk (dairy) and tomatoes (veg). The Fertilizer Price Index covers diammonium phosphate, potash and urea.
Source: IMF

Agenda, the global prevalence of undernourishment improved slightly, but rebounded to 9.3% in 2020 after the COVID-19 outbreak and 9.8% in 2021 (Figure 1-10). Undernourishment is most pronounced in Africa and Asia. Both the prevalence of undernourishment and the undernourished population in Africa have been rising steadily since 2015, worsening after the COVID outbreak and amid the pandemic. In 2021, the continent's undernourished population reached 278 million, meaning that one out of every five people was undernourished. Although the prevalence of undernourishment in Asia is much lower than in Africa, its undernourished population is bigger than in Africa, with 425 million undernourished people in 2021. FAO and other UN agencies estimate that going by current trends, nearly 600 million people will still face hunger globally by 2030 (FAO et al., 2023), roughly the same level as in 2015.

1.1.3 Global public health was hit hard by COVID-19

Progress has been made on some health-related SDG indicators. For maternal and child health, the global maternal mortality fell slightly from 227 deaths per 100,000 live births in 2015 to 223 in 2020. The proportion of births assisted by skilled health personnel rose from 81% in 2015 to 86% in 2022, and 146 out of 200 countries and territories with statistics have already achieved or are on track to meet the SDG target of reducing under-five mortality to at least as low as 25 per 1,000 (UN, 2023b). For communicable diseases, results have been achieved in the fight against AIDS, with the number of new HIV infections per 1,000 uninfected people decreasing from 0.25 in 2015 to 0.18 in 2021, and the number of people dying of AIDS decreasing from about 900,000 in 2015 to about 630,000 in 2022 (WHO,

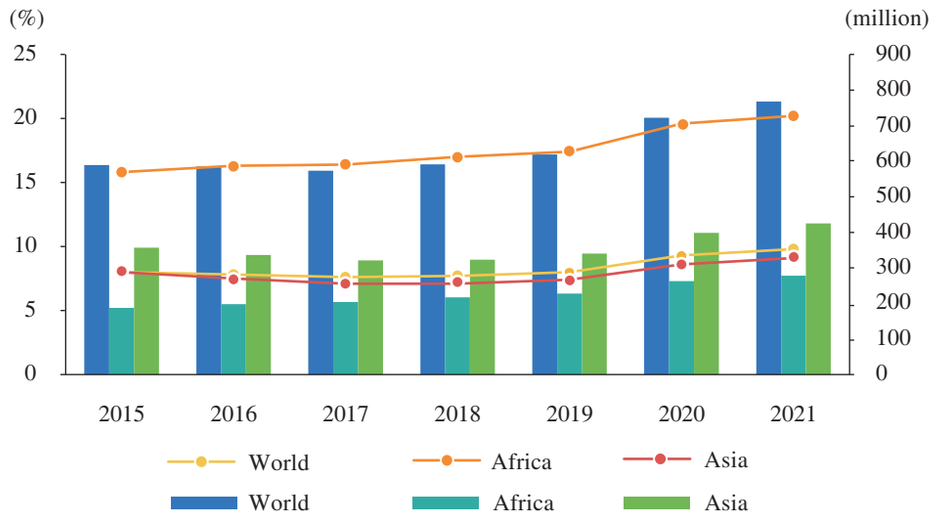

Figure 1-10 Prevalence of undernourishment (left) and number of undernourished people (right), 2015-2021

Source: FAOSTAT

2023b). For noncommunicable diseases (NCDs), the probability of dying of any of the four main NCDs (cardiovascular diseases, cancers, diabetes, and chronic respiratory diseases) in the 30-to-70 age group declined from 18.5% in 2015 to 17.8% in 2019. However, the decline is not fast enough to meet the target of reducing the probability by one-third by 2030 and data during the pandemic is not available yet (WHO, 2023b).

The pandemic has reversed progress on a number of health-related indicators. By August 17, 2023, the number of confirmed COVID-19 cases had reached 769.8 million, with more than 6.95 million deaths worldwide (WHO, 2023a). The pandemic has impacted basic health services in many countries, including routine immunization, NCD services and mental health services. Health service disruption was more severe in the Americas, with about 55% of services disrupted in 27 countries (WHO, 2022). Global life expectancy at birth decreased dramatically. From 2015 to 2019, it increased from 71.8 to 72.8 years. However, due to COVID-19, it declined by about 1.8 years to the 2012 level in 2021 (Figure 1-11), wiping out the gains made since the adoption of the 2030 Agenda (UNDESA, 2022). Childhood vaccination coverage[1] suffered the largest decline in nearly three decades, decreasing by 5 percentage points from 2019 to 2021. Tuberculosis incidence per 100,000 population continued to fall from 150 in 2015 to 129 in 2020, but rose to 134 in 2021. Malaria incidence per 1,000 population increased from 57.16 in 2019 to 59.45 in 2020 and 59.25 in 2021 (WHO, 2023b) (Figure 1-12). The global incidence of anxiety disorders and depression increased by 25% in 2020 (UN, 2022).

[1] This refers to the proportion of children receiving three doses of the diphtheria, tetanus and pertussis vaccine (DTP3), a marker of immunization coverage within and across countries.

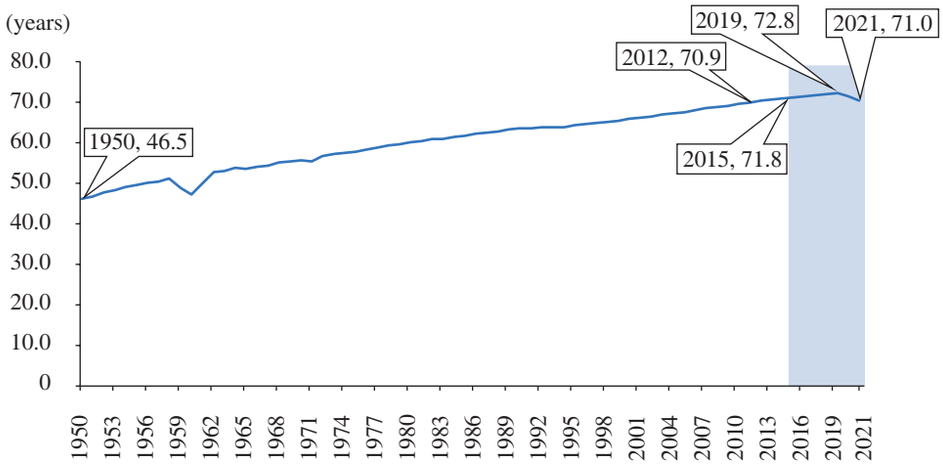

Figure 1-11 Global life expectancy at birth, 1950-2021

Note: The color bars represent the change in global life expectancy at birth after the adoption of the 2030 Agenda.
Source: UNDESA; CIKD

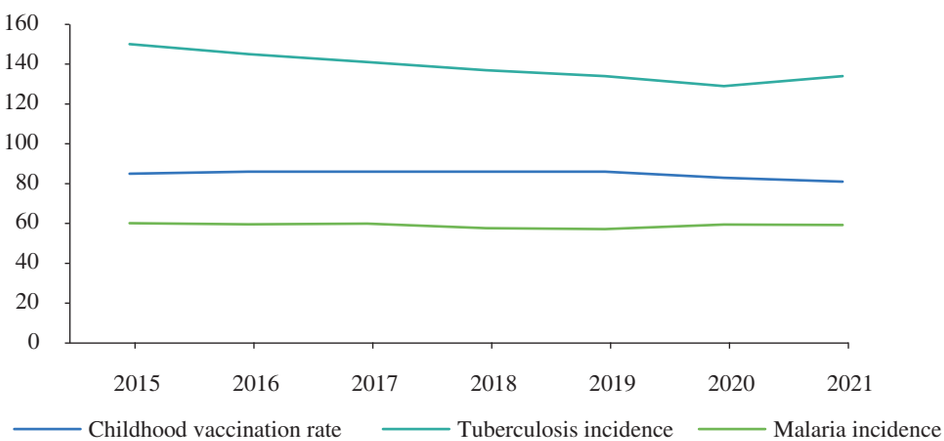

Figure 1-12 Health-related indicators reversed by COVID-19, 2015-2021

Note: Childhood vaccination rate refers to diphtheria, tetanus and pertussis (DTP3) immunization coverage per 100 children aged 1 year; tuberculosis incidence refers to the incidence of tuberculosis per 100,000 population; and malaria incidence refers to the estimated incidence of malaria per 1,000 population at risk.
Source: WHO

1.1.4 Global education has been improved

The "education gap" among countries remains huge. From 2015 to 2020, the completion rate of global primary education stabilized at about 90%. Low-income countries improved significantly from 63.5% in 2015 to 68.4% in 2020, but the gap with the countries in other income groups remained large (Figure 1-13). Low-income countries have seen their gross enrollment rate for primary school rise since 2015 to levels comparable to those of the countries in other income groups, but progress in secondary and higher education has been slow with significantly lower rates than in high-income and upper-middle-income countries (Figure 1-14).

The global education system has been severely impacted by the pandemic. School closures not only affect the progress and effectiveness of student learning, but might also cause immeasurable lifelong losses. Between 2020 and 2021, 147 million children worldwide missed more than half of their classroom instructions, billions of children were seriously out of school, and more than 100 million were below minimum competency levels in reading and other academic subjects. In present value terms, this generation of children could lose a total of US$17 trillion in lifetime earnings (UN, 2022).

1.2 Planet

The 2030 Agenda is committed to creating a world in which natural resources are produced, consumed and used in a sustainable manner, human beings live in harmony with nature, and wildlife and other species are protected. To that end, all of humanity needs to work together to address climate change and its systemic impacts, contain the trend of biodiversity loss, and stop the depletion of natural resources and environmental degradation to protect the planet, humanity's only home.

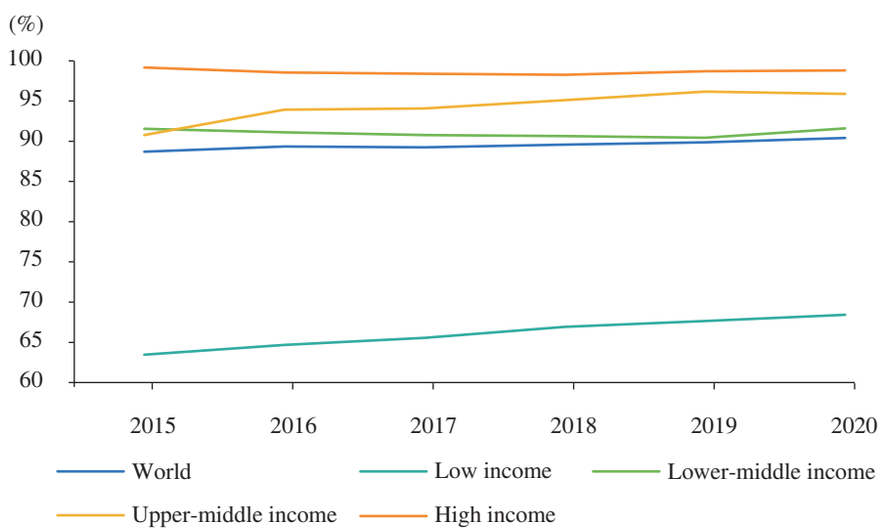

Figure 1-13 Primary education completion rate, 2015-2020

Source: World Development Indicators

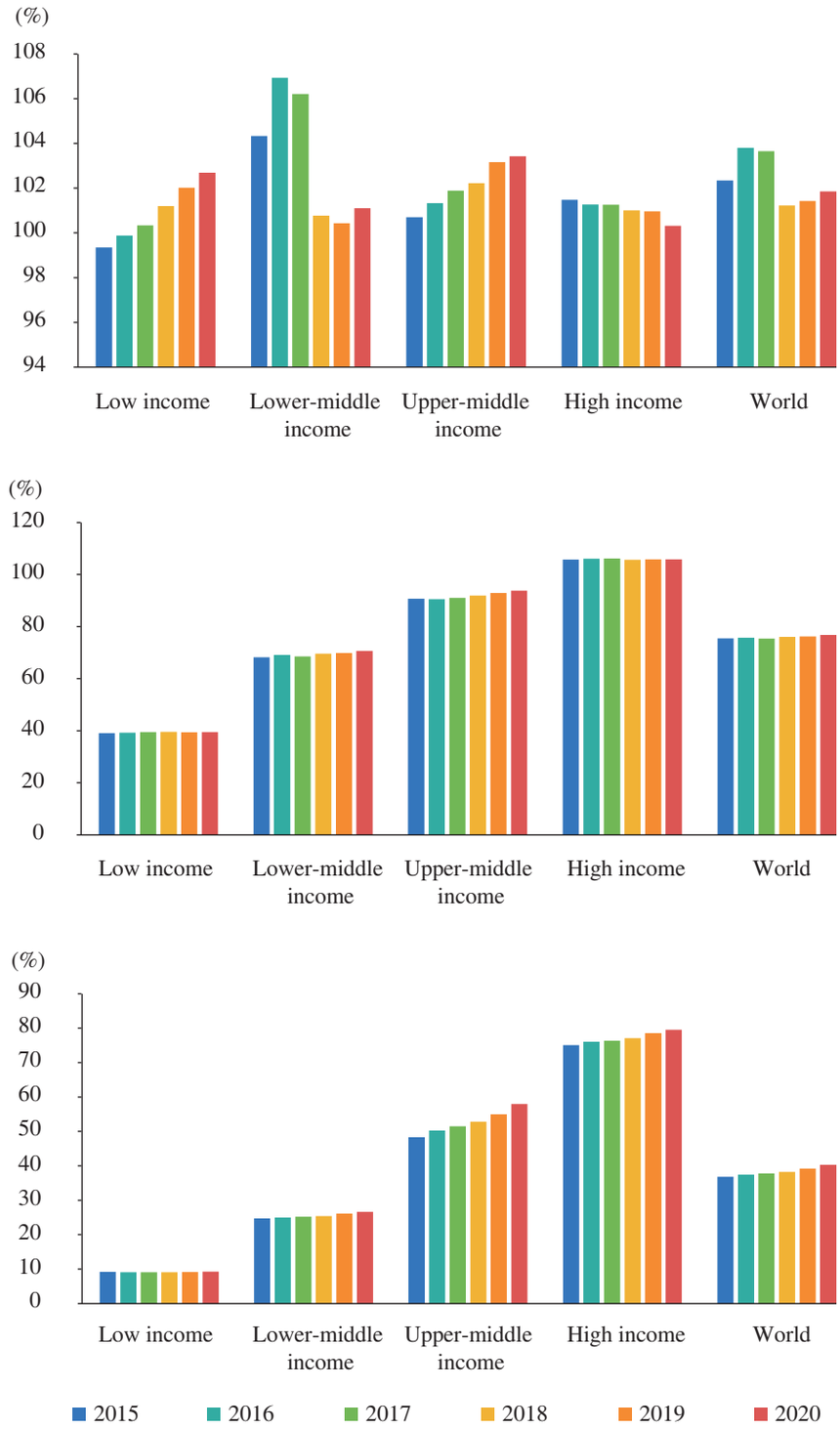

Figure 1-14 Gross enrollment rates for primary (top), secondary (middle), and higher (bottom) education, 2015-2020

Source: World Development Indicators

1.2.1 The challenges imposed by global climate change remain severe

The world is growing more aware of the impacts of climate challenge but redressive actions are still insufficient. Global response to climate change has become broad consensus. Since the adoption of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, there are now 198 parties to the Convention, 192 parties to the Kyoto Protocol and 195 parties to the Paris Agreement. But reaching the Paris Agreement goal of keeping the temperature rise within 2°C remains a huge challenge. It is estimated that in 2030 global emissions would need to be reduced by 25% from 2010 levels if global warming has to be limited within 2°C above pre-industrial levels (IPCC, 2018). However, going by the nationally determined contributions (NDCs), targets and commitments communicated by the parties to the UNFCCC, global emissions will increase by nearly 14% between now and 2030 (UN, 2022).

Global carbon dioxide emissions are on an upward trend. They increased from 40.94 billion tonnes in 2015 to 41.64 billion tonnes in 2019. In 2020, due to the pandemic, they fell by 5.6% (about 2.3 billion tonnes), the largest decline since the end of World War II (Figure 1-15). However, they climbed again in 2021 to 41.06 billion tonnes. Although emissions from land use change have declined significantly since 2015, falling from 5.39 billion tonnes in 2015 to 3.94 billion tonnes in 2021 with their share of total emissions down from 13.2% to 9.6%, emissions from fossil fuels are increasing significantly, rising from 35.56 billion tonnes in 2015 to 37.12 billion tonnes in 2021, with their share in total emissions up from 86.8% to 90.4%[1] (Figure 1-16).

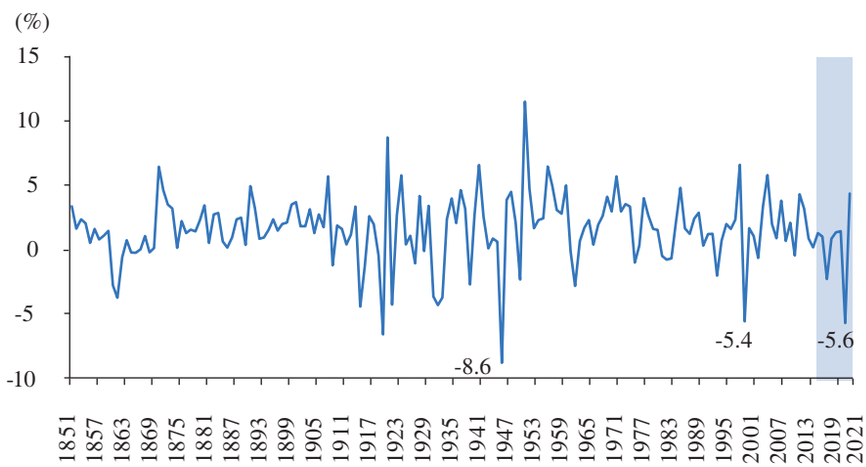

Figure 1-15 Growth rate of global carbon dioxide emissions, 1851-2021

Note: The curve with background color represents the change in the growth rate of global carbon dioxide emissions after the adoption of the 2030 Agenda.
Source: Our World in Data; CIKD

[1] The results may be slightly off due to rounding.

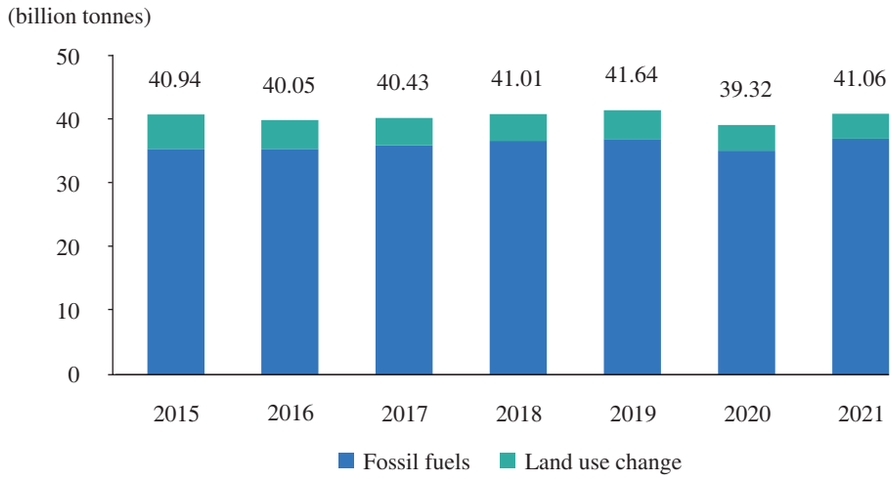

Figure 1-16 Global carbon dioxide emissions from fossil fuels and land use change, 2015-2021

Source: Our World in Data

The adverse effects of climate change are becoming increasingly pronounced, and developing countries are particularly vulnerable. Climate and weather extremes induced by climate change have increased in frequency and intensity, including hot extremes, heavy precipitation events, drought and fire weather, which have widespread and pervasive impacts on ecosystems, people, settlements and infrastructure. Between 2011 and 2020, global satellite and weather station observations showed a general trend of expanding global heatwave impacts, with 25.5% of the land area exposed to 30-day heatwaves in 2011, peaking at 31% in 2019 before falling back slightly to 29.7% in 2020. During the same period, a global average of 470 million people per year were exposed to heatwaves of a moderate level, nearly 90 million people were affected by strong heatwaves and 1.7 million by severe heatwaves[1]. From 1999 to 2021, the global ocean heat content of the upper 2,000 m increased at a rate of 9.5×10^{22} J/10a, four times the rate of warming from 1955 to 1990 (CBAS, 2022). Due to their ecological environment, industrial structure and socio-economic development, developing countries are more vulnerable to climate change and are in urgent need of support in technology, finance and capacity building.

1.2.2 Global ecological environment continues to degrade

Global efforts to protect the ecological environment have increased. Humanity has increasingly recognized the importance of protecting the ecological environment and biodiversity and is taking a series of remedial measures, including establishing protected areas, restricting hunting, and controlling invasive alien species. The protected area for ecosystem conservation has been gradually expanding, with terrestrial protected

[1] Using the criterion of more than three consecutive hot days as one heatwave event, the level of heatwave hazard is defined as moderate, strong and severe based on the number of heatwave events exceeding 10, 15 and 20 per year in the statistical interval, respectively.

areas increasing from 10% to 15% of total land area, marine protected areas from about 3% to 7%, and biodiversity conservation areas from 29% to 44% from 2000 to 2020. By 2020, nearly 100 countries had included biodiversity values in their national accounting systems (CBD Secretariat, 2020). The global deforestation rate from 2015 to 2020 was about 10 million ha per year, down from 12 million ha from 2010 to 2015 (FAO, 2020). Trends varied by region, with Asia, Oceania and Europe experiencing a net increase in forests, while Africa and South America continued to lose forests (Figure 1-17).

The current efforts are insufficient to prevent the continued degradation of marine and terrestrial ecosystems. Marine ecosystems continue to be damaged by acidification, eutrophication and plastic pollution. Data collected from 308 stations in 35 countries in 2022 indicated that the continued decline in global ocean alkalinity or pH will have untold adverse impacts on marine ecosystems. Monitoring of eutrophication by satellite remote sensing shows the indicators have been on the rise since 2016, with the 2020-2021 average peak up by more than 23% compared to previous years (UN, 2022). Global plastic waste rose from 156 million tonnes in 2000 to 353 million tonnes in 2019, with about one-fifth being mismanaged and leading to leakage into the environment. By 2019, an estimated 109 million tonnes of leaked plastics had accumulated in rivers and 30 million tonnes in oceans (OECD, 2022). After the outbreak of COVID-19, single-use plastics from medical waste have increased, with an estimated 25,000 tonnes of plastic waste continuously entering the world's oceans (UN, 2022).

Terrestrial ecosystems are plagued by deforestation, land degradation and biodiversity loss. The world's forest area has declined, with the share of forests in total land area decreasing from 31.9% in 2000 to 31.2% in 2020 (UN, 2022). About 20% to 40% of the world's land is already degraded, directly affecting nearly half of the global population. About half of global GDP (US$44 trillion) is threatened by dependence on natural capital (UNCCD, 2022). The risk of species extinction continues to rise around the world, with the International Union for Conservation of

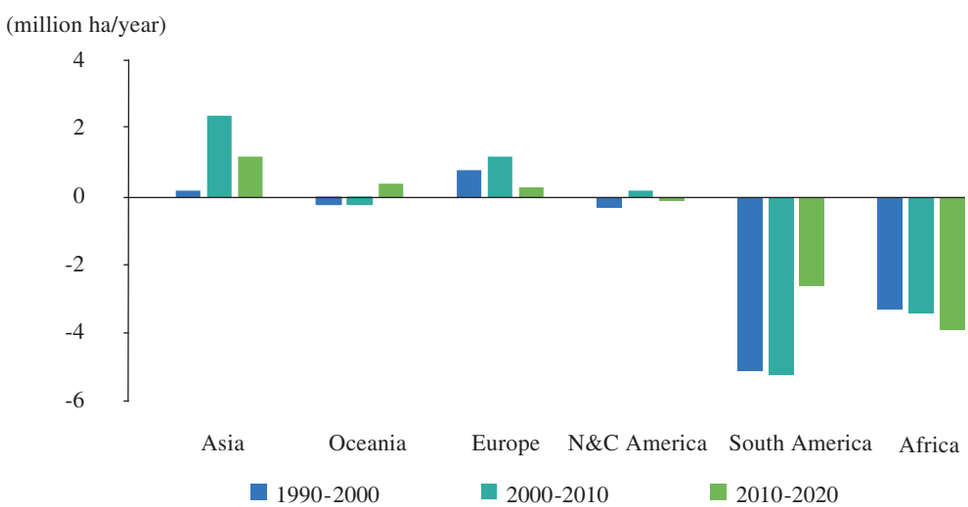

Figure 1-17 Net changes in forests by region, 1990-2020 (by decade)

Source: FAO

Nature (IUCN) Red List of Threatened Species Index falling from 0.80 in 2000 to 0.72 in 2022 (UN, 2022). Among the 150,388 species assessed for the Red List in 2022, more than 42,100 are threatened with extinction (IUCN, 2023).

1.2.3 Global resource waste is still serious

The pressures of economic development on the environment have eased. Although the global material footprint[1] continued to expand after 2015, its rate of growth has abated. From 2015 to 2019, the global material footprint grew at an average annual rate of 1.1%, down from 2.8% from 2000 to 2014, suggesting that the growth of economic pressures on the environment has slowed (UN, 2022). The global material footprint per capita increased consistently from 2000 to 2014, with only zero growth in 2008 and negative growth in 2009. From 2015 to 2019, the indicator continuously registered negative or near-zero growth, implying that fewer materials were consumed on a per capita basis (Figure 1-18).

The momentum of global renewable energy development is strong. The global installed capacity of renewable energy expanded rapidly, up from 1,852.8 GW in 2015 to 3,371.8 GW at the end of 2022, accounting for 40% of the global installed capacity of electricity (IRENA, 2023). Global renewable electricity generation reached 8,538.5 TWh in 2022, expanding by 54.9% compared with 2015; global consumption of renewable energy reached 20,848.7 TWh, an increase of 18.9% from 2015 (Figure 1-19). The unit cost of renewable energy has been dropping. From 2010 to 2019, the unit cost of solar energy, wind energy and lithium-ion battery decreased by 85%, 55% and 85% respectively (IPCC, 2022). At the

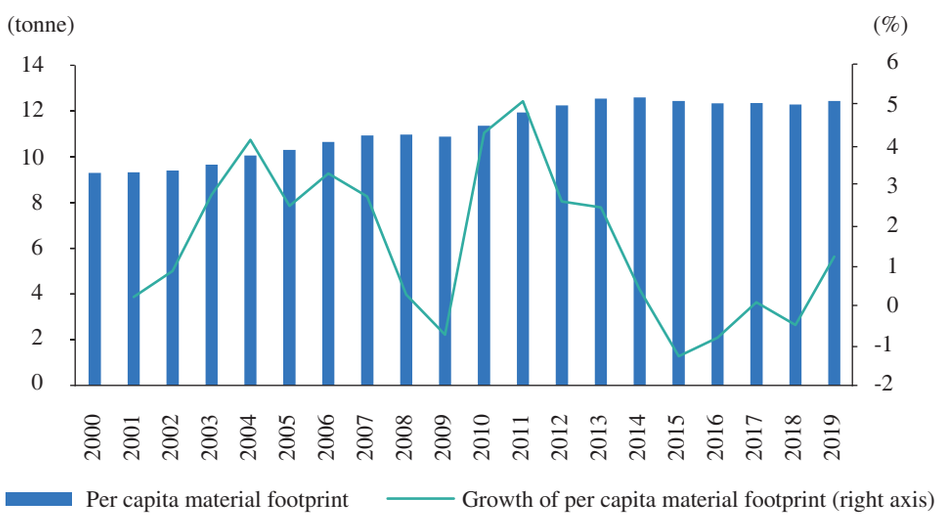

Figure 1-18 Per capita material footprint and its growth rate, 2000-2019

Source: UNEP; CIKD

[1] Material footprint refers to the total amount of raw materials extracted to meet final consumption needs and is an important indicator of resource efficiency in SDG 8 and sustainable management of natural resources in SDG 12. The global material footprint is the sum of the material footprint for biomass, fossil fuels, metal ores and non-metal ores.

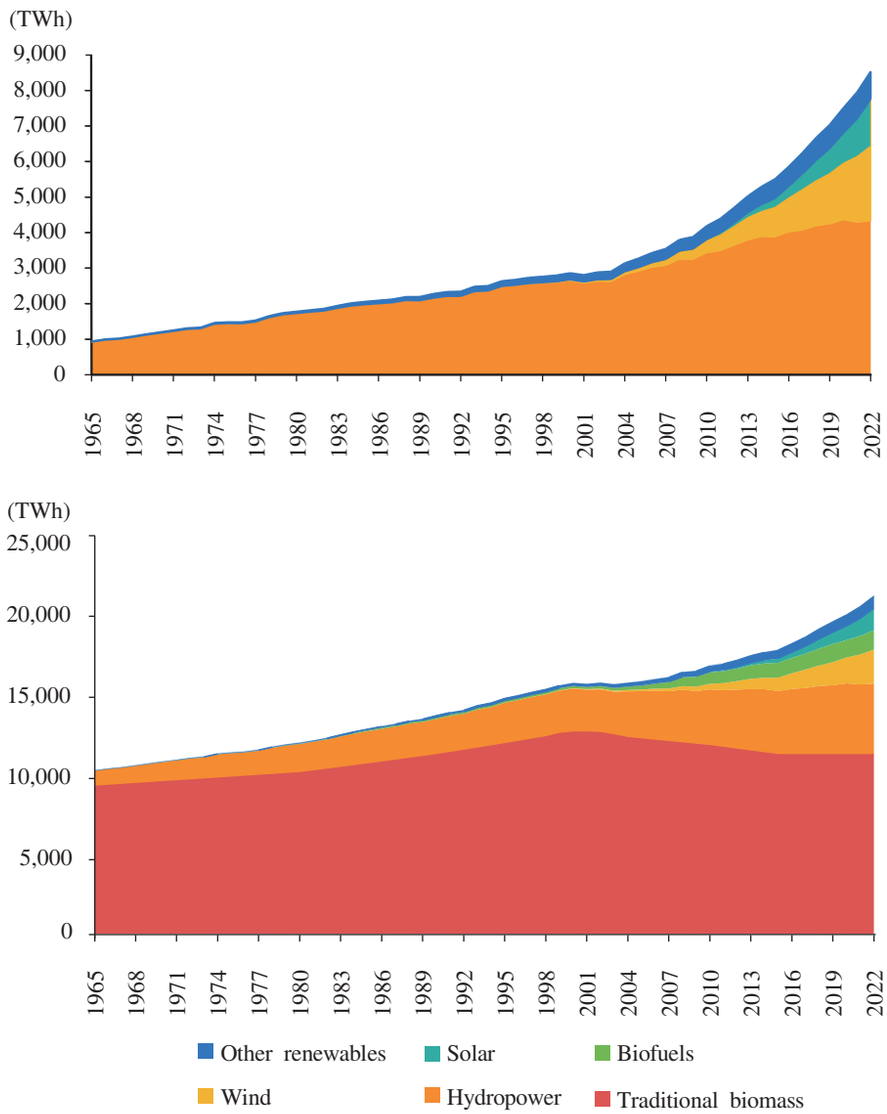

Figure 1-19 Global renewable electricity generation (top) and renewable energy consumption (bottom), 1965-2022

Source: Our World in Data

same time, the use of electric vehicles has rapidly increased. From 2015 to 2022, global electric vehicle ownership grew rapidly from 1.3 million to 26.2 million, a 20-fold increase (Figure 1-20), with most of the growth coming from markets such as China, Europe and the United States.

Waste recycling has seen positive growth. For example, the amount of global scrap used to make steel has continued to climb in recent years (Figure 1-21). From 2011 to 2015, the amount of steel made from scrap in major steel-producing countries and regions hovered around 350 million tonnes (BIR, 2016). By 2020, it had exceeded 450 million tonnes (BIR, 2021). In addition, by

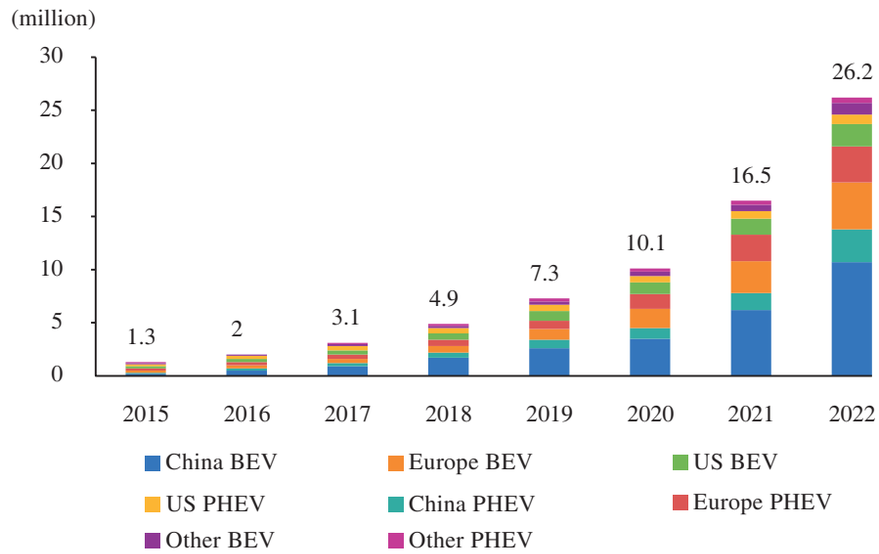

Figure 1-20 Global electric vehicle ownership, 2015-2022

Note: "BEV" = battery electric vehicle; "PHEV" = plug-in hybrid electric vehicle. The electric car ownership in this chart refers to light-duty passenger vehicles.
Source: IEA

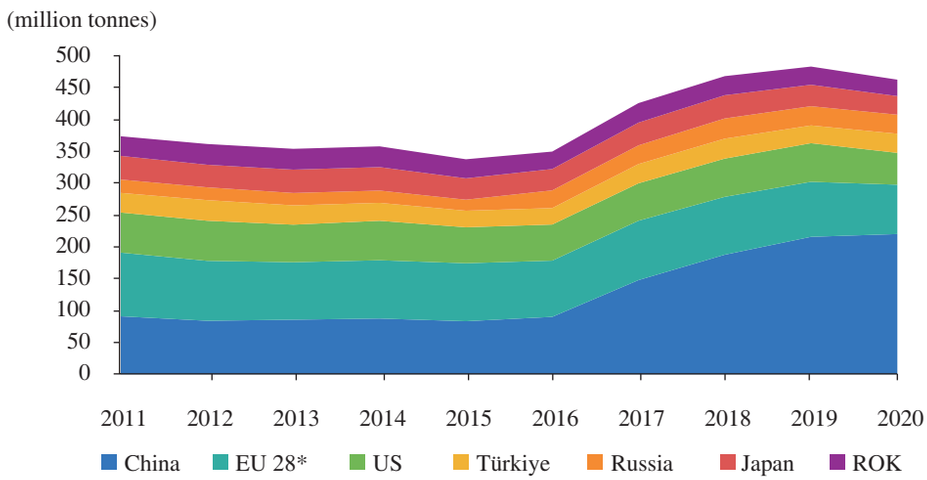

Figure 1-21 Main steel scrap used for steelmaking in the world, 2011-2020

Note: *It is "EU-28" here in the BIR report. This report refers to it as the EU 28, ruling out the change in the number of EU countries caused by events such as Brexit and Croatia's accession to the EU.
Source: BIR; CIKD

2022, the average municipal solid waste collection rate was 82% globally, and that of municipal controlled facilities was 55% (CBAS, 2022). Recycle and reuse of plastics has also seen some progress. Global secondary plastics production more than quadrupled between 2000 and 2019, growing from 6.7 million tonnes to 29.1 million tonnes, faster than the increase of primary plastics production. Yet the total secondary plastics production is still far smaller than primary production, accounting for just 6.8% of the latter (OECD, 2022).

Large-scale food losses and waste remain. Reducing food losses and waste is an important step towards sustainable production and consumption[1]. Globally, about 17% of food is wasted at the retail or consumer level, and the food lost and wasted each year could feed 1.26 billion hungry people. Food losses and waste contribute about 8%-10% of total global greenhouse gas emissions (FAO & UNEP, 2022). Between 2016 and 2021, the global average Food Waste Index changed relatively little, with North America and Europe, West Asia and North Africa, sub-Saharan Africa and Oceania reporting a surge in the index in 2020 compared to 2016 and a decrease in 2021 (Figure 1-22). Over the same period, the global food loss rate[2] increased, with a higher share from sub-Saharan Africa, but registered a fall in 2021 compared to 2016, with an increased share from Latin America and the Caribbean, West Asia and North Africa, and Oceania (Figure 1-23). In terms of the Food Waste Index, estimates at the global level indicate that about 121 kg of food is wasted per person per year, with a total of 931 million tonnes of food wasted globally in 2019 (UNEP, 2021).

1.3 Prosperity

The 2030 Agenda is committed to enabling all people to live a prosperous and fulfilling life and to achieving economic, social and technological progress in harmony with nature. To that end, all of humanity needs to join forces to create sustained, inclusive and sustainable economic growth, achieve sustainable industrial development, utilize information and communications technology to accelerate development, ensure universal access to modern, affordable, reliable and sustainable energy services, and build high-quality, resilient and inclusive infrastructure that benefits all.

1.3.1 Global economic recovery remains weak

Global economic growth has picked up after being hit by the pandemic. From 2015 to 2019, global GDP growth remained at around 3%, and GDP per capita grew at around 2%. GDP growth in least developed countries (LDCs) remained above 4%, higher than the world average, and their GDP per capita growth was comparable to the world average, but both indicators were well below the target level of at least 7%, as set by SDG 8.1. With the COVID-19 shock in 2020, global GDP growth and GDP per capita growth fell to -3% and -4% before rapidly rebounding to 6% and 5% in 2021, respectively. However, the average annual growth rates for these two years

[1] Reducing food losses and waste is generally measured by two indices. One is the Food Loss Index (FLI), which reflects post-harvest losses in operations, transportation, storage and processing on the supply side; and the other is the Food Waste Index (FWI), which reflects waste in retail, food service supply and household consumption on the consumption side (FAO, 2019). These two indices are measures of SDG 12.3.

[2] Food loss rate = food loss/food production.

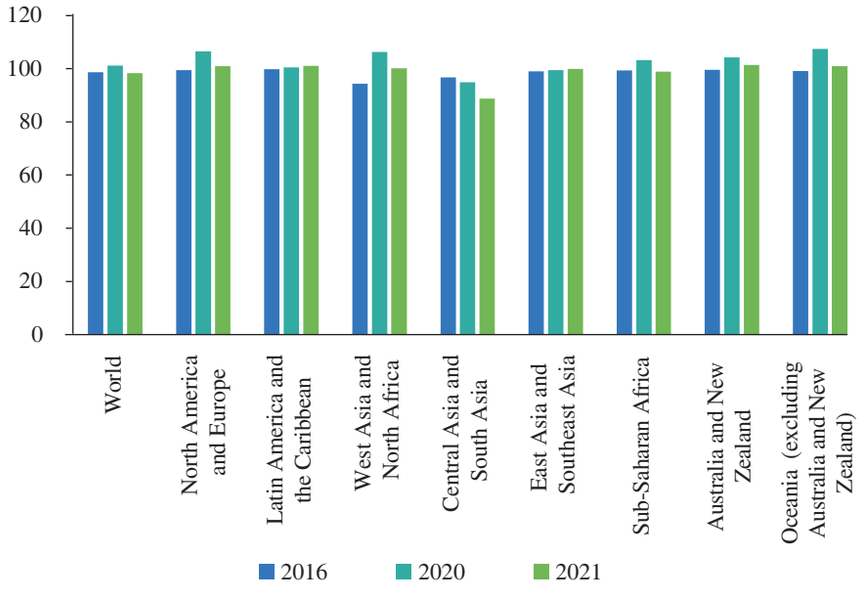

Figure 1-22 Food Loss Index in 2016, 2020 and 2021 (2015=100)

Source: FAO

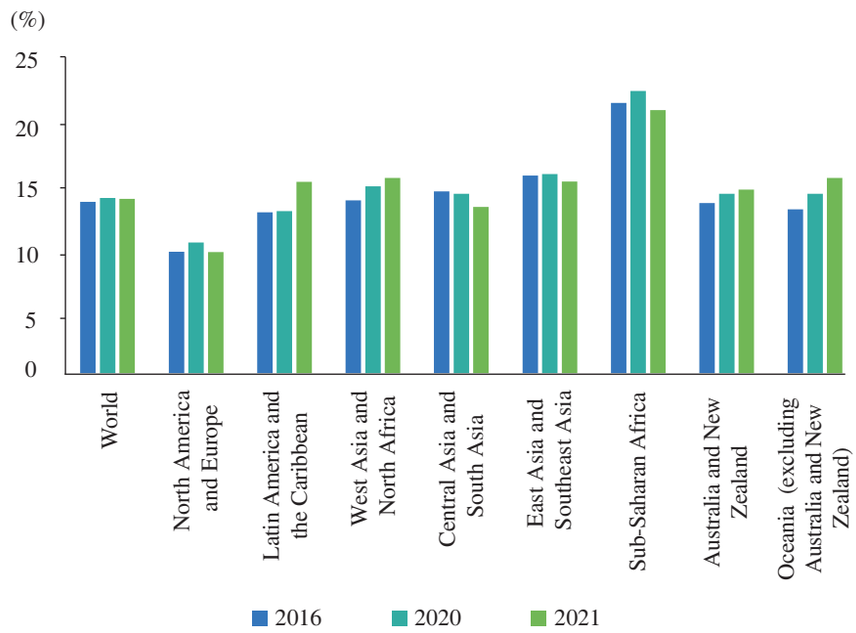

Figure 1-23 Food loss rate in 2016, 2020 and 2021

Source: FAO

were only 1.4% and 0.4%, respectively. In 2022, the global GDP growth rate and per capita GDP growth rate fell back to pre-pandemic levels (Figure 1-24).

Global economic growth is experiencing a structural slowdown. Due to the decline in investment growth and total factor productivity growth, the aging global workforce, geopolitical conflicts, and the fragmentation of international trade, the potential global growth rate between now and 2030 will fall to the lowest level in 30 years, which will undermine the ability of emerging market and developing economies (EMDEs) to achieve the SDGs (Kose & Ohnsorge, 2023). For aging countries in Europe, North America and East Asia, a declining or even negative population growth will lead to a significant reduction in economic growth potential and prospects. For countries where current fertility rates are still well above replacement levels, such as sub-Saharan Africa, the Middle East and North Africa, the creation of stable employment opportunities for new labor force will be key to achieving sustained economic growth.

1.3.2 Industrialization is generally slow in the developing world

A few developing countries have industrialized relatively rapidly. In Bangladesh, China, Iran, Malaysia, Thailand, Türkiye and Viet Nam in Asia and Algeria in Africa, the share of industrial value added in GDP exceeds 20%, and even 30% in some of these countries (Figure 1-25). Among them, Bangladesh, China and Viet Nam have maintained relatively fast growth in industrial value added from 2016 to 2022 (Figure 1-26).

The industrialization of the LDCs faces daunting challenges. In the LDCs, the share of manufacturing value added in GDP has grown slowly, from 12.1% in 2015 to only 14.0% in 2022, far short of the target of doubling this indicator by 2030. Progress has been particularly slow in the LDCs in Africa, with a growth of only 0.45 percentage point from 2015 to 2022 (Figure 1-27). In terms of manufacturing value added per capita, the LDCs are far behind developed countries,

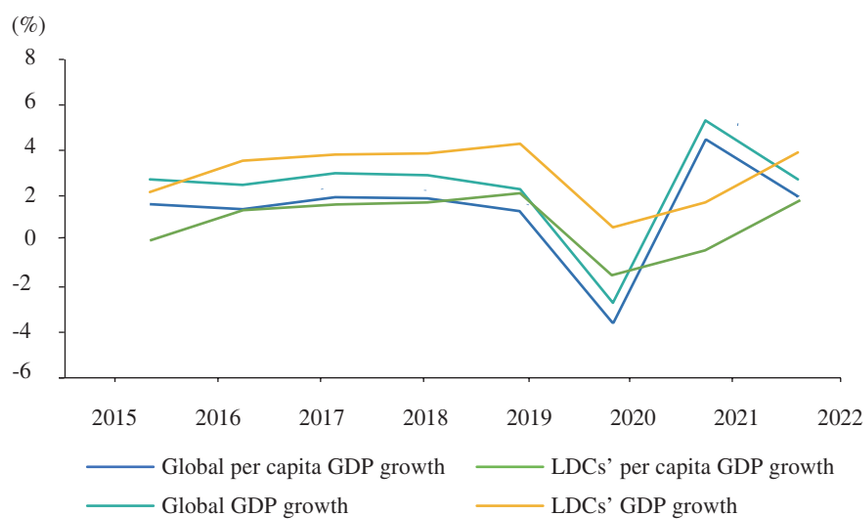

Figure 1-24 Global and LDCs' economic growth, 2015-2022

Source: World Development Indicators

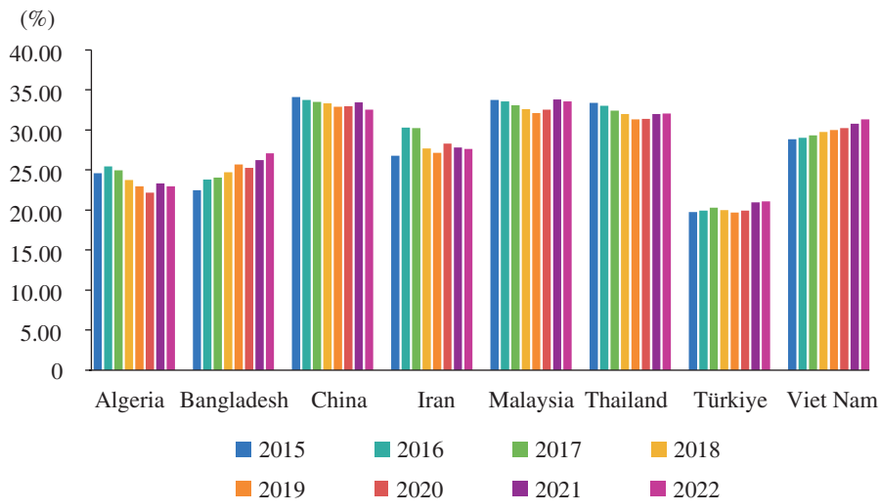

Figure 1-25 Share of industrial value added in GDP in some developing countries, 2015-2022

Source: UNIDO National Accounts Database; CIKD

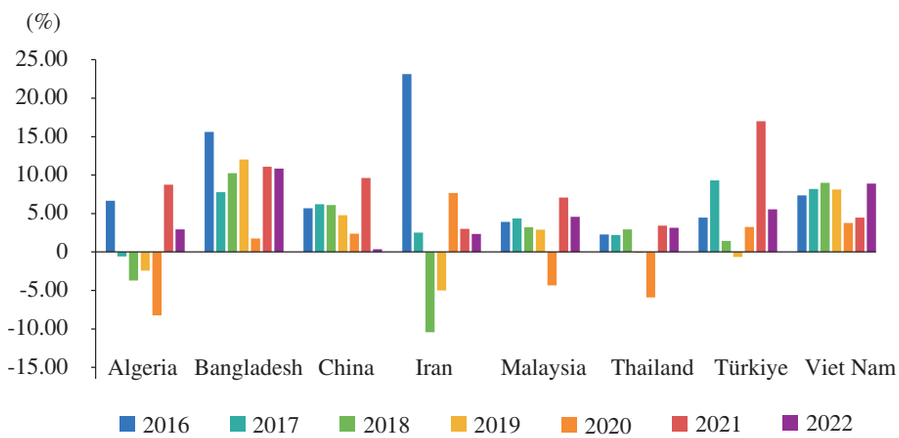

Figure 1-26 Growth of industrial value added in some developing countries, 2016-2022

Source: UNIDO National Accounts Database; CIKD

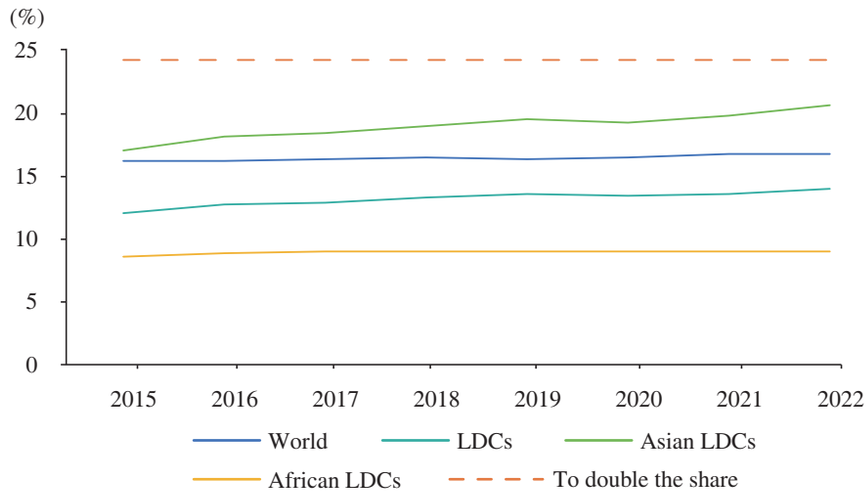

Figure 1-27 Share of manufacturing value added in GDP, 2015-2022

Source: UNIDO National Accounts Database; CIKD

with Europe and North America reaching a historical high of US$5,093 in 2022, compared with only US$159 for the LDCs (UN, 2023b).

The goal of doubling manufacturing's share of total employment in developing countries[1] cannot be achieved in the foreseeable future. The indicator declined from 14.3% in 2015 to 13.6% in 2021 (Figure 1-28). Among them, the proportion in upper-middle-income countries has decreased significantly, by 1.18 percentage points. In contrast, it remained unchanged in lower-middle-income countries and rose slightly by

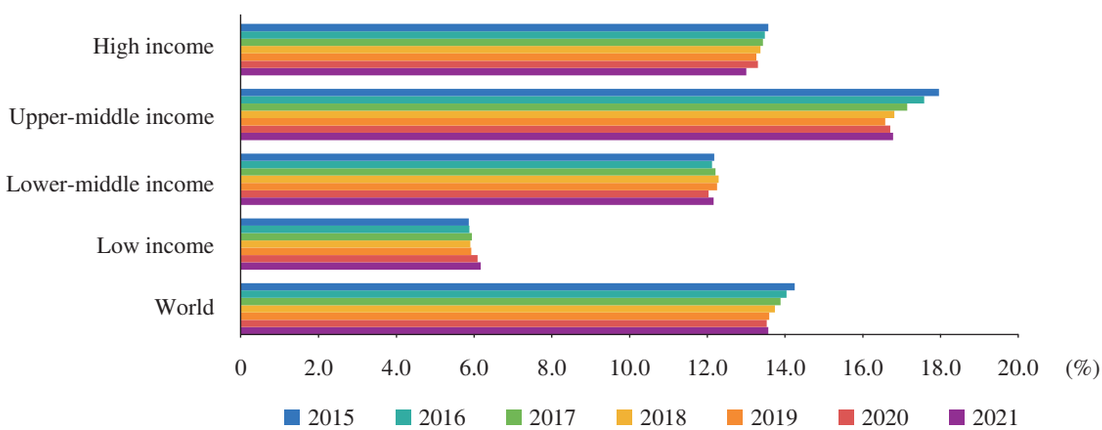

Figure 1-28 Share of manufacturing employment in total employment, 2015-2021

Source: ILOSTAT

[1] Doubling the share of industry in employment in the LDCs is one of the targets of SDG 9, and manufacturing employment as a share of total employment is a measure of this target.

0.3 percentage point in low-income countries, a rate that makes it difficult to achieve the doubling target of SDG 9.

1.3.3 Digital divide remains wide

Digital technology has made rapid progress in recent years. AI, big data, blockchain and other digital technologies are being increasingly used in industrial production, public health, education, public services and other fields. Internet coverage is expanding rapidly. The number of internet users worldwide has continued to climb since 2015, with significant growth during the three years of COVID-19. About 3 billion people worldwide, or 41% of the global population, used the internet in 2015, compared with 5.3 billion or 66% in 2022. In 2022, 4G network coverage doubled from 2015 to cover 88% of the global population (ITU, 2022). Despite this rapid progress, about 2.7 billion people worldwide are still without access

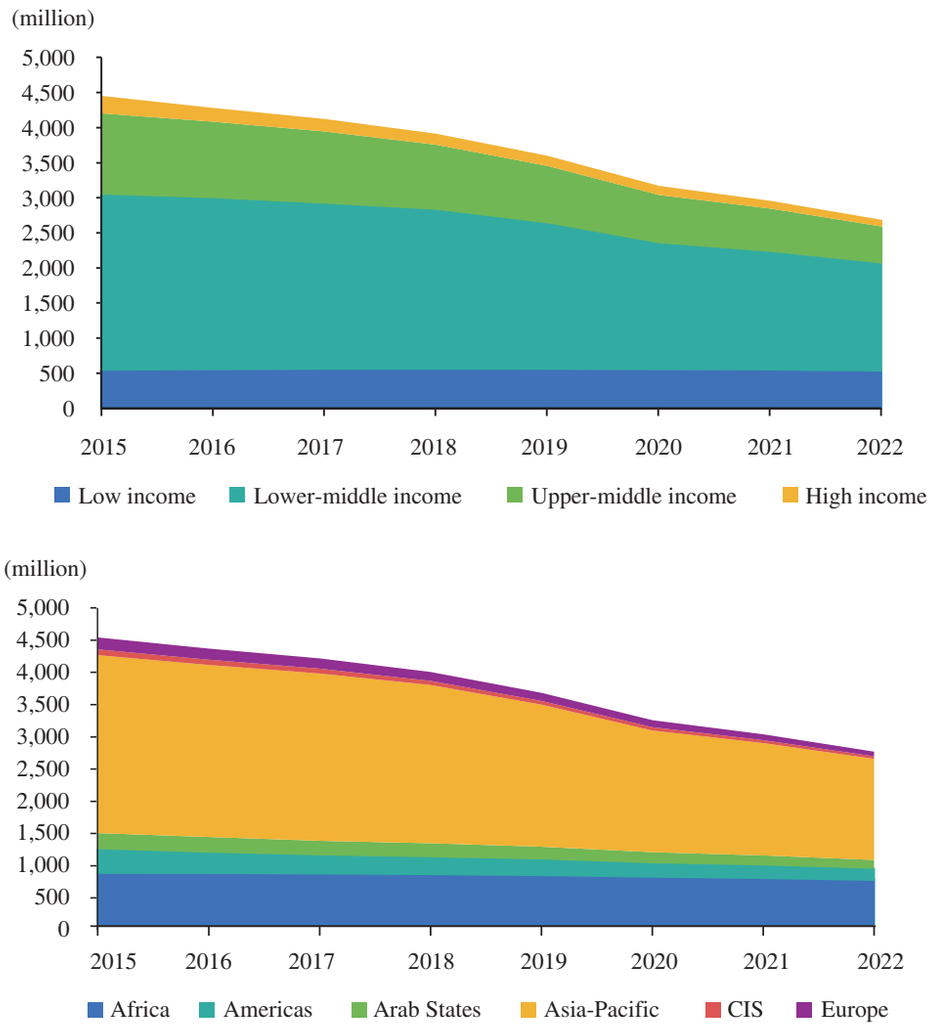

Figure 1-29 Individuals not using the internet by income (top) and by region (bottom), 2015-2022

Source: ITU

to the internet, mainly in low-income and lower-middle-income Asia-Pacific and African countries (Figure 1-29).

The cost of internet use remains high in developing countries. In 2022, the prices of mobile broadband services in 103 economies and fixed broadband services in 71 economies were above the standard of 2% of monthly GNI per capita[1] (ITU, 2022). The global price of fixed broadband service in monthly GNI per capita decreased from 3.5% in 2021 to 3.2% in 2022, which is still higher than the 2% target (Figure 1-30). The indicator is well above the affordable level in low-income and lower-middle-income countries, which severely inhibits the increase of internet coverage and is detrimental to the promotion of economic development through the internet.

1.3.4 Global demands for infrastructure are not sufficiently met

Global power grid coverage suffered a reversal. The share of the global population with access to electricity rose from 86.5% in 2015 to 90.4% in 2020, thanks to increased and improved electricity infrastructure in Asian countries and some African countries. The global share of electrified floor space increased from 96.95% in 2014 to 98.68% in 2020 (CBAS, 2022). After 2020, the expansion of grid coverage slowed down or even reversed due to a combination of factors, such as the pandemic and soaring energy prices. The number of people lacking access to electricity globally was expected to increase by about 20 million in 2022, totaling 774 million (Figure

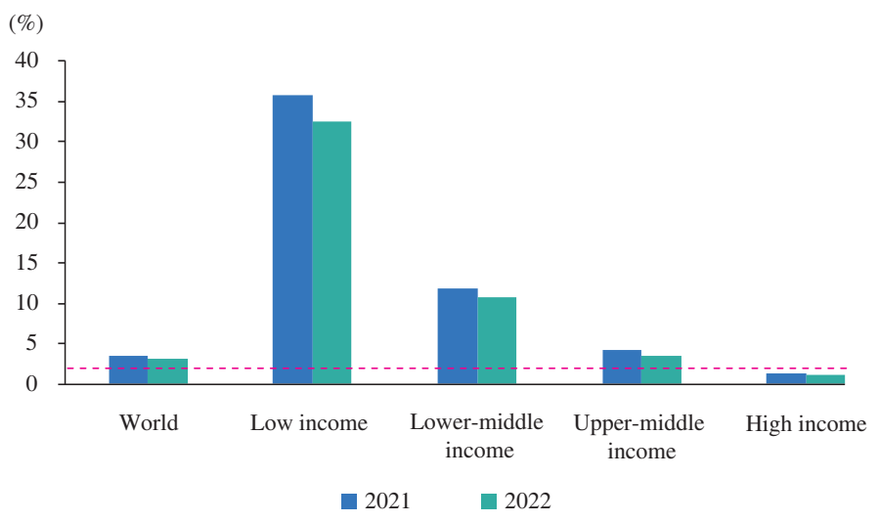

Figure 1-30 Share of fixed broadband service price in monthly GNI per capita, 2021-2022

Note: The dotted line represents the standard of 2% of monthly GNI per capita.
Source: ITU

[1] The Broadband Commission for Sustainable Development set the affordability standard below 2% of monthly GNI per capita.

1-31), the first rise in 20 years. This means that in order to achieve universal access to electricity by 2030, an average of about 110 million people would need to be brought into grid coverage each year from 2023 to 2030. However, the IEA estimates that under the current policies and commitments, 672 million people worldwide will still lack access to electricity in 2030, of whom 85% live in Africa (IEA, 2023a).

Global transport infrastructure gap remains huge. Transport volumes continued to climb from 2015 to 2019, but the pandemic had a large impact on them in 2020 (Figure 1-32). At present, more than 1 billion people globally still have no access to all-weather roads, and only about half of the urban population have easy access to public transport (UN, 2021). In Africa, it is estimated that about 450 million people, or more than 70% of its total rural population, remain unreached by transport infrastructure and systems.

Since the adoption of the 2030 Agenda, countries around the world have taken action to

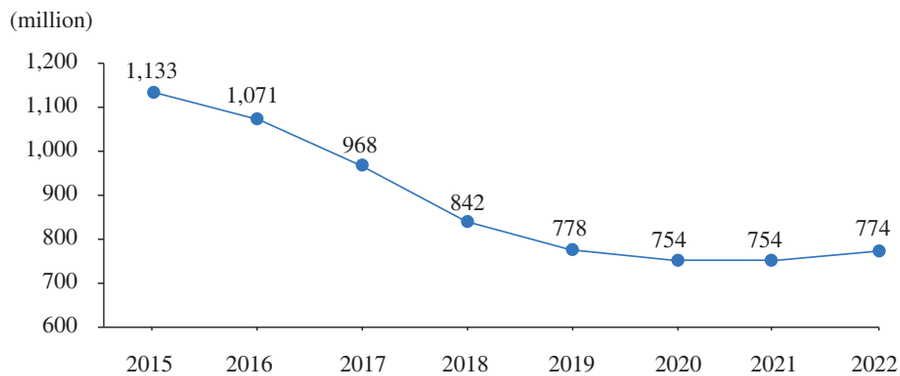

Figure 1-31 Global population without access to electricity, 2015-2022

Source: Cozzi et al., 2022

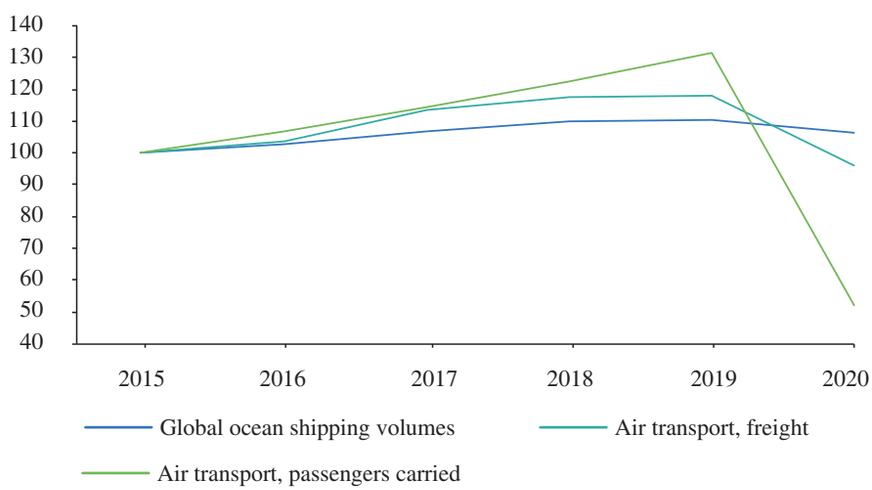

Figure 1-32 Global transport volumes, 2015-2020 (2015=100)

Source: UNCTAD; World Development Indicators; CIKD

promote global development in the three dimensions of people, planet and prosperity. In particular, developing countries have made unremitting efforts to explore development paths that are in line with their own national conditions and to make remarkable achievements in economic and social development. Many countries have made great strides in poverty reduction, food security, public health and basic education, creating better conditions for the survival and development of humanity. However, the impact of COVID-19 has reversed the progress of the past few years, with incalculable long-term negative impacts. Climate change, continuing loss of biodiversity and overconsumption of natural resources are becoming increasingly acute, forcing human societies to take action, which, however, is far outpaced by environmental degradation and further hampered by problems of coordination, cooperation and burden-sharing among different countries and groups. Economic and social prosperity is also faced with challenges such as inadequate impetus for economic growth, slowing industrialization, and lack of infrastructure, while rapid advances in emerging digital technology have brought about new types of inequality, not least the digital divide, along with new productivity. The future direction of global development at this historic crossroads is a pressing issue facing all humanity today.

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Chapter II

Trends and Prospects of Global Development

Currently, six trends are emerging in global development, which can be summed up as the "6Ds": Deceleration (world economic growth faces the risk of deceleration), Divergence (global development shows clear trend of division), Deglobalization (economic globalization is encountering headwinds), Decarbonization (green and low-carbon development is flourishing), Digitalization (digital transformation has fostered a new momentum for global development), and Destabilization (global development faces increasing uncertainty and instability).

2.1 Deceleration: World economic growth faces the risk of deceleration

2.1.1 The probability of global economic slowdowns is high

In the 1980s, the world economy ushered in the Great Moderation that lasted more than 30 years. During this period, global economy generally achieved medium- to high-speed growth with low inflation. While a triumph for the demand-side macro-control policies of the world's major economies, the Great Moderation was mainly driven by globalization on the supply side. The integration of emerging market economies, represented by China, into the global supply chain provided the world with more cost-effective raw materials, products and services, increased global growth potential, and curbed inflation worldwide, especially in developed countries. But the 2008 global financial crisis triggered the end of the Great Moderation, and in recent years, multiple factors such as trade protectionism, the COVID-19 pandemic and geopolitical conflicts have led to a decline in the global economic growth rate (Figure 2-1).

World economic growth faces downward pressure. From the 1980s to the 1990s, the world's average economic growth increased from less than 2% to more than 4% at one time, and remained above 3% for most of the time. Since the turn of the century, global economic growth has declined from an annual average of 3.6% in the decade before the great financial crisis to 3.2% in

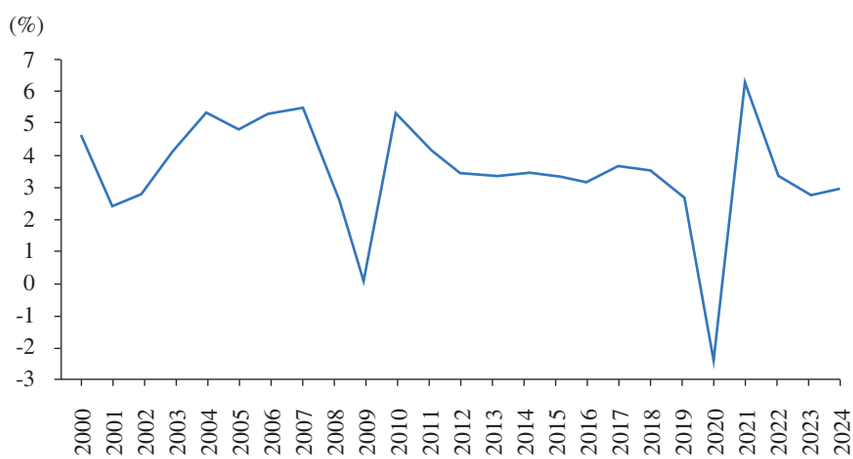

Figure 2-1 World economic growth, 2000-2024

Note: Values for 2023 and 2024 are projections.
Source: IMF

the decade before the COVID-19 outbreak (Goldman Sachs, 2022). According to a World Bank study in 2023, if countries do not make drastic policy reforms, global potential GDP growth will fall to 2.2% per year during the period 2022-2030 (World Bank, 2023a). According to a stress test by the International Monetary Fund (IMF) the same year, with the combined effect of risk scenarios, like a lower global credit supply and continued dollar appreciation, the probability of further slowdown in global economic growth in 2023 and 2024 is high (IMF, 2023).

2.1.2 Technological progress is key to increasing global economic growth

From the perspective of production function, among the mid- and long-term factors driving global economic growth, population aging and the slowdown of physical capital accumulation will restrict economic growth. The key to increasing the potential growth rate of the global economy lies in the innovation momentum brought by technological progress.

The shadow of aging is spreading from developed countries to developing ones. Over the past 50 years, global population growth has declined from an average annual rate of about 2% to less than 1% today, triggering a deceleration in the potential rate of global economic growth (Goldman Sachs, 2022). Global fertility has fallen from an average of 5 children per woman in the mid-20th century to an average of 2.3 in 2021, and is projected to fall to a tipping point in 2050 at a population replacement rate of 2.1 (UN, 2022). Most developed countries have seen declining fertility for many years, and now many developing countries, including those in Africa and Latin America, have also begun to experience declining birth rates. Aging is a far-reaching impact of slower population growth, as a larger proportion of retirees will have to be supported by fewer young people, which will be a drag on economic growth (World Bank, 2023a). The human capital dividend is supposed to be the key to compensating for the demographic dividend. However, the COVID-19 pandemic interrupted the education opportunities of many children and adolescents in low-income countries, exerting a non-negligible negative impact on global human capital growth.

The contribution of physical capital accumulation to global economic growth has slowed down. In terms of production function, sustained investment in physical capital is the biggest contributor to economic growth. The growth of physical capital depends mainly on the financial situation of the market players, their investment expectations, and the financing environment. With the exception of a few sectors such as consumer electronics, biomedicine and digital technology, most companies around the world have experienced a decline in profitability due to COVID-19. They have entered a lengthy period of "balance sheet repair", with a lack of capacity and willingness to invest, and a cautious attitude towards new investment projects. At the same time, the tight monetary policies since 2022 have raised financing rates in the markets of developed economies, and undermined the ability of enterprises, especially technology companies, to raise capital, leading to less investment in innovative projects.

Technological innovation and diffusion will bring new drivers of global growth. Technological innovation continues to expand the frontier of human knowledge, making it possible for various production factors and resources to be allocated in a more efficient manner, expanding the boundaries of economic growth. Against the background of slowing population growth and physical capital accumulation, technological innovation in frontier fields and its diffusion

are pivotal to the recovery of global economic growth. At present, global development is at a critical point in a new revolution in science, technology and industry. Cutting-edge technologies such as new energy, generative AI, autonomous driving, quantum technology and future bioengineering are pervading all walks of life. Expanding the goods and scope of services, combining innovative resources and elements, and reforming industrial organization models, these technologies are important sources of increasing global potential growth rates. The global coverage of modern communication and transportation infrastructure networks continues to increase, accelerating the technological spillovers brought about by the flow and integration of innovative resources. Those emerging technologies, proven by the market, are spreading to developing countries through the global production network. This can also generate considerable scale effects in the industrialization of innovation and support sustained growth of the global economy.

2.2 Divergence: Global development shows clear trend of division

2.2.1 The global development divide is widening

The trend of "income convergence" between developing and developed countries has slowed down. In the first two decades of the 21st century, the economic growth of the former was significantly higher than that of the latter, resulting in the phenomenon of "income convergence" as described in development economics. From 2000 to 2019, the average annual economic growth of developed countries was 1.97%, while that of developing ones was 5.72%. In 2000, developing countries accounted for only 17.59% of the global economy; in 2019, their contribution reached 36.60%. However, starting from 2020, their average annual growth rate was only 2.83%, 2.89 percentage points below the 2010-2019 average. The economic growth of the Middle East and North Africa and sub-Saharan Africa in 2021 was still lower than the average level of the developed world. Between 2017 and 2021, the indicator measuring inequality between countries rose by 1.2%, which was the first increase in a generation (UN, 2022), and "income convergence" between developing and developed countries slowed down.

Income disparities between different strata of the world have widened. COVID-19 had a greater impact on jobs in the labor-intensive manufacturing and services sectors, while employment in medium- and high-end producer services, such as finance and information, could be sustained through online office systems. The incomes of middle- and low-skilled workers were affected more. For the poorest, the percentage loss of income during the pandemic was twice as high as for the richest in the world (World Bank, 2022). Low-income earners spend a higher proportion of their income on food and energy, and the increase of prices in recent years has reduced their rate of wealth accumulation. On the other hand, high-income earners, benefiting from the economic stimulus introduced by governments, have seen significant appreciation in the value of their holdings in areas such as communications, pharmaceuticals and finance. The global wealth gap has widened even more dramatically than the income gap. The richest 10% of the world's population held 76% of global wealth in 2021, while the poorest half of the population accounted for only 2% (Figure 2-2).

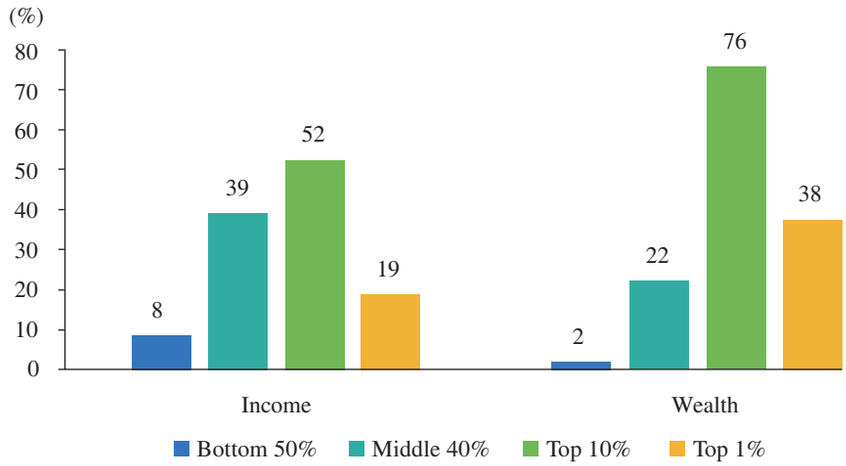

Figure 2-2 Share of global income (wealth) by group in total income (wealth) in 2021

Source: World Inequality Lab database

2.2.2 Economic recovery in developing countries is relatively difficult

Multiple external shocks have had a negative impact on all countries and regions of the world. However, developed countries have a comparatively greater resilience for economic recovery as they have more physical and financial resources, more space for fiscal and monetary policies, a greater number of more dynamic market players, and broader and deeper markets. Developing countries, after their growth inertia was interrupted by external shocks, are facing the impact of multiple risks and challenges, namely weakened growth momentum, high government debt, increasing pressure of capital outflow, and food price volatility, which makes economic recovery significantly more difficult for them than for developed countries. In the next two years, the average per capita income growth in EMDEs is projected to be only 2.8%, a full percentage point below the average for 2010-2019 (World Bank, 2023a).

The "scarring effect" has weakened the growth momentum of developing countries. The pandemic had not only a short-term impact on global economy, but also a long-term "scarring effect" that has led to medium- and long-term problems such as reduced productivity, underinvestment and suppressed innovation (G20 Framework Working Group, 2022). The impact of the "scarring effect" on developing countries is more far-reaching for three reasons. First, there is a lack of endogenous sources of investment. Developing countries are more dependent on external investment for growth, and there is a tendency for global capital to flow back to developed countries. Total investment in emerging market economies is projected to grow by only 3.5% between 2022 and 2024, less than half the average of the past 20 years (World Bank, 2023a). Second, developing country governments see insufficient space and limited effectiveness when it comes to their own policy interventions. Current macroeconomic policy adjustments in developed economies, which have shifted from ultra-loose to tight, have a negative spillover effect on developing countries, making it more difficult for them to rely on fiscal and monetary policy tools to promote economic recovery. Third, as the population of developing countries is relatively young,

education interruptions due to COVID-19 have a harder impact on their human capital. This makes it more difficult for developing countries to unleash their potential demographic dividend.

High indebtedness is constraining the growth capacity of developing countries. The stock of external debt of developing countries in 2021 (US$11.1 trillion) was nearly five times in 2000, and the ratio of external debt to GDP rose from 22.8% in 2008 to 30.6% in 2021 (UNCTAD, 2023a). Tightening financing conditions, weak growth and rising debt levels pose significant fiscal challenges for EMDEs. About 15% of low-income countries are currently in debt distress, while another 45% of low-income countries and about 25% of emerging market economies are at high risk of debt distress (World Bank, 2023b). The local currencies of some EMDEs have depreciated at a relatively high rate, significantly raising the risk of default on their sovereign debt. High indebtedness not only crowds out government spending in economic growth and people's livelihood in developing countries, but also limits the ability of their governments to cope with other shocks.

Exchange rate volatility and capital outflows have made recovery more difficult for developing countries. The current tightening of monetary policies in developed countries has also triggered international capital volatility, generating capital outflows, currency depreciation and asset-price adjustment pressures on EMDEs, and exacerbating financial instability and economic downside risks for developing countries. To prevent more severe pressures from capital outflows and currency depreciation, the monetary authorities in many developing countries have prolonged their domestic tightening cycles or utilized foreign exchange reserves to counteract exchange rate pressures. This has pushed up the financing costs and debt-servicing pressures of developing countries, creating a chain of dilemmas: exchange rate shocks – capital outflows – higher financing costs – debt-servicing difficulties.

Food security risks have hit developing countries harder. In recent years, global food supply-demand tensions have worsened as COVID-19, climate extremes and geopolitical conflicts have increased food security vulnerability. Currently, about one in 10 people worldwide suffers from

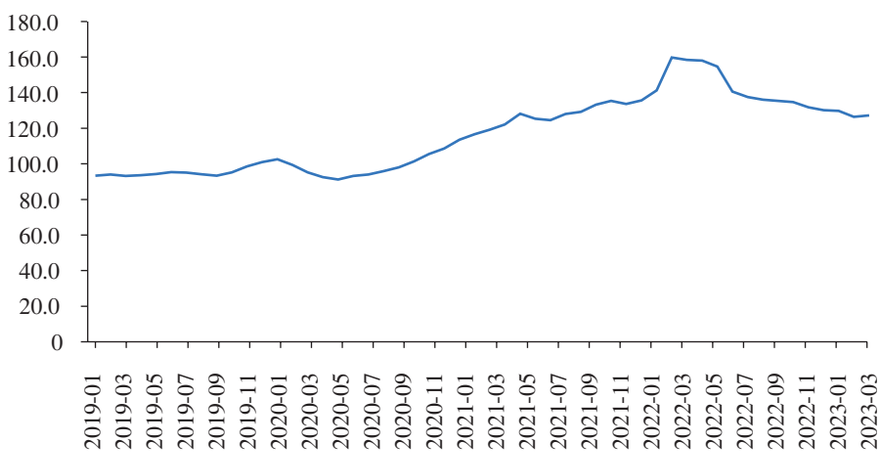

Figure 2-3 FAO Food Price Index, Jan. 2019-Mar. 2023

Source: FAO

hunger, nearly one-third of the world's population does not have regular access to adequate food (UN, 2022), and 349 million people in 79 countries are acutely food insecure (WFP, 2022). While the FAO Food Price Index declined in 2022, it is still higher than in 2021 and 2020 (Figure 2-3). Since developing countries have higher Engel coefficients, rising food costs can have a direct impact on the survival of the large number of low- and middle-income households in developing countries and become an important factor affecting social stability in these countries.

2.2.3 South-South cooperation is an important force in global development

EMDEs represented by the BRICS should strengthen cooperation among themselves. Development embodies people's aspiration for a better life and is the top priority of developing countries. The BRICS countries are companions on the road of development and revitalization. According to IMF data, the combined GDP of the BRICS countries accounted for 25.8% of the global GDP in 2022, up from 8.4% in 2001. While promoting their own development, the BRICS countries have also made positive contributions to the common development of EMDEs. The New Development Bank (NDB) initiated by the BRICS has approved 98 projects with a total loan amount of more than US$33 billion by 2023; it has played an important role in making up the gap in financing for global development and promoted key areas in the recipient developing nations such as infrastructure, green development, new industrialization and the digital economy. In August 2023, the BRICS countries achieved a historic expansion, reflecting their determination to unite and cooperate with other developing countries, in line with the common interests of EMDEs.

The global economic governance mechanism should be reformed to be more favorable for EMDEs. As developing countries share the same future, they should safeguard their common interests and increase their representation and say in global economic governance. From 2020 to 2025, the G20 presidency was and will be held by developing countries except in 2021, when it went to Italy. Developing countries have a high degree of consensus on making the G20 give more importance to the 2030 Agenda and support the growth of developing countries. They are pressing all players to pay greater attention to the urgent risks and challenges they face such as food and energy security, public health, and economic and financial stability. For example, Indonesia, the G20 presidency in 2022, pushed for the creation of the Pandemic Fund to help developing countries tide over difficulties.

2.3 Deglobalization: Economic globalization is encountering headwinds

2.3.1 Overstretching the concept of security raises the cost of global development

Overstretching the concept of security reduces the efficiency of global economic development. In the last round of globalization, "efficiency" was the dominant factor in determining the global division of labor, and tariff and non-tariff trade barriers were the main obstacles to globalization. In recent years, unilateralism and protectionism are on the rise, and geopolitics has become an important factor affecting the new round of globalization. In the name of "security", some countries have politicized, instrumentalized and weaponized economic and trade issues, and used investment restrictions, discriminatory subsidies

and unilateral sanctions to undermine market rules and the principle of fair competition. Multinational corporations, when restructuring their global operations, have to give greater weight to the geopolitical factor. For some industries, it has even become the decisive factor, leading to a slowdown in the expansion of global value chains (OECD, 2023a). Compared with trade data, foreign direct investment (FDI) is a leading indicator of globalization. However, as global trade is growing moderately, global FDI growth has slowed down significantly. According to the IMF, global FDI as a percentage of total global GDP has declined from a range of 4%-5.5% around 2000 to a range of 1.5%-2% in 2018-2022.

Overstretching the concept of security weakens the ability of developing countries to share the dividends of globalization. An efficiency-oriented globalization is rooted in the division of labor, industrial agglomeration and scale effects. Compared with developed countries, the headwinds of economic globalization have a greater impact on EMDEs, especially small and medium-sized economies. Under the division of labor system in the global production network, developing countries with incomplete production systems and weak technical capabilities can also participate in the global supply chain. Small and medium-sized developing countries do not need to establish a complete industrial chain but can focus on a particular production link of commodities and form economies of scale. But in a global economic system overstretching the concept of security, these countries face the risk of losing the opportunities brought by the scale effect of the global value chain, making it more difficult to expand production and upgrade industries.

Overstretching the concept of security reduces the security of global development. In the face of the pandemic shocks and geopolitical risks, the global production network has shown strong resilience precisely because of the efficiency-oriented division of labor, which can be adjusted efficiently, flexibly and rapidly. In the new round of globalization where the concept of security is overstretched, the reduction of efficiency and the increase in costs have become an inevitable trend, a cost that does not translate into long-term security. The global supply chain is also divided at local critical points, and if global health crises such as the COVID-19 pandemic or global natural disasters caused by weather extremes recur in the future, the global production network, which is built on a less efficient and more costly architecture, will be less capable to use resources and less resilient in responding to the shocks, with less margin for adjustment, less buffer space and less depth of collaboration. This will reduce the robustness and sustainability of global development.

2.3.2 Economic globalization is an irreversible historical trend

The global trading network remains dynamic. Although the intensity of global trade (global trade volume/global economic aggregate) has declined, in absolute terms total global trade is still on an upward trend amidst volatilities. After the outbreak of COVID-19, global trade still maintained a small average annual increase of 3% in 2020-2022. Although the pandemic repeatedly impacted global trade-based industrial and supply chains, the global production network with its deep division of labor still showed good resistance and self-adjustment capacity. Despite occasional fluctuations in the global supply chain due to shortages of components, there was no prolonged supply chain disruption in the major industries. In 2019-2021, the total value of exported global goods maintained an average

annual growth of 10.3%, and the rapidly growing global demand for medical supplies and electronic products was met during the pandemic (Figure 2-4).

Trade in services has become the new highlight of economic globalization. Even though it was affected by the pandemic, total trade in services declined only in 2020 and quickly rebounded to near pre-pandemic levels in 2021, growing by 15% to US$6.8 trillion in 2022. The share of services trade in total global GDP rose from 6% in 1975 to 14% in 2019, before declining slightly after the COVID outbreak to 12% in 2021. In 2019-2022, while trade in international travel services and transportation services declined significantly, other commercial services maintained a relatively rapid growth of 5% per annum (WTO, 2023). Thanks to the development of communications technology and the expansion of telecommuting, digital trade boosted trade in consumer services, including software membership subscriptions and customer service outsourcing services, as well as trade in producer services that includes software development outsourcing, film and media outsourcing, and innovation outsourcing. Services trade has become an important growth area and a new driving force for global trade.

Promoting better economic globalization has become a general trend. Economic globalization is the trend of the times, and no country can afford to go against it. From a long-term perspective, there will be no fundamental shift in the underlying logic of the efficiency- and cost-oriented international division of labor. It is undeniable that the dividends of economic globalization have not benefited all groups within countries. Under the impact of the COVID-19 pandemic and geopolitical conflicts, countries have been paying more attention to the security of supply chains. But overstretching the concept of national security cannot resolve the existing defects of globalization. The current adjustment of globalization should not only pay attention to the concerns of all countries on reasonable security, but also adhere to the concept of common, comprehensive, cooperative and sustainable security, seek the greatest common ground in the global division of

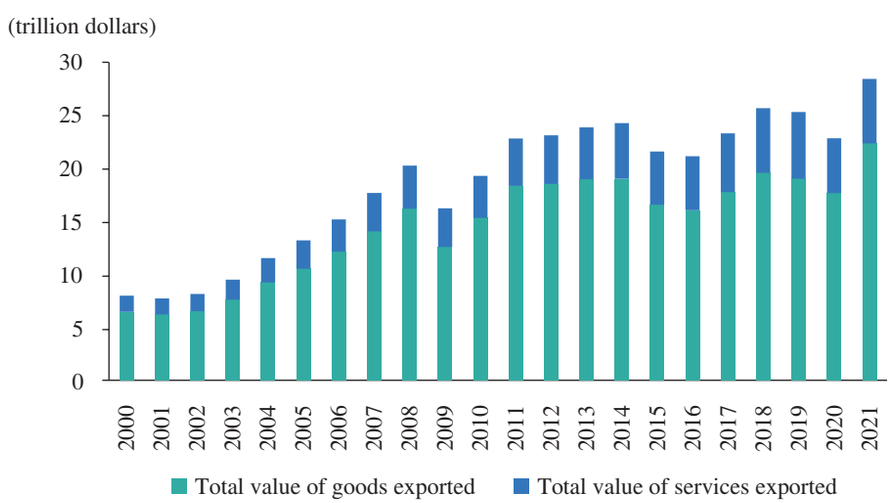

Figure 2-4 World export of goods and services, 2000-2021

Source: WTO database and the authors' calculations

labor and cooperation, and keep "security" within a limited and well-defined scope. Only by seeking a better globalization based on mutual trust, mutual respect, solidarity and cooperation, can an open world economy be advanced and development dividends be shared by all countries via safe and stable global industrial and supply chains.

2.4 Decarbonization: Green and low-carbon development is flourishing

2.4.1 The global green industry is picking up the pace

Renewable energy has gained strong momentum. In the past five years, renewable energy equipment accounted for about 70% of new power generation installations globally, and renewable energy accounted for about 60% of the global new power generation (IEA, 2021). Global renewable generation capacity reached 3,372 GW in 2022, an increase of 295 GW from 2021, or about 9.6% year on year, growing much faster than fossil fuel consumption over the same period (IRENA, 2023). The IEA predicts that the share of global clean energy power generation will rise to 33% by 2025. According to the Energy Transition Commission (ETC) data in 2023, an average of about US$3.5 trillion per year in capital investment will be needed to build a net-zero global economy between now and 2050, well above the current US$1 trillion per year, and equivalent to 1.3% of potential global average annual GDP over the next 30 years. In terms of commercial viability, green energy has entered a virtuous cycle of "technology innovation – scale up – cost down". Between 2010 and 2021, the cost of solar and wind power decreased by 60%-88% (IRENA, 2023).

The new energy automobile industry has achieved exponential development. Increasing the proportion of new energy vehicles (NEVs) is the most effective and commercially feasible development path for decarbonization of road transportation. In recent years, with the popularity and acceptance of NEVs increasing around the world, the NEV market has shown exponential growth. In 2022, the global sales of NEVs exceeded 10 million. According to an IEA estimate in 2023, as the global penetration of NEVs increases, global road transport oil demand will reach its peak around 2025. At present, many countries regard NEVs and power batteries as one of their core industries, and there is an endless stream of technological innovations in batteries, motors, electronic controls and charging facilities. Since 2018, the mileage of NEVs has increased by an average of 10% per year (BNEF, 2023). In the future, "vehicle-electricity interconnection technology"[1] will enable NEVs to play a greater role in carbon reduction.

Developing countries play an increasingly important role in green transition. On the manufacturing side of new energy equipment, the large-scale commercialization and industrialization of new energy by major emerging countries has an obvious spillover effect on accelerating the global green and low-carbon transition. On the operational side of new energy production, developing countries have abundant and low-cost production factors for the "green economy" and the "blue economy" (desert areas and coastlines), and potential for large-scale production of solar,

[1] That is, new energy sources such as PV and wind power provide power to NEVs. The core idea is to use NEV batteries as stored energy. When the grid load is too high, NEV batteries are discharged to support the operation of the grid. When the grid load is too low, they can store the grid's excess power to avoid waste.

wind and hydrogen power. In 2022, China's total installed capacity of renewable energy reached 1,210 GW, exceeding coal power capacity for the first time (National Energy Administration, 2022); Brazil added 9.0 GW to its total installed photovoltaic (PV) capacity, a 73.3% increase year on year; and India added 13.96 GW of PV capacity, a year-on-year increase of nearly 40%.

2.4.2 The severe global climate situation calls for further green and low-carbon development

Global climate change has hit developing countries particularly hard. The period from 2015 to 2022 was the warmest eight years on record, with glaciers melting and the sea level rise reaching record levels in 2022 (WMO, 2022). In 2022, persistent droughts in Africa, record-breaking rains in Pakistan and other extreme weather phenomena affected tens of millions of people in developing countries, costing billions of dollars in loss and damage, and pushing up food security risks. Owing to their ecological environment, industrial structure and level of socio-economic development, developing countries are more vulnerable to the adverse effects of climate change than developed ones, and their generally weaker capacity to adapt to climate change makes it easier for them to fall into the poverty trap.

It is imperative to accelerate green and low-carbon transformation of global development. The extreme weather disasters that have occurred in recent years are still phased, regional risks. However, within the temperature rise range of 1.5-3 degrees Celsius, the risk of species extinction in the 34 global biodiversity hotspots will increase tenfold; and when the temperature rises above 3 degrees Celsius, the direct flood risk will be 2.5-3.9 times higher (IPCC, 2023). In order to avoid the irreversible impact of global warming on the environment, it is imperative to accelerate green and low-carbon transformation of global development.

2.5 Digitalization: Digital transformation has fostered a new momentum for global development

2.5.1 Digital technology is forming a new driving force for global development

The COVID-19 pandemic has accelerated the process of digitalization globally. The pandemic impeded the movement of people, logistics and transportation in the physical space, but also accelerated the empowerment of various factors by digital technology and the digital transformation of various industries. In 2022, about 5.3 billion people (66%) out of the world's 8 billion population used the internet, an increase of 0.4 billion people over 2021, which was significantly higher than the pre-pandemic level (Figure 2-5). Increased digital penetration has expanded the scope of factor allocation, improved the efficiency of resource utilization, increased the accessibility of goods and services, and greatly compensated for global development loss in the physical space. In 2021, the digital economy's value added in 47 countries around the world was US$38.1 trillion, a nominal increase of 15.6% year on year and a share of 45.0% of the GDP (CAICT, 2022). The accelerating digital transformation of global development is reflected in all three areas of production, consumption and distribution.

Digitalization has increased efficiency and resilience on the production end. Digital technology has driven automation and intelligence in production processes. The global industrial automation and control systems market is expected to reach US$377.25 billion by 2030 and grow

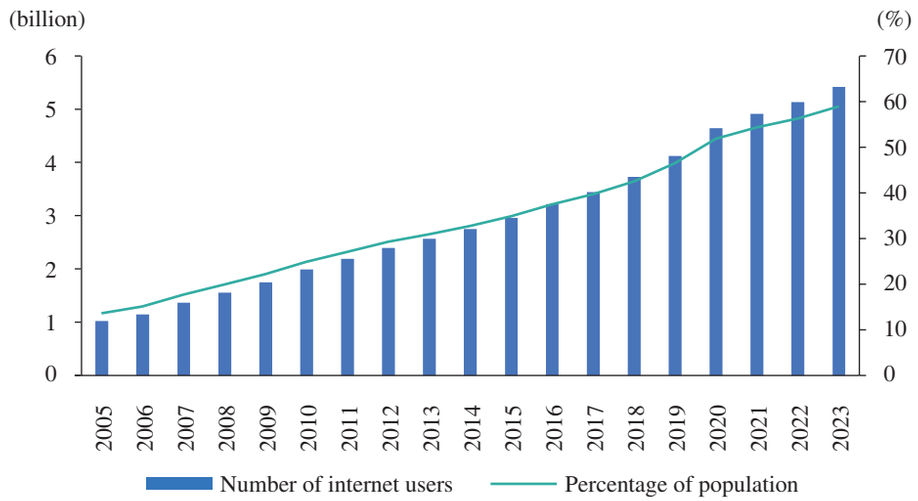

Figure 2-5 Total number of global internet users and their shares, 2005-2023

Source: International Telecommunication Union (ITU)

at a compound annual growth rate (CAGR) of 10.5% from 2023 to 2030 (Grand View Research, 2023). Digital technology has accelerated the deepening of the division of labor in the global industrial chain. Industrial organization, which was dominated by the traditional chain structure, is evolving into an open, collaborative network with synergies from multiple players, where many small and medium-sized enterprises (SMEs) are participating in collaborative research and development, collaborative design and collaborative manufacturing in a crowdsourcing manner. Digital technology has also strengthened the resilience of the global production network. As data acquisition, data storage, data modelling and data visualization technologies become more mature, when a chain endpoint in the global production network breaks, digital production platforms can automatically match possible suppliers or demanders through intelligent means to restore the stability of the industrial chain.

Digitalization has accelerated the emergence of new consumption models. The pandemic has fostered "contact-free" consumption and accelerated the new layout of global retailers and consumer goods companies. An increasing number of enterprises are relying on e-commerce and digital payment technologies to accurately reach and acquire consumers, with the number of online shoppers rising from about 1.3 billion to 2.3 billion between 2017 and 2021, accounting for 39% of the population aged 15 and above (UNCTAD, 2021). The connection between consumer internet and industrial internet platforms has also improved the efficiency of matching the consumer side with the producer side. Enterprises get real-time feedback through the transaction data of e-commerce platforms, and consumers participate in the design and manufacturing based on the consumer-to-manufacturer (C2M) model, which facilitates smoother transmission of supply and demand information among consumers, traders and suppliers, and closer connection between consumption, design and production. The production organization model of "small orders and quick reorders" meets the tail-end demand of global consumers, and a new type of producer-consumer group of a sizable scale has

emerged.

The digitalization of logistics has accelerated real-world connectivity. In response to the pandemic, enterprises in various countries have accelerated the adoption of digital technology to optimize the logistics supply chain, promoted the construction of the internet of things (IoT), created "digital twin" systems in both physical and digital spaces, and formed a more secure and efficient intelligent logistics system. Global enterprise-level investments in the IoT amounted to approximately US$681.28 billion in 2021 and are expected to rise to US$1.1 trillion in 2026 (IDC, 2023). On the IoT platform, enterprises use AI and cloud computing as the basis to improve delivery speed and warehousing efficiency, using unmanned vehicles, drones, unmanned containers and other technological means. This can increase the speed of the economic cycle from the supply side to the demand side.

The new round of digital technology innovation has great potential for development. According to forecasting organizations, global digital transformation spending will reach US$3.4 trillion by 2026, with a CAGR of 16.3% in the coming years (IDC, 2023). Among them, investment in more mature fields such as intelligent manufacturing, financial technology, digital diagnosis and treatment, and education technology has grown faster. Since the end of 2022, ChatGPT and other general pre-trained model application tools have emerged, drawing the world's attention to the prospects of AI development. Generative AI based on a large language model can understand and respond to natural language, image, audio and video. Its application areas are beyond word processing. It will change the relationship between human beings, computers and knowledge (Berkeley and Berlin, 2023). It can help us accelerate the development of new medicines, design new materials, and control robots through sensor data and text training. As a general-purpose technology, AI will improve the efficiency of existing industries and is expected to create new industries and new tracks. It is an important potential driving force for future global growth.

2.5.2 The digital divide is restricting developing countries from sharing the digital dividend

Digital technology helps promote the growth of developing countries. Overall, it has empowered low-skilled workers, expanded the scope of specialization in the global market, and promoted related industries while creating new job opportunities. The replicable and portable digital technology will especially help EMDEs accelerate their industrialization and urbanization on the digital track. For example, digital technology has expedited technology diffusion and knowledge spillover, making it easier for companies in developing countries to enter the global market by engaging in specific production tasks in the global value chain; digital education has expanded the scope of high-quality education in developing countries, enabling a wider range of people to participate in the virtuous process of skill improvement and income rise; digital payment tools have improved the accessibility of modern finance in backward areas; and AI labelling jobs are enabling more low-skilled labor to enter modern production sectors.

The digital divide may erode the comparative advantages of developing countries. A large digital divide still exists between developing and developed countries. In 2021, for the first time, more than half of the population (57%) in developing countries used the internet, which was still far less than in developed countries (90%) (UNCTAD, 2023b); in the LDCs and landlocked

developing countries (LLDCs), only 36% of the population had access to the internet (ITU, 2022). The existence of the digital divide means the impact of digital technology innovation on all countries is not homogeneous. The new round of digital technology innovation represented by AI is knowledge-intensive, capital-intensive and even computationally intensive. It can attract global factors and resources such as talent, finance and energy and thus realize substitution of labor-intensive comparative advantages. Goldman Sachs, using occupational task data in the United States and Europe, found that generative AI may replace up to a quarter of current jobs, potentially putting 300 million jobs worldwide at risk of being lost due to automation (Goldman Sachs, 2022). The resource endowments and comparative advantages of different countries in the digital field are different. The comparative advantages of developed countries in technology, capital and computing power will further enhance their ability to control the industrial chain and value chain through digital technology, while some developing countries with a low level of industrialization may lose their comparative advantage of low-cost labor due to the development of AI.

2.6 Destabilization: Global development faces increasing uncertainty and instability

2.6.1 The world has entered a new phase of turbulence and transformation

Global unexpected risks have become frequent. The world today is undergoing both transformation and upheaval, and changes of a scale unseen in a century are unfolding at a faster pace. Global development is undergoing major shifts, division and regrouping, leading to more uncertain, unstable and unpredictable developments. In recent years, the global geopolitical situation has been severe. Some countries are still displaying a Cold War mentality, which has triggered unexpected risk events with global influence. The "polycrises" created by these unanticipated tail risks are no longer just separate "black swan" events but are characterized as "fat tails" on the risk probability distribution diagram (Figure 2-6). While various countries and regions are becoming more and more closely connected through global production, logistics and trade networks, this also makes it easier for unexpected risks to spread and amplify across fields and regions, leading to a profound impact on global development.

New technologies such as AI may introduce new risks. Technological advances not only bring new impetus to global development, but also give rise to unanticipated risks of loss of control over technology when innovation at the technology level overtakes innovation at the institutional level. For example, generative AI, represented by ChatGPT, involves hundreds of billions of parameters, which are increasing still. Even its creator cannot fully understand its inner workings. It is a kind of "black box" based on machine learning models and has the potential to produce outputs that are impossible for human beings to understand, predict and control. If a corresponding governance system and regulatory system are not established, AI technology can lower the technological threshold for disseminating false information, inciting social prejudice, manipulating stock prices, committing financial fraud, launching cyber attacks, synthesizing biological viruses and other negative behaviors, and make these destructive, risky behaviors more "efficient". At present, the new technology field represented by AI is the focal area of competition among countries. In

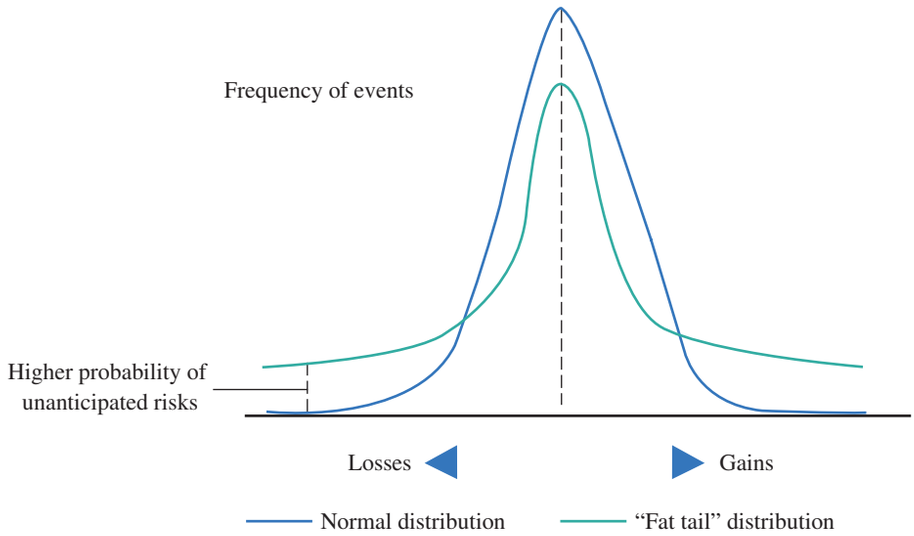

Figure 2-6 Fat-tail characteristics of unanticipated risks versus traditional normal distribution characteristics

Source: Compiled and edited by the authors

the absence of a global collaborative governance system for technological innovation, competition among countries will accelerate exponential development of new technologies, but the security issues that may arise from the loss of control over technology are easily overlooked, along with the potential for uncontrollable and irreversible systemic risks to global development.

2.6.2 Strengthening international cooperation and global governance is imperative

The power of change and development is inherent in risks and crises. Risk is an insurmountable part of the global development process, and turning a crisis into an opportunity is one of the important driving forces for social development. In fact, it is through addressing the challenges of natural risks, economic and financial risks, and health and disease risks that humanity has developed stronger survival skills, technological levels and institutional safeguards to achieve higher levels of development while effectively managing the risks. In the process of global development, the policy objective of risk management is not to eliminate risks, but to increase the resilience of development and to avoid systemic risks caused by the simultaneous outbreaks of multiple risks, in particular to avoid systemic risks that may cause irreversible harm to human society.

Expanded global exposures of risks call for a more effective governance system. In modern society, the level of risk management capacity has a direct impact on the size of development opportunities. To successfully cope with risks, it is necessary to have a proactive, systematic and comprehensive risk governance capacity, and to amass material, knowledge, capital and institutional reserves in advance to avoid the snowballing of local risks into global crises. However, the current risk governance systems of countries are mainly prepared for anticipated risks, while the current and future unanticipated risks are large in scale, wide in scope and deep in impact, and are

beyond the risk governance capacity of any single country. In particular, countries (mainly developing ones) with fragile ecological environments, material bases and technological capacities have limited risk governance capacities and are more vulnerable to the huge impacts of unanticipated risks. Past human experience in dealing with global risk events shows that risks evolve and propagate according to the Cannikin Law, or the law of the bucket, which says that the performance of a team depends on its weakest member. Only by increasing the representation and say of developing countries in global governance, building consensus among major countries and establishing a common action mechanism and a global risk governance system, can the imbalance in risk governance capacity between developed and developing countries and between large and small countries be effectively remedied. It is also the only way to deploy resources globally in a timely and effective manner, build the global resilience to crises and risks, avoid a beggar-thy-neighbor risk-averse behavior, and safeguard sustainable development of human society.

In general, humanity tends to overestimate the short-term impacts of shocks but underestimate their long-term effects when predicting future trends and prospects. We are at a crossroads of global development, and which way the pendulum of history will swing depends on our choices. Multiple external shocks make up a double-edged sword. When external risks hit human society in a non-linear way, the world responds by accelerating technological iteration and institutional innovation, which not only improves the resilience of human society in coping with shocks and supports global stability, recovery and growth, but also lays the groundwork for a global development pattern that is more inclusive, beneficial to all, and resilient.

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Chapter III

Building a Global Community of Shared Development

The world now faces multiple challenges, including climate change, environmental pollution, biodiversity loss, increasing risks to food and energy security, and widening development gap. Geopolitical tensions and disarray in global governance have not been effectively alleviated. The consensus for development has diminished, its momentum decreased and process hindered, and its results have fallen short of expectations. The 2030 Agenda for Sustainable Development faces obstacles. Global development is at a crossroads of history.

Against this unstable and uncertain backdrop, China proposed the Global Development Initiative (GDI) that focuses on development and calls for further cooperation, making contributions to addressing development problems and promoting global development. The goal of the GDI is to implement the 2030 Agenda. It calls for a united, equal, balanced and inclusive global development partnership and works towards stronger, greener and healthier global development and a global community of shared development.

3.1 Promoting global development with a right vision

Development embodies people's aspiration for a better life. It is a timeless theme for humanity and the key to resolving most global problems. Development is particularly important for developing countries and is their top priority. Promoting global development and bridging the development deficit requires staying committed to development as a priority, a people-centered approach, benefits for all, innovation-driven development, harmony between humanity and nature, and results-oriented actions, and promoting sustainable development of all countries on the basis of mutually beneficial cooperation and a global community of shared development.

3.1.1 Staying committed to development as a priority

Problems arising from development can be resolved only through development and in the process of development. To respond more quickly and effectively to the urgent aspirations of developing countries, the development pie should be enlarged and international consensus forged to promote development. Development should be placed at the center of the international agenda, with an enabling international environment, new momentum and a global partnership. This will help address problems in development and promote shared opportunities and gains.

Some of the key courses of action are: to adhere to the correct direction of economic globalization, promote the liberalization and facilitation of trade and investment, and advance bilateral, regional and multilateral cooperation; to put development prominent in the global macro-policy framework, and fully utilize the mechanisms and platforms already in place to promote the coordination of international macroeconomic policies; to forge a sense of development community, augment systems thinking, enhance transparency and information sharing in policies, and maintain policy consistency, stability and sustainability; to promote the reform of the international monetary and financial system, strengthen policy communication and financial cooperation between developed and developing countries, and control the spillover effects of monetary policy to minimize the impacts on developing countries; to build sustainable and trustworthy global and regional financial safety nets and provide more systematic protection for EMDEs; to expand the use of digital technology to enhance financial inclusion and the efficiency of cross-border payments.

3.1.2 Staying committed to a people-centered approach

A people-centered approach means taking the right to survival and the right to development as the first and foremost basic human right, working for coordinated progress in the economic, political, social, cultural and environmental rights of all people, and caring for the life, value and dignity of human beings. The fundamental approach to people-centered global development is to improve people's wellbeing and realize well-rounded human development, and its goal is to meet the aspirations of the people of all countries for a better life, leaving no country and no one behind.

Some of the key courses of action are: to safeguard and improve people's livelihoods, protect and promote human rights through development, and make sure that development is for the people and by the people, that its fruits are shared among the people, and that the people have a growing sense of gain, fulfillment and security; to make development efforts more balanced, equitable, effective and synergized to provide equal access to the opportunities and benefits of development; to make development goals more specific, practical and operational to bring visible and tangible benefits to people; to make the accessibility of food and energy security a priority in upholding people-centered global development.

3.1.3 Staying committed to benefits for all

Humanity is a community of shared future. Only when all countries develop and prosper together can we achieve true and good development. In response to problems brought by imbalanced and insufficient development such as the North-South divide, digital divide and technological divide that have emerged in current development, countries should pay more attention to the universal benefit, coordination and inclusiveness of development.

Some of the courses for action are: to recognize the organic unity of individual and collective interests, national interests and the common interests of all countries and all people; to pay attention to the special needs of developing countries, strengthen international development cooperation, and create more development opportunities and space for developing countries to realize independent and sustainable development; and to build a more equal and balanced global development partnership, promote synergies in the multilateral development cooperation process, and address the problems of imbalanced and insufficient development among and within countries. Developed countries should meet their official development assistance (ODA) and climate finance commitments, and multilateral development banks (MDBs) should adhere to their key mandates in poverty reduction and development and increase support for developing countries.

3.1.4 Staying committed to innovation-driven development

Innovation is the premier driving force for development. The emerging new technologies and industries create conditions and driving forces for improving labor productivity, reducing resource consumption and promoting economic restructuring and sustainable development.

Some of the key courses of action are: to strengthen intellectual property protection, optimize the management of scientific research institutions, establish a technological innovation ecosystem, and cultivate innovative and entrepreneurial talent to create an enabling environment; to seize the opportunity brought by the new revolution

in science, technology and industry, accelerate the transformation of scientific and technological achievements into real productivity, and create an open, fair, equitable and nondiscriminatory environment for scientific and technological innovation, tap new driving forces for economic growth, and join forces to realize leapfrog development; to strengthen North-South, South-South and triangular cooperation in the fields of science, technology and innovation, and promote the dissemination of information and communication technologies (ICTs) and environmentally friendly technologies conducive to inclusive development and environmental protection to developing countries to improve their capacity for independent research and development; and to advance the development of modern industries, bridge the digital divide, and accelerate low-carbon transformation to help developing countries achieve leapfrog development.

3.1.5 Staying committed to harmony between humanity and nature

Humanity and nature are a community of life. Humanity, in the use and transformation of nature, should respect, adapt to and protect nature, and plan development for harmonious coexistence of the two. Eco-environmental protection and economic development can be complementary. Protecting the ecological environment and promoting a green low-carbon cycle can create a beautiful ecological environment and lead to higher-quality, more efficient, equitable, sustainable and secure development.

Some of the courses of action are: to address the structural contradictions between unlimited expansion of production, unrestrained consumption and finite resources; to manage the relationship between current economic development goals and future economic growth potential, and between the wellbeing of the people of current generations and of future generations; and to actively cope with climate change, implement the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement in a comprehensive and effective manner, promote green and low-carbon transformation of production and consumption, strengthen climate financing, and promote research and development and transfer and sharing of green technologies. Developed countries should accelerate efforts to fulfil their climate change funding commitments, and the Global Climate Fund (GCF) and the Global Environment Facility (GEF) should make more effective use of their resources to help developing countries in sustainable transformation, and promote climate change adaptation and mitigation based on the principle of common but differentiated responsibilities and respective capabilities to achieve sustainable development. Sustained efforts should be made in pollution prevention and control and ecosystem protection to build a global eco-civilization. Air, water, soil and other pollution should be controlled and protection and restoration of important ecosystems on land and in the oceans enhanced. Equal weight should be given to development and protection in accordance with the intrinsic operating laws of ecosystems to ensure a good ecological environment that will support sustainable global economic and social development.

3.1.6 Staying committed to results-oriented actions

A result-oriented approach requires making full use of existing multilateral mechanisms and platforms, enhancing communication and coordination of international development policies, and translating consensus into substantial actions. It is of great significance to accelerating the implementation of the 2030 Agenda. More development

resources should be invested through multiple channels and means, cooperation mechanisms innovated, and cooperation advanced in key areas including poverty reduction, food security, public health, climate change and green development, industrialization and digitalization.

Some of the courses of action are: to provide budgets and corresponding mechanisms for global public goods based on aid and development cooperation departments, and coordinate with the UN and international financial institutions; to increase funding sources by introducing international taxation instruments, while prudently advancing the G20/OECD Two-Pillar solution to global tax reform to ensure multinational corporations pay their fair share of taxes globally; to adopt new financing instruments such as issuing bonds dedicated to climate initiatives and agriculture to support projects, institutions and mechanisms in the relevant fields; to evaluate and track overall progress of different countries in achieving the SDGs on a voluntary basis when data and statistical conditions permit, provide incentives for countries and regions that complete goals ahead of schedule, and grant targeted assistance to those confronted with significant difficulties in attaining these goals; and to make strengthening pre-crisis preparedness of developing countries a priority of cooperation. To mitigate the impact of global public crises such as pandemics and extreme weather events on developing countries, the scale of the Pandemic Fund initiated by the G20 and established at the World Bank can be expanded, investment in forecasting, early warning, prevention and control of natural disasters and epidemics increased, and diversified expert response teams set up to provide timely support to regions weak in these areas.

3.2 Promoting global development with concrete actions

Since its founding, the People's Republic of China has undergone tremendous changes and created development miracles unseen in human history. With its economic aggregate jumping to second place in the world and over 1.4 billion people freed from material shortages, China has built a moderately prosperous society in all respects, mapping out a new path to modernization. The Chinese path to modernization is for a huge population, aims at common prosperity, and balances material and cultural-ethical progress. It features harmonious coexistence between humanity and nature, and peaceful development. China's realization of a moderately prosperous society is an important contribution to global development as well, injecting confidence and strength and creating a new choice for countries that wish to accelerate their development while preserving their independence. It contributes China's vision for development and solutions to development issues.

3.2.1 Promoting global development with its own development

Success in the battle against poverty. China has set standards in six areas to make poverty alleviation work precise: identifying the poor accurately, arranging targeted programs, utilizing capital efficiently, taking measures tailored to impoverished households, dispatching first Party secretaries and other officials based on village conditions, and achieving the goals set. It has also launched five key measures to lift people out of poverty: new economic activities, relocation from uninhabitable areas, recompense for

eco-protection, education, and social assistance for basic needs. By the end of 2020, China had accomplished the goal of eliminating absolute poverty as scheduled, which was also a decade ahead of the deadline for meeting the poverty reduction goal of the 2030 Agenda, making a major contribution to global poverty reduction progress. All of the 832 counties and 128,000 villages with 98.99 million rural residents living below the current poverty line emerged from poverty. China has adhered to the basic policy of gender equality and prioritized alleviating poverty among women. Pro-poor policies, funds and measures have addressed impoverished women's most urgent needs and problems. Women account for roughly half of the nearly 100 million people lifted out of poverty and their survival and development conditions have significantly improved. Over the past four decades, China has reduced the number of people living in poverty by nearly 800 million, accounting for nearly 75% of the global population lifted out of poverty since 1980, as measured by the World Bank's global absolute poverty standard of US$1.9 per person per day (DRC & World Bank, 2022). In 2021, China set up a five-year transition period for areas that have just shaken off poverty to consolidate and expand the outcomes of their fight against poverty as part of the effort to promote rural revitalization. In 2022, the per capita disposable income of rural residents in counties that had emerged from poverty increased by 7.5% year on year, and the per capita net income of populations that had emerged from poverty increased by 14.3% year on year. The buttressing role of employment and industrial development is being strengthened in areas that have emerged from poverty, progress has been made in rural reconstruction and rural governance, and rural revitalization across the board has got off to a good start.

Sustained and healthy economic development. Since the reform and opening up began in 1978, the economy has been growing at a rapid pace. From 1978 to 2022, China's GDP grew at an average annual rate of 9.1%. Even in the second decade of the 21st century when the average annual GDP growth rate dropped to 7.6% (2010 to 2019), China still contributed more than 30% of global growth in most of the years and remained the engine of global economic growth. It is the only country in the world that has all the categories of industries listed in the UN industrial classification system, and is the numero uno producer of many industrial products. With a growing middle-income group of more than 400 million people, China is a mega-market with the greatest growth potential and sustained momentum. Faced with the impacts of multiple factors at home and abroad that were beyond initial expectations, China has implemented the new development philosophy in full, to the letter and in all fields to create a new development dynamic and pursue high-quality economic development. In 2020, during the COVID-19 pandemic, China was the only major economy in the world to achieve positive growth; in 2022, China's GDP stood at RMB121.02 trillion, an increase of 3% over the previous year. In 2022, the investment intensity of R&D funds increased to more than 2.5%; and China rose to 11th place on the Global Innovation Index (GII) released by the World Intellectual Property Organization (WIPO), entering the ranks of innovative countries. Despite the backlash against globalization, China has stayed committed to opening up for mutual benefit, developing an open economy of higher standards, establishing a framework for opening up on all fronts, and creating a bigger market, more business opportunities and broader development space for other countries.

Significant improvements in people's wellbeing. China follows a people-centered development philosophy with improving people's livelihood and wellbeing as its fundamental goal. Outstanding issues concerning people's immediate interests have been resolved and their sense of gain, fulfillment and security has been enhanced. People's disposable income per capita increased from RMB171 in 1978 to RMB36,883 in 2022. The Engel coefficient for urban and rural residents declined from 57.5% and 67.7% in 1978 to 29.5% and 33% in 2022, respectively, showing that the quality of life for both urban and rural residents has increased. The public health system has been improved, and the allocation of healthcare resources optimized. Maternal mortality, under-five mortality and infant mortality have continued to decline. Life expectancy reached 78.2 years in 2021; and the major health indicators for the entire population are among the highest in upper-middle-income countries. China has built the largest education system in the world, comprising preschool, primary, secondary and higher education. It has joined the ranks of the world's upper middle-level countries in the overall level of education modernization. In 2022, the net enrolment rate of primary school-age children was above 99.9%; the gross enrolment rate for junior secondary education remained over 100%; nine-year compulsory education saw 95.5% retention; and the gross enrolment rate in preschool education, senior secondary education and higher education was 89.7%, 91.6% and 59.6% respectively.

Remarkable progress in building an eco-civilization. By implementing the environmental protection laws rigorously and formulating and updating a series of laws and regulations, China has formed a basic framework of eco-environmental laws and regulations. The system of river and lake chiefs and forest chiefs has been implemented across the board. The system of public participation in environmental protection has been improved with further environmental information disclosure and better mechanisms for public participation in environmental decision-making and supervision, as well as for filing complaints and reporting environmental violations. With public awareness of environmental protection increasing, universal participation in eco-environmental protection has reached a new stage. In 2022, the proportion of good or excellent air quality days in the year in cities at the prefectural level and above was 86.5%; and the proportion of heavily polluted days dropped to 0.9%, less than 1% for the first time. The concentration of fine particulate matter (PM2.5) fell to 29 $\mu g/m^3$, a year-on-year decrease of 3.3% and below 30 $\mu g/m^3$ for the first time since monitoring data became available; the proportion of surface water meeting good or excellent water quality standards (Grade I-III) was 87.9% nationwide, a year-on-year increase of 3 percentage points; the proportion of near-shore waters with good or excellent seawater quality (Grade I and II) was 81.9%, a year-on-year increase of 0.6 percentage point. In 2022, China had 231 million ha of forests, with a forest coverage rate of 24.02%, and 265 million ha of grasslands, with a steppe vegetation coverage rate of 50.32%. China also has the largest growth in forest resources and the largest area of planted forests, contributing 25% of the new green space in the world since the turn of the century. China has built the world's largest clean power generation system with the largest installed capacity of hydropower, wind power and solar power. China has supported an average annual economic growth of more than 6% with an average annual energy consumption growth of 3%. In 2022, the proportion of non-fossil energy production and consumption increased to 18.6% and 17.4%, respectively;

newly installed wind and photovoltaic power generation exceeded 120 million kW, and the national installed capacity of renewable energy resources exceeded 1.2 billion kW, ranking first in the world. In 2022, energy consumption per RMB10,000 of the GDP was reduced by 15.5% compared with that in 2015, making China one of the fastest countries in the world to reduce energy consumption intensity.

3.2.2 Injecting impetus into global development

China has always placed its own development in the coordinate system of human development, ensuring that the interests of the Chinese are integrated with the common interests of the people of other countries by safeguarding world peace, contributing to global development, preserving international order, and providing public goods. Since it proposed the GDI, the Chinese government, together with all partners, has steadily and pragmatically promoted cooperation in various areas, and achieved a series of positive results (CIKD, 2023).

The content of the GDI has been enriched. The GDI is an important public good and cooperation platform proposed by the Chinese government for the whole world. Upholding the principles of openness, transparency and inclusiveness, it widely accepts and adopts constructive opinions and suggestions from all parties and improves its cooperation programs in a timely manner to accelerate the implementation of the 2030 Agenda. In September 2021, China circulated a GDI concept paper at the UN, proposing eight core concepts and eight priority areas of cooperation. In May 2022, the high-level virtual meeting of the Group of Friends of the GDI unanimously supported the overall direction of cooperation in the eight priority areas and stressed the role of the GDI as an accelerator of the 2030 Agenda. It was agreed that cooperation within the GDI framework should be adjusted to the changing situations and on the basis of sufficient consultation. As development is a prerequisite for protecting and promoting human rights, the GDI should pay special attention to gender equality, meet the development needs of such groups as the elderly, children and persons with disabilities, and enhance balanced, coordinated and inclusive development so that no country or person is left behind. In June 2022, the High-level Dialogue on Global Development resulted in the Chair's Statement, which further elaborated the core concepts and principles for implementing the GDI, specified the direction and entry points for cooperation in the eight priority areas, announced 32 practical measures for joint efforts, and improved the framework of actions.

GDI cooperation mechanisms have been put in place. The Group of Friends of the GDI was formed at the UN in January 2022. As an important platform for extensive consultation, joint contribution and shared benefits, it serves as an important step in the institutional development of GDI cooperation. So far, nearly 70 countries have joined the Group of Friends. A number of activities have been held, such as the high-level virtual meeting and a ministerial meeting, at which the participants had in-depth exchanges of views and reached broad consensus on issues such as deepening practical cooperation under the GDI, accelerating the implementation of the 2030 Agenda, promoting the institutional arrangement for the Group, and strengthening synergy with the UN development system. The Group of Friends called for a taskforce composed of heads of UN development agencies and experts in relevant fields to advance the GDI. This working group will serve as another platform for strengthening

policy dialogue and strategic synergy with UN development agencies and be a mechanism for promoting GDI cooperation. In September 2022, China set up a GDI project pool and published the first batch of projects. In November 2022, the Global Development Promotion Center was launched, and in January 2023, the Global Development Promotion Center Network was inaugurated. With the participation of more than 30 countries and regional organizations, the Network provides a platform for exchanging ideas, synergizing development plans and coordinating resources. A Global Knowledge Network for Development is in the pipeline. The China-ASEAN Knowledge Network for Development has hosted multiple joint research and exchange activities. China will work with more partners to promote experience sharing and mutual learning in governance with the support of regional and thematic networks. Meanwhile, relevant global or regional cooperation mechanisms have been established in various priority cooperation areas.

Cooperation approach under the GDI has been identified. The Ministerial Meeting of the Group of Friends held in September 2022 came up with a six-pronged approach for advancing the GDI. First, development will be the priority of the GDI and its central task will be implementing the 2030 Agenda. Second, it will be projects-led and action-oriented, where policy dialogue, experience sharing, capacity building and practical cooperation will be promoted through specific projects in various fields. Third, it welcomes extensive participation, with UN development agencies as important cooperation partners and the Group of Friends of the GDI as the main actor, to build a good example of cooperation and encourage the participation of other countries and agencies. Fourth, it will increase input, which means to fully leverage the Global Development and South-South Cooperation Fund and the China-UN Peace and Development Trust Fund to pool more resources and encourage all parties to fund projects in their areas of interest. Fifth, it will advance all-round cooperation in the key areas of the GDI to ensure that all the 17 SDGs of the 2030 Agenda are met. Sixth, it will have a special focus on key issues, including pressing challenges such as food and energy security, poverty reduction, supply/industrial chain disruptions.

Practical cooperation projects under the GDI have come to fruition. Half of the 32 deliverables of the High-level Dialogue on Global Development released in June 2022 have been accomplished or have reaped early harvests. The first batch of the 50 projects in the GDI project pool released at the Ministerial Meeting of the Group of Friends in September 2022 covers various areas such as poverty reduction, food security and industrialization. Among them, more than 10 projects have been completed, and the rest are progressing. By September 2023, projects in the pool, totaling nearly 200, had covered more than 60 developing countries. In 2022, the Chinese government set up 1,000 capacity-building projects and provided 20,000 training opportunities, covering almost all members of the Group of Friends. Besides, China issues the Global Development Report and establishes the Global Knowledge Network for Development to contribute Chinese ideas to solving development challenges.

China has made every effort to help other developing countries. As the largest developing country in the world and a member of the Global South, China is actively engaged in international development cooperation and help recipient countries improve their capacity for development. It has cooperated with nearly 20 international organizations, including the UN World Food Programme, the UN Development Programme, the

UN Children's Fund, the UN Refugee Agency, the World Health Organization, and the International Committee of the Red Cross, and executed over 130 projects in nearly 60 countries including Ethiopia, Pakistan and Nigeria. "Small but beautiful", these projects span fields such as poverty reduction, food security, COVID-19 response and climate change, and have benefited more than 30 million individuals. China has done its best to help other developing countries improve their capacity to cope with climate change, vigorously supported their green and low-carbon energy development, signed 46 memorandums of understanding on South-South cooperation on climate change with 39 developing countries, and trained about 2,300 officials and technicians in the field of climate change for more than 120 developing countries.

China has contributed to global governance on major issues. In the area of climate change, China has actively contributed to the Paris Agreement and constructively participated in the conferences and negotiations under the UNFCCC. China has committed itself to achieving peak carbon dioxide emissions by 2030 and carbon neutrality by 2060 on the basis of the principle of "common but differentiated responsibilities", which means it will accomplish the world's largest reduction in carbon emission intensity and realize the transition from peak carbon emissions to carbon neutrality in the shortest period of time in history. China supports green and low-carbon energy transition in developing countries, and is implementing more green technology and clean energy projects. It has announced that it will no longer build any new coal power plants overseas. In the area of biodiversity, China, as the host of the 15th meeting of the Conference of the Parties to the Convention on Biological Diversity, funded the Global Biodiversity Framework Fund and facilitated the adoption of the Kunming-Montreal Global Biodiversity Framework. In the area of food and agriculture, China is an active participant in the WTO agricultural negotiations and contributed to the commitment to remove export subsidy for agricultural products in the Nairobi Ministerial Declaration. During the 12th WTO Ministerial Conference in 2022, China contributed to the conclusion of the Ministerial Declaration on the Emergency Response to Food Insecurity and the Ministerial Decision on World Food Programme Food Purchases Exemption from Export Prohibitions or Restrictions. Along with other developing countries, China calls for reducing the Aggregate Measurement of Support (AMS) privileges of a few developed members. In the area of global public health, China was the first country to commit that COVID-19 vaccines developed and deployed in China would be made a global public good. It was the first to support waivers on COVID-19 vaccine patents, and has provided the largest number of vaccines to other countries. China was a founding donor to the Pandemic Fund and one of its largest developing country donors, making a significant contribution to increasing the availability of vaccines and medicines in developing countries in general, as well as preventing and responding to the COVID-19 pandemic. In the area of financing for development, China has fully implemented the G20 Debt Service Suspension Initiative (DSSI) for poor countries and become its largest contributor. It has signed debt mitigation agreements or reached consensus with 19 African countries, helping ease the debt repayment pressure on Africa.

The development deficit is both the result of multiple global issues and a major determinant of numerous global problems. While development is beneficial to the resolution of other outstanding problems, the current global development

concept and governance system can hardly meet the practical needs of post-pandemic economic recovery, bridge the existing gap between the rich countries and the poor ones, and realize social unity and cooperation. No single country can effectively address the various emerging global challenges. Only consensus on a larger scale and coordination of development resources can create a force strong enough to do that. In September 2023, the UN convened the 2023 SDG Summit, providing a crucial opportunity for all stakeholders to consolidate the development consensus and mobilize resources. All parties need to take people's aspiration for a better life as the fundamental pursuit, intensify their efforts to address urgent global challenges in areas such as poverty reduction, food security and public health, and increase investment in industrialization, climate action and green development, digitalization, and human capital. In this way, the global partnership for sustainable development can be revitalized to build a global community of shared development and advance the 2030 Agenda.

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Part II Thematic Report

Chapter IV

Working Together to Reduce Global Poverty

In 2020, due to the COVID-19 pandemic and other crises, the number of people living in poverty worldwide increased for the first time in nearly 20 years, a major setback in global poverty reduction progress. The world is unlikely to meet the goal of ending extreme poverty by 2030 and there are several reasons for the regression. The global economy's uneven recovery resulted in limited domestic and international resources for poverty reduction. The poor's income and spending are both squeezed with the sluggish recovery of the labor market slowing their income growth while food and energy inflation significantly increases the basic living cost. Frequent extreme weather events have devastated the human capital and physical assets of low-income countries and the poor. Concerted efforts should be made to bring poverty reduction back on track. The global community should put poverty reduction high on the global recovery agenda and stay committed to common development. Agricultural development and inclusive industrial transformation should be emphasized in low-income countries and among the poor. The human capital accumulation of the poor should be increased and their employment quality improved as a means of poverty reduction. Given the limited resources for poverty reduction, the use of resources should be more efficient and policies more targeted. Developed countries need to deliver on their ODA commitments and improve the global poverty reduction governance system.

4.1 Global progress in poverty reduction suffers reversal

4.1.1 Impoverished population increases for the first time in nearly two decades

Measured by the extreme poverty standard of the World Bank, four years of steady gains have been erased. Multiple studies on post-2020 poverty[1] examined the progress in global poverty reduction (Mahler et al., 2022; Yonzan et al., 2022). The World Bank, which incorporated economic growth, inequality and inflation into its projection model[2], predicted that the number of people living in extreme poverty globally would reach 719 million by 2020, an increase of 70,704,900 people, or 10.91%, compared to 2019, based on the extreme poverty threshold of US$2.15 per person per day (on a 2017 PPP basis), a net increase of 90 million people in extreme poverty (Yonzan et al., 2022)[3]. The global incidence of poverty hit 9.3% in 2020, an increase of 0.865 percentage point from 2019. According to the projections, the number of people living in poverty globally started to decline in 2021, but would not return to 2019 levels until 2023, which means the process of global poverty reduction has been set back by four years.

The number of poor people, if measured by the poverty threshold for middle-income countries, has increased. The number of people

[1] Due to the lag in household survey data, the most current poverty headcount data supported by concrete evidence is only till 2019.

[2] The model sets the welfare impact of food price increases 3 percentage points higher for the lowest 40% of income groups than for the upper 60%.

[3] The net increase is the difference between the number of people predicted to be poor considering the current shock and the number of people predicted to be poor in the absence of the crisis.

living in poverty globally, as measured by the World Bank's poverty threshold for lower-middle-income countries and upper-middle-income countries, has also risen, defying the general trend. Measured by the poverty line of US$3.65 per person per day in lower-middle-income countries, the number of people living in poverty globally increased in 2020 by 81,760,300 compared to 2019, with the poverty headcount ratio increasing by 0.83 percentage point. Measured by the poverty threshold of US$6.85 per person per day in upper-middle-income countries, the number of people living in poverty and the poverty incidence increased in 2020 by 134 million people and 1.20 percentage points, respectively, compared with 2019 (Figure 4-1). The current crisis not only affects the poorest, but is also having a significant adverse impact on low-income populations globally.

The world is unlikely to meet the goal of ending extreme poverty set in the 2030 Agenda. The confluence of crises, including the COVID-19 pandemic, geopolitical conflicts, inflation and economic slowdown, has reversed the global poverty reduction process and affected every country and region. Although the 1997 Asian financial crisis also reversed the global process of poverty reduction, its cumulative impact on global poverty was muted because it was a single crisis with limited reach, and it was countered by effective regional cooperation. According to World Bank statistics, the global population living in extreme poverty increased by 51,378,000 in 1997-1998, or a mere 2.84%, with more than 60% of the increase coming from East Asia and the Pacific. Only two years after the outbreak of the Asian financial crisis, the number of people living in extreme poverty globally fell to the level of 1996. Under the current conditions of widening global inequality, sluggish economic growth and high inflation, the global incidence of poverty will likely reach 6.8% by 2030, with a total of 574 million people in poverty, and the goal of ending poverty will almost certainly become unattainable (World Bank, 2022).

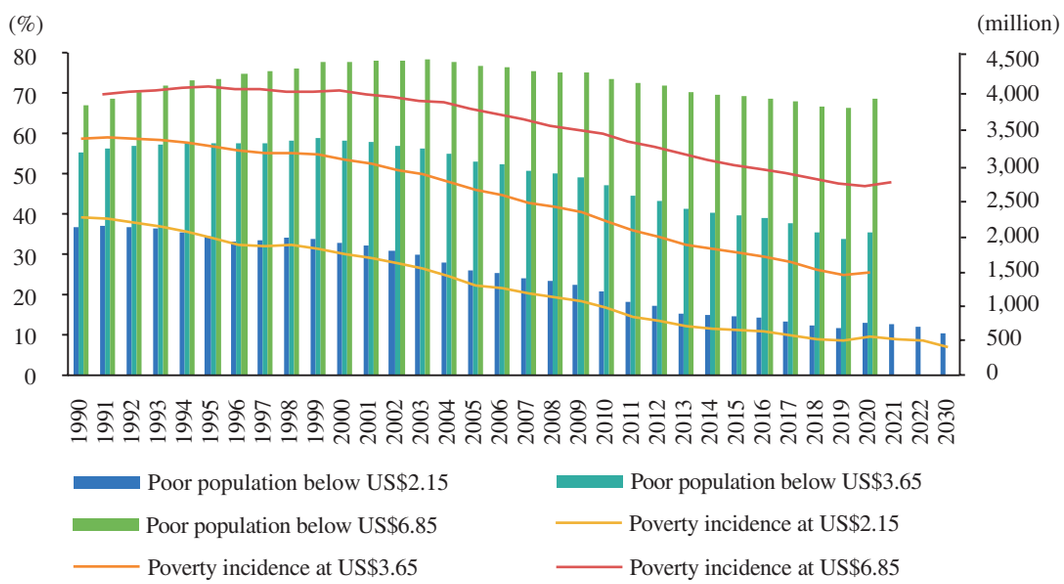

Figure 4-1 Global population in poverty (right axis) and poverty incidence (left axis), 1990-2030

Source: World Bank

4.1.2 The increase of population living in multidimensional poverty is higher than that of extreme poverty

Alkire et al. (2021) used data on school closures and food insecurity to estimate the number of people living in multidimensional poverty[1], which they assessed as having increased by 152-547 million globally in 2020, much more than the increase in the number of people living in extreme poverty, resulting in a 3.6-9.9-year regression in the progress on reducing multidimensional poverty. Additionally, multiple studies show a worsening of non-monetary poverty indicators globally. For example, the *World Energy Outlook 2022* stated that the number of people without access to the power grid would reach 774 million globally in 2022, an increase of 200 million from 2021, with the majority of the increment concentrated in sub-Saharan Africa. This reversed the trend of a continuous increase in electricity coverage in Africa since 2013 (Cozzi et al., 2020). According to the World Food Programme estimates, in 2022, 193 million people in 53 countries and regions were in a food crisis, increasing by nearly 400 million compared with the record in 2020 (WFP, FAO, 2022). School closures and shutdowns due to the COVID-19 pandemic could reduce secondary education completion rates, with learning poverty rising by one-third in low- and middle-income countries, and about 70% of 10-year-olds unable to understand a simple written text (Olaberria & Reinhart, 2022; Feng, 2022).

There has been a reversal in relative poverty incidence even in developed European countries. Rising energy and soaring food prices have severely affected prices in commodity-importing European countries, creating significant economic, social and political repercussions. According to Eurostat, using 60% of median income as a relative poverty threshold, European countries made significant progress in alleviating relative poverty in 2015-2019, with the incidence of relative poverty continuing to decline. However, the incidence of relative poverty in Europe rose in 2020-2021 against the general trend. In 11 of the 31 countries with statistics for 2021, the incidence of relative poverty increased from the previous year.

4.1.3 The global distribution of poverty further concentrates

The "new poor" are concentrated in regions with a high poverty incidence in the pre-COVID period. According to the World Bank, the additional poor due to COVID-19 was concentrated in South Asia, East Asia and the Pacific, and sub-Saharan Africa (Table 4-1). Considering the population base of each region, South Asia and sub-Saharan Africa have the highest share of new poverty as a percentage of total population. In 2020, the share of new poverty was 3.88% in South Asia and 0.69% in sub-Saharan Africa. In 2022, the share of new poor in South Asia fell to 2.50%, while in sub-Saharan Africa it rose to 0.96%. The multiple ongoing crises have scarred regions where poverty was already concentrated, further polarizing the global distribution of poverty.

[1] The Multidimensional Poverty Index (MPI), developed jointly by the UNDP and the Oxford Poverty and Human Development Initiative, covers three dimensions – health, education, and standard of living – and contains 10 indicators: nutritional status of people under 70 years of age, mortality rate of children under 18 years of age, whether any member of the household has more than six years of schooling, school enrolment of school-age children, use of solid fuels for cooking, access to sanitation, access to safe drinking water, access to electricity in the household, household housing, and the level of assets of the household. Nutrition, child mortality, years of schooling and school enrolment are each assigned a score of 1/6, and the others are each assigned a score of 1/18. Groups with a score of more than 1/3 on the "deprivation" indicator are considered multidimensionally poor.

Table 4-1 Newly added global poverty by region, 2020-2022 Unit: million people

Year	Poverty Threshold	East Asia and the Pacific	Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa	South Asia	Sub-Saharan Africa
2020	US$2.15	9	1	-1.4	1.3	73	8
2021		10	0.5	-3.1	4.2	58	9
2022		9	1	-2.8	5.4	47	11
2020	US$3.65	29	1.8	-1	0.6	120	17
2021		31	0.9	-5.8	2.6	102	18
2022		32	2.3	-6	2.5	95	20
2020	US$6.85	73	4	2.7	8.9	56	8
2021		73	1.5	-7.2	8.1	58	8
2022		82	12.3	-7	7.5	59	10

Source: World Bank; Mahler et al., 2022

In 2019, nearly 60% of the poor lived in sub-Saharan Africa and 24% in South Asia, the two regions with the highest rates of poverty globally.

Sub-Saharan Africa faces an immense challenge of poverty reduction. Despite its large poor population, South Asia has accelerated poverty reduction since 2014, halving the incidence of extreme poverty in 2014-2019. Due to sluggish economic growth and high population growth, sub-Saharan Africa saw its number of poor people rebound after 2015, reaching 391 million in 2019, accounting for 60% of the global poor population (Schoch et al., 2022), nearly five times the 1990 level. The multiple ongoing crises have dampened economic recovery in the region and weakened the underlying momentum of poverty reduction. According to the IMF, in 2019 sub-Saharan Africa's GDP per capita was 34.78% of the average for EMDEs. It fell to 34.32% in 2020 and would further decline to only 30.97% by 2025. The World Bank's *Global Economic Prospects 2023* also pointed out that in 2023-2024, sub-Saharan Africa, with the highest incidence of poverty, would have the slowest growth in per capita income, at only 1.2%, 0.5 percentage point lower than in 2019. By 2030, 30% of the population in sub-Saharan Africa will be living in extreme poverty, due to slow economic recovery, regional vulnerability and conflict (Schoch et al., 2022).

The share of urban non-farm employment among the new poor has increased. Compared to the chronically poor[1], the new poor generated by the multiple current crises show new characteristics. Only 19% of the chronically poor lived in urban areas, and the share of non-farm employment was 31.75%, while 28% of the new poor lived in urban areas and 44.29% were employed in non-farm jobs (Nguyen et al., 2020). Data obtained by the World Bank through high-frequency phone surveys presented a similar finding, with urban groups with the lowest 40% incomes suffering more from the crises than the remaining 60%, but

[1] The chronically poor are those who remain in poverty regardless of the multiple current crises.

this finding did not apply in rural areas (Yonzan et al., 2022). Those employed in agriculture were comparatively less affected by social distancing policies. Furthermore, agricultural self-sufficiency in many developing countries cushioned the negative impact of the crises on household expenditure. For wage-earning urban households, the multiple crises have directly reduced household income and raised the cost of living, resulting in a large number of people in non-farm employment falling into poverty.

4.1.4 Vulnerable groups at high risk of poverty

The assets of vulnerable populations were significantly reduced. Vulnerable populations are those with incomes above the extreme poverty threshold and below the middle-income threshold, amounting to approximately 3.4 billion globally (Fengler et al., 2023). In the multiple current crises, vulnerable groups in the lower strata of society have not only been hit by school closures, unemployment, lower wages and inflation, but have also responded to the crises by selling their assets, drawing down their savings and reducing non-food spending. Vulnerable populations may have avoided a significant drop in household income and poverty, but due to the slow recovery of the global economy, they have been living through a prolonged period of low income and are unlikely to repair their balance sheet any time soon or invest in human capital. The loss of family wealth meant the disappearance of the shield against risks, resulting in spending suppression and underinvestment in human capital. This further increases the vulnerability of the poor and undermines the effort to reduce poverty sustainably.

The level of welfare that vulnerable populations' assets could generate decreased. Human, social and physical capital, as well as public resources, provide the basis of a household's livelihood, and households need to dispose of their assets, for example, by using or selling them, to generate income. The current climate crisis, economic slowdown and global inflation have reduced the net worth of vulnerable populations while at the same time diminishing the level of welfare such household assets could generate. For example, the economic slowdown has led to devaluation of fixed and financial assets and reduced value creation from productive assets. Without the multiple current crises, 100 million of the 3.4 billion vulnerable people could have a chance of entering the middle class each year, but the number of people entering the middle class in 2023 was expected to fall to 85 million (Fengler et al., 2023). Vulnerable groups are not yet included in poverty monitoring systems and present the greatest uncertainty in the future outlook on global poverty.

4.2 Multiple factors affect the effects of poverty reduction

4.2.1 Significant decline in resources available for poverty reduction

In countries with a high poverty incidence, economic growth has virtually stagnated, stalling the momentum of poverty reduction. The Development Research Center of the State Council (DRC) and the World Bank conducted an analysis of the dynamics of poverty reduction in major countries over the past 20 years and found that sustained economic growth has been a major driver of global poverty reduction (DRC & World Bank, 2022). The slowdown of the world economy began in 2010, and its growth has been further depressed by the ensuing multiple crises. The World Bank forecast the global economy

would grow by a cumulative 2.2% from 2022 to 2030, only two-thirds of the 2000-2010 rate, with the potential growth rate decreasing by an average of 0.4 percentage point per year. The potential growth rate of EMDEs is expected to decline by 1 percentage point per year on average, while for the developed economies, it will decrease only by 0.2 percentage point (Kose & Ohnsorge, 2023). Low-income countries with a higher poverty incidence face larger shocks and slower economic recovery. The average GDP growth of low-income countries with a poverty incidence higher than 50% was -5.3% in 2020 and was estimated at 0.2% in 2022, compared with a GDP growth rate of 0.1% and 1.2%, respectively, for low-income countries with a poverty incidence of less than 50% (World Bank, 2023). Lower economic growth means fewer jobs, less fiscal revenue and reduced industrial performance, which will greatly affect the employment and income of the poor and have a substantial impact on global poverty reduction.

Low-income countries have suffered shrinks in financial resources and financing capacity. They face challenges on both the revenue and expenditure sides, and their deficits have risen significantly. On one hand, they introduced a host of policies to curb inflation and had to increase fiscal spending. On the other hand, the downturn in the domestic economy and the decrease in corporate and household income have stunted the growth of fiscal revenue. According to the IMF, the deficit rate of low-income countries was 4.94% in 2022, an increase of 1.45 percentage points from 2019; while the deficit rate of developed economies was 3.64%, an increase of only 0.8 percentage point from 2019 (IMF, 2022). The deteriorating global financial environment has led to a continued widening of sovereign spreads in EMDEs, and higher financing costs have weakened their access to financing. Operating under fiscal constraints, developing economies must balance the different objectives of debt stabilization, economic revitalization, poverty reduction and climate change adaptation. Not only has poverty reduction been given a much lower priority in the allocation of fiscal resources, but the choice of poverty reduction policy instruments has also been limited (IMF, 2022; World Bank, 2022).

Global development resources for poverty reduction have declined significantly. The strain on internal resources in developing countries has been accompanied by shrinking development assistance from developed donor countries. For example, in November 2020, the UK government announced cuts to its total ODA from 0.7% to 0.5% of its GDP, which is lower than the UN's target and is the lowest proportion of the UK's total aid to its GDP for the 2013-2020 period. While total ODA increased by 13.6% in 2022 according to Organization for Economic Co-operation and Development (OECD) statistics, the aid associated with domestic refugees amounted to US$29.3 billion, or 14.4% of net ODA. Ukraine-related aid amounted to US$16.1 billion, or 7.8% of net ODA. And spending associated with the COVID-19 pandemic amounted to US$11.2 billion, or 5.49% of net ODA. If these three components are removed, ODA actually declined in 2022 (OECD, 2022). The decline in donor resources further erodes the resources available for poverty reduction globally.

4.2.2 Rising food and energy prices led to the cost-of-living crisis

Developing economics are largely affected by the rising prices of food and energy. A series of shocks – such as supply chain disruptions caused by COVID-19 quarantine measures, labor shortages due to "long COVID" and unjustified unemployment subsidies, and food and energy

crises – continued to prolong and expand the current round of inflation and push up prices. Concurrent food and energy price increases added to the feedback power of the current inflation cycle. Since 2020, the global average Consumer Price Index (CPI) has rapidly increased, reaching 9.48% by 2022, and the median CPI was 7.9% (Figure 4-2). In April 2021, the EU's Harmonized Index of Consumer Prices (HICP) exceeded the 2% target and continued to rise unabated, hitting double digit by August 2022. In October 2022, the US core CPI also reached a record high of nearly 40 years. Inflation in EMDEs reached 6.94% in 2020-2022, twice as high as in developed economies. World Bank data show that between December 2022 and March 2023, 82.4% of low-income countries, 93% of lower-middle-income countries, and 89.0% of upper-middle-income countries had inflation levels above 5%, with many countries experiencing double-digit inflation. In terms of the sources of inflation, rising energy prices have been the main contributor in developed economies since 2020, while inflation in EMDEs has come primarily from rising food prices (Figure 4-3). In 2022, energy prices in developed economies grew by 9.67% on average, higher than in EMDEs. However, EMDEs have endured a higher food price increase of 8.61%, 3.48 percentage points higher than in developed economies. Average inflation in sub-Saharan Africa reached 12.9% in October 2022, with higher food prices contributing more than 50% of the inflation (World Bank, 2023).

Low-income groups experienced a significant decline in real purchasing power. Inflation reduced their real purchasing power. According to the International Labor Organization (ILO) estimates, global real wages fell by 0.9% in the first half of 2022, the first decline since 2008. In addition to the impact of widespread inflation, low-income groups were hit harder as the "effective rate of inflation" varies between households

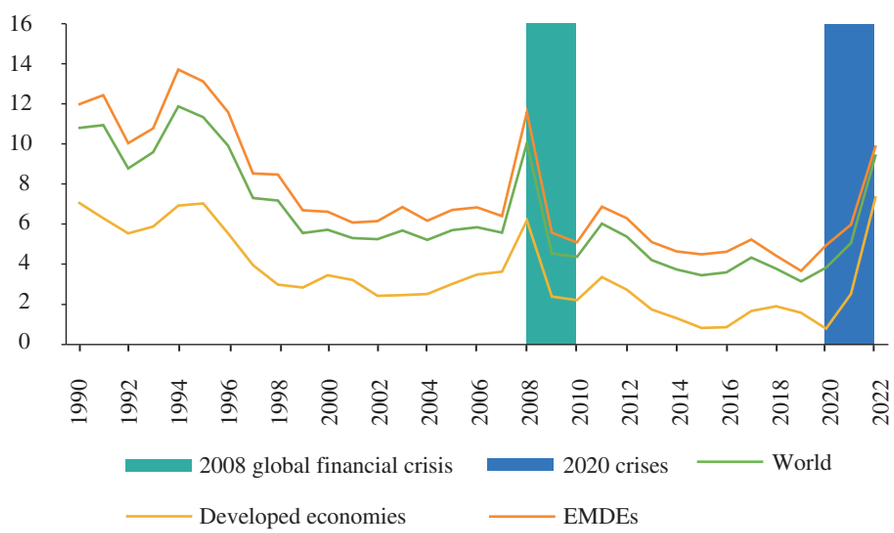

Figure 4-2 Global CPI, 1990-2022

Source: Ha, Jongrim, M. Ayhan Kose and Franziska Ohnsorge, 2021

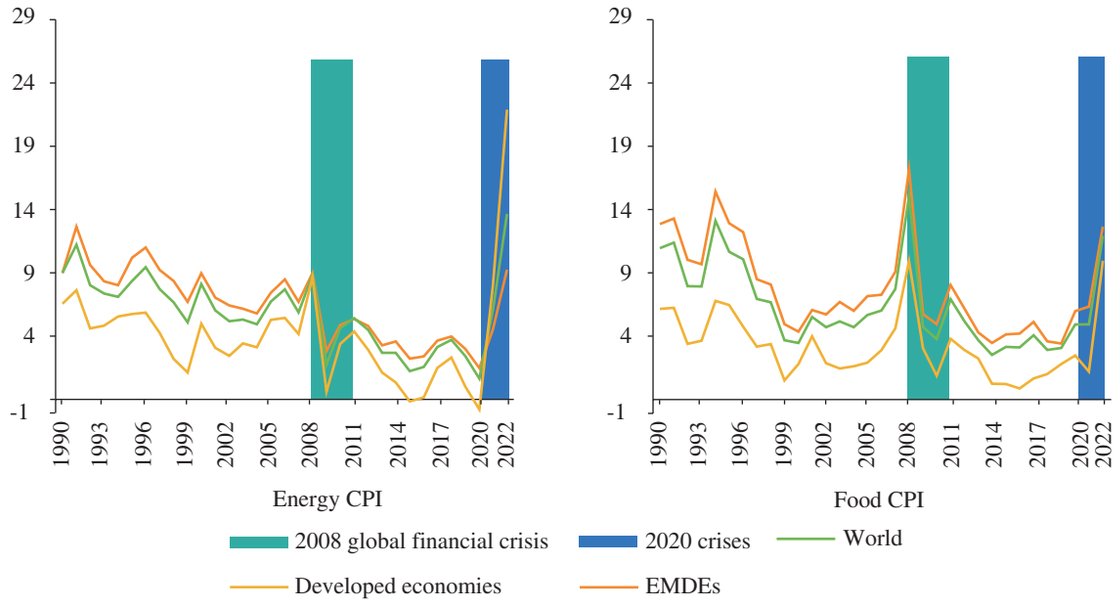

Figure 4-3 Global energy and food CPI, 1990-2022

Source: Ha, Jongrim, M. Ayhan Kose and Franziska Ohnsorge, 2021

at different income levels due to their spending mix. During the 2017-2019 period, the share of food expenditure reached 44.84% in low-income countries, 21.40% in lower-middle-income countries, and only 8.15% in high-income countries (OECD and FAO, 2020). The World Bank estimates that in developing countries, one-third of a typical poor household's spending is for food (World Bank, 2022). Inflation brought about by rising food and cereal prices has undoubtedly hit low-income groups and the poor harder. A study by the ILO has found that low-income households face an "effective rate of inflation" that is 1-4 percentage points higher than that of high-income households (ILO, 2023). A World Bank analysis suggests that a 1% increase in food prices could push 10 million people into poverty; if food prices remain as high as they were in 2022 for a year, this could lead to an increase of 100 million people living in poverty worldwide (World Bank, 2022).

4.2.3 The quality of employment declined due to the pandemic and other factors

The labor markets in low-income countries experienced a slow recovery, with high unemployment rates and fewer working hours. At the beginning of COVID-19, low-income countries seldom took measures such as social distancing, and their labor markets were less affected, with no significant changes in working hours or unemployment rates. However, as multiple crises hit subsequently, in particular the contraction of aggregate demand in high-income countries and its transmission through the global value chain, the labor markets of low-income countries were greatly weakened. The number of unemployed people globally was 205 million in 2022, corresponding to an unemployment rate of 5.8%, 0.3 percentage point higher than in 2019. The main reason was slow recovery of labor markets in

low-income and lower-middle-income countries, with unemployment rates 0.6 percentage point and 0.7 percentage point higher than in 2019, respectively (Table 4-2). The unemployment rate only partially reflects the labor market downturn. The actual impact of the multiple crises on jobs was much more acute than these figures suggest, as many people stopped searching for jobs and were not included in the unemployment statistics. Some workers remained employed but suffered a loss of working hours. Employees worked an average of 42 hours per week in 2019, which was down to 41.4 hours in 2022. Similar to the unemployment rate, the loss of working hours was more severe in low-income and lower-middle-income countries.

The quality of employment declined markedly, and the working poverty incidence increased. The decline in the quality of employment globally was characterized by both lower wages and a higher share of informal employment. For wages, while global labor force income in 2021 was 0.9% above pre-crisis levels, the average obscures the fact that three-fifths of workers still live in countries where incomes have not recovered to pre-crisis levels (ILO, 2022). With regard to informal employment, the number of informal jobs had recovered to 2019 levels in 2021-2022, in contrast to 2005-2019 when informal employment grew at a slower pace than formal employment. The rapid recovery in informal employment was mainly driven by an increase in informal jobs in low-income and lower-middle-income countries. While the increase in informal jobs could improve income and employment for low-income groups in the short run, it also meant an increase in the number of socially unprotected, low-wage workers, which in the long run increases global vulnerability to poverty. As a result of the deteriorating quality of employment, the global working poverty incidence reversed a decade-long trend of decline (Figure 4-4), rising from 6.68% in 2019 to 7.19% in 2020. In breakdown, the 0.84 percentage point increase in lower-middle-income countries was the main source of the global increase in working poverty. While the

Table 4-2 Global labor market performance by national income level

	Year	World	Low-income countries	Low-middle-income countries	Upper-middle-income countries	High-income countries
Loss of working hours due to COVID-19 (hours)	2020	8.7	5.9	11.2	7.1	7.6
	2021	3.6	4.6	6.4	0.8	3.6
	2022	1.4	2.1	2.7	0.3	0.6
	2023	1.6	2.1	2.6	0.5	1.6
Unemployment rate (%)	2019	5.5	5.2	5.5	6.0	4.8
	2020	6.9	5.9	7.4	6.8	6.5
	2021	6.2	5.8	6.4	6.3	5.6
	2022	5.8	5.8	6.2	6.0	4.5
	2023	5.8	5.7	6.2	5.8	4.9

Source: ILOSTAT

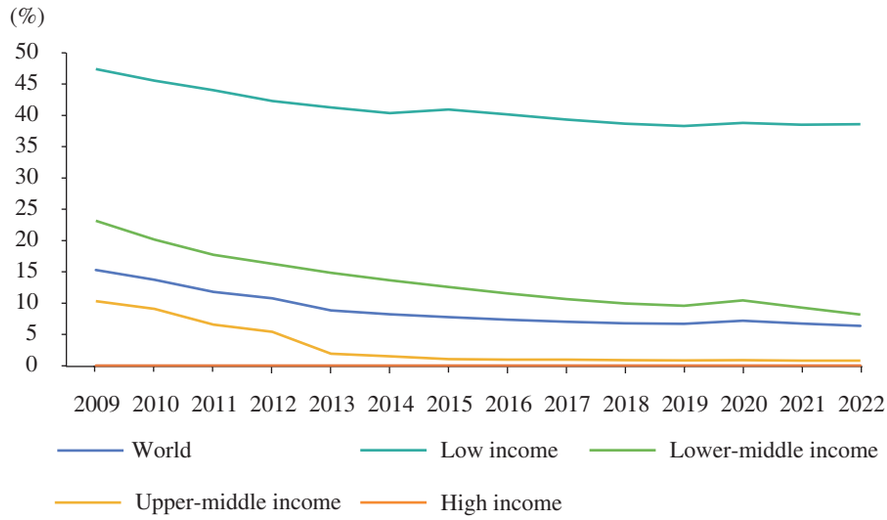

Figure 4-4 Working poverty incidence among the population aged above 15, 2009-2022

Note: Poverty threshold here is US$1.90 per person per day.
Source: ILOSTAT

working poverty incidence decreased to 6.38% in 2022, below the 2019 level, the working poverty incidence in low-income countries was still 0.28 percentage point higher than in 2019.

4.2.4 Poverty caused by disasters increased

Climate change leads to a loss of physical capital for poor countries and populations. The impacts of climate change include perennial changes such as soil degradation and salinization and extreme weather events such as heat, floods and other natural disasters. Globally, 70% of the poor depend on the extraction of natural resources for their livelihoods, and 36% of the wealth of low-income countries is in natural resources (Kempf, 2018). As a result, the impact of climate change on natural resources could have a direct impact on low-income countries, causing poverty and economic slowdown. For the large number of poor people who depend on agriculture, forestry and fisheries for their livelihoods, climate change leads to the loss of agricultural inputs and lower yields of agricultural products, causing unstable incomes and malnutrition among the poor, alongside other consequences. The destruction of shelter and infrastructure caused by extreme weather events threatens the basic conditions for survival and prosperity of low-income countries and the poor, further reducing their access to essential public services. A World Bank study suggests that if left unchecked, the number of people pushed into poverty by climate change will reach 130 million by 2030 (Nishio, 2021). An IMF study has found that in the worst-case scenario, climate change could reverse the development gains of the past decades and widen the inequality among countries.

Low-income countries face a higher mortality rate due to extreme climate. Research by the UN Intergovernmental Panel on Climate Change (IPCC) has found that populations living in highly vulnerable countries such as Mozambique, Somalia and Nigeria are 15 times more likely to die as a result of floods, droughts and storms compared to populations in low-vulnerability

countries such as the United Kingdom and Australia. The loss of human capital will take a devastating toll on households.

4.3 Jointly bringing poverty reduction back on track

Uneven recovery has exacerbated global inequality and further widened the North-South divide, resulting in an increase of the global poor against the general trend. If the lives of the poor in the midst of the multiple crises were to be profiled, it would show them being forced to take up high-risk service jobs, and risking their lives for a meagre income to sustain their minimum living standards because they were not equipped to work remotely during the COVID-19 pandemic, while poor children had to put their studies on hold because of school closures. Girls from poor families had to undertake heavy domestic chores and may never return to school. Coming out of the pandemic, the poor found that they could never bring their lives back on track. Rising food and energy prices eroded the living standards of a large number of poor people, and the labor market remained depressed even after the removal of social distancing restrictions. Many could not return to their jobs and had to resort to low-paying informal employment as a replacement for formal occupations – and were then excluded from the social safety net.

Respect for human life and dignity is the common pursuit of human society. Leaving no country or person behind is a commitment of the 2030 Agenda. Ending poverty would require not only prioritizing development and promoting stable and sustained economic growth, but also formulating poverty reduction strategies that are timely, adapted to the local conditions, and concentrating a variety of resources on effectively assisting the poor.

4.3.1 Prioritizing poverty reduction on the policy agenda

Poverty reduction should be placed high on the inclusive recovery agenda, and various resources are to be mobilized for poverty reduction. Maintaining a people-centered approach and promoting balanced, coordinated and inclusive global development is key to restarting the global poverty reduction process. Inclusiveness should be the foundation of economic development in the post-pandemic era so that no country and no one is left behind. Countries should integrate the poor into their industrial, social and fiscal policies and fully consider the interests of the poor in economic recovery. A whole-of-government, whole-of-society system for poverty reduction should be established and financial and human resources mobilized from the non-state sector, including private enterprises, foreign investors, and non-governmental organizations, to invest in the poverty reduction policy agenda and promote policy synergies. In the long term, achieving the goal of poverty reduction will also require sustained improvement in governments' capacity to govern, which should play a constructive role in building credible commitments, strengthening internal coordination and promoting multi-stakeholder cooperation (Box 4-1).

Box 4-1 Two pillars of China's absolute poverty elimination

Over the past four decades, China has reduced the number of people living in poverty by about 800 million, according to the World Bank's absolute poverty threshold of US$1.9 per person per day, accounting for 75% of the global poverty reduction over the same period. In 2021, China declared that all rural poor people below the current poverty line had been lifted out of poverty, a decisive and historic moment of ending absolute poverty.

A joint study by the DRC and the World Bank examined China's path to poverty eradication and concluded that the two pillars of China's solution to absolute poverty were broad-based economic reform and development and government-led poverty alleviation strategies and policies. The first created new opportunities for the poor and raised incomes. The latter, following the government's recognition of the need for targeted support to poor areas and poor households, focused on geographically disadvantaged areas and then shifted to more targeted poverty reduction interventions with poor households. The targeted poverty reduction strategy played a positive role in addressing the "last mile" challenge. Additionally, effective governance was the foundation of China's success in poverty reduction. Credible government commitments, inter-agency coordination and cooperation with the non-governmental sector underpinned the achievement of poverty reduction goals.

Source: DRC and World Bank

Genuine multilateralism should be upheld to promote common development across the world. In the era of globalization, no country can thrive alone, nor can any country independently overcome multiple crises, such as the COVID-19 pandemic, inflation and geopolitical conflicts. All countries in the world should continue to act in solidarity and cooperation, uphold and practice genuine multilateralism, and achieve inclusive development through multilateral platforms and solutions. Against the backdrop of a weaker-than-expected economic recovery in developing countries and the further widening of global inequality, achieving inclusive development and returning global poverty reduction to the right track requires clear actions against trade protectionism and conditions to fully leverage the comparative advantages of more developing countries for better, deeper and broader participation in the global value chain. Countries should strengthen macroeconomic policy coordination, maintain global financing for development, and jointly create an international environment conducive to development.

4.3.2 Emphasizing agricultural development and committing to inclusive industrial transformation

Food security for poor populations and low-income countries has become the minimum requirement of the global poverty reduction endeavor. Promoting agricultural development and improving food supply can provide a cushion for the poor and raise the welfare level of poor households engaged in agricultural production. At the same time, for both food-producing and food-exporting countries, increasing food production capacity can improve the terms of trade

and contribute to economic recovery and higher incomes for rural populations.

Agricultural development should be integrated into poverty reduction and agricultural resilience should be increased. With three quarters of the world's poor living in rural areas, agricultural development is naturally linked to the poverty reduction agenda. Low-income countries and developing countries should make increasing the resilience of agriculture and extending the value chain the core objectives of agricultural development. They should attach high importance to agricultural development, update the domestic agricultural governance system, and increase public and private sector investment in agriculture. In the research and development and production stages, they should adopt more innovative agricultural technologies and strengthen the research and development of agricultural technologies suitable for local environments and conducive to sustainable development, as well as the extension of such technologies. They should develop agricultural infrastructure and improve the efficiency of utilizing land and other agricultural inputs. Tax policies should appropriately favor agriculture, and long-term, stable support should be given to agricultural development by the poor and in poor regions. Private capital should be attracted into the processing, storage and transportation stages to optimize the mix of agricultural industry and extend the agricultural value chain.

Agricultural development assistance should combine short- and long-term programs, and soft and hard infrastructures. At present, the most urgent task is to provide timely and effective food aid to countries and groups facing food shortages to avoid humanitarian crises. In the longer term, poverty reduction and agricultural assistance should be combined, focusing on both the infrastructure and soft conditions for agricultural development to provide effective assistance to the poor. On one hand, such assistance should focus on the development of agricultural infrastructure and water conservancy projects so as to lay a good foundation for the agricultural development of the recipient countries and create favorable conditions for the self-development of the poor. On the other hand, the training of agricultural professionals and technology demonstration should be intensified. Agricultural technology training should be strengthened and local professionals familiar with the local economic and social environment should be trained. The effectiveness of agricultural aid should be improved by scaling up successful pilots. Through the training of model farmers and the construction of model farms, the confidence and internal motivation of the poor to adopt new technologies and varieties will be boosted.

Industrial transformation and inclusive development should be promoted. From the perspective of industrial development and economic growth, a country's poverty reduction goal must be realized based on inclusive economic growth. The transformation of inefficient industries into efficient ones and the upgrading of inefficient production to efficient production are the fundamental drivers of poverty reduction, and high-quality development is the core driver of improving the wellbeing of the poor. The new technological revolution offers developing countries the opportunity to achieve leapfrog development, but it is not a panacea for all development challenges. Economic growth and industrial transformation must promote inclusive growth and improve the livelihoods of the poorest groups. This is particularly true in the digital age, where creative destruction is likely to raise issues of inclusiveness and inequality as human jobs are replaced by machines. Issues arising from development, such as

the digital divide and equity deficits, should also be addressed in development.

4.3.3 Building up human capital and promoting employment for the poor

School closures as a result of the COVID-19 pandemic took a lasting toll on the education of poor children, while the slow recovery of the labor market led to higher unemployment among the poor, especially young people. Addressing the human capital deficit must be on the agenda as the world embarks on the road to recovery.

Adequate and sustained support should be provided for human capital accumulation. The priority is to help poor children dropping out of school as a result of the pandemic return to school to avoid further loss of human capital. The focus should be on access to education and health care for the poor. Schools and hospitals should be rationally located to reduce the cost of education and health care. The existing technologies, such as distance learning platforms, should be fully leveraged to develop human capital while also protecting the poor from falling into the digital divide.

Employment of the poor should be supported and their skills improved to adapt to the digital age. To accelerate the recovery of the labor market, small and micro-enterprises should be supported with a variety of fiscal and tax incentives. Programs such as work relief should be implemented to create more jobs and prevent welfare dependency. Informal employees should be included in the social security system. Future-proof skills training should be provided to help the poor adapt to the job demands of the digital age.

4.3.4 Developing targeted policies and improving resource efficiency

COVID-19 control measures consumed a great deal of national resources, and the subsequent anemic economic recovery failed to generate sufficient resources for poverty reduction. Improving the effectiveness of poverty reduction policies is a practical way to move global poverty reduction back on track.

The poor should be identified precisely and the quality of data on poverty improved (Box 4-2). The multiple crises have increased the number of poor people worldwide, but the new poor are different from the chronically poor. Priority should be given to the collection of baseline data on the number, distribution and characteristics of the poor for accurate demographic characterization and effective policy interventions. Monitoring networks should be established covering both urban and rural areas, the employed and unemployed, and formal and informal workers; data sharing among government agencies should be strengthened and digital technology should be fully harnessed to accurately measure household income and expenditure. An early warning system should be developed for the poor, vulnerable groups should be included in the monitoring, and preventive measures should be strengthened.

Box 4-2 China's experience in accurate identification of poor households

Since the 1980s when China embarked on a large-scale, systematic poverty reduction program, it has continuously adapted its approach to poverty reduction according to the changing causes of poverty: from the nationwide minimum living standard allowance to the widespread

regional poverty alleviation and development strategies; to specialized and more granular poverty alleviation policies and programs in poverty-stricken areas, counties and villages; and finally, to targeted and direct interventions with poor households.

The targeted poverty reduction strategy improved the identification of poor households. A combination of top-down and bottom-up approaches was used to identify poor households. Specifically, the National Bureau of Statistics (NBS) measured the size of the poor population at the national and provincial levels based on the 2010 national poverty line. The NBS survey found about 100 million poor people in China's rural areas, mainly concentrated in the central and western provinces. In the process of mapping out the poor population, the Chinese government mobilized about 800,000 officials to conduct accurate identification of poor households using the total number as a reference and set up records for poor households in each county and village. It is worth noting that monetary indicators such as household income and expenditure are no longer the only criteria used in "bottom-up" identification. In the absence of accurate income and consumption data for rural households, local governments often supplemented the income-based poverty criterion by counting the household assets such as housing and durable goods. In order to ensure that "no household or individual is left behind", if the bottom-up total exceeds the NBS total, the NBS total may be increased by 10% or more.

The implementation of the targeted poverty reduction strategy has not been without challenges. Due to weak governance capacity in rural areas, previous exercises resulted in false positives (households above the poverty threshold were identified as poor) and false negatives (poor households were not identified). This calls for secondary verification of poor household identification results during the implementation phase of targeted poverty reduction and follow-up of the households exiting from poverty. Providing strong incentives and monitoring poverty exit has proven to be particularly valuable in motivating local officials to achieve the poverty reduction targets. To improve public oversight, China has also established a monitoring and reporting line.

Source: DRC and World Bank

A cross-sectoral and multi-level policy system should be established and a policy evaluation mechanism developed. All countries' national conditions should be respected and adequate assessments and research should be conducted on policies such as transfer payments, infrastructure development, consumer subsidies and tax incentives. Multi-stakeholder evaluation that involves government departments, independent actors and international organizations should be fully leveraged and result evaluation should be included in the policymaking process to ensure policy continuity and effectiveness. Poverty reduction requires stronger policy coordination of multiple sectors, including the fiscal system and the economic development sector, as well as the social and financial sectors; each sector should clearly define its policy objectives and priorities to form a concerted effort to reduce poverty. Frontline officials should be mobilized to ensure that "last-mile" policy implementation truly benefits the poor.

4.3.5 Enhancing global cooperation in poverty reduction

The global governance system for poverty reduction should be improved and practical cooperation enhanced. A global governance approach of extensive consultation, joint contribution and shared benefits should be adopted, and the UN and other organizations should play an effective role in planning and coordinating the global poverty reduction process. The role of the 2030 Agenda in building consensus, synergies and coordination should be maximized. Global and regional governance mechanisms should be fully leveraged. Countries and organizations should be encouraged to provide effective global public goods. The GDI should be implemented, and the global governance framework for poverty reduction enhanced. Monitoring of the global poverty reduction process and evaluation of aid effectiveness should be improved. The exchange of experience, policies and knowledge on poverty reduction should be facilitated, and practical cooperation should be conducted to broaden partnerships for poverty reduction.

Developed countries and multilateral organizations must do their utmost to meet their commitments to poverty reduction. Financing for sustainable development should be strengthened and developed countries urged to fulfill their ODA commitments to developing countries by increasing their support for less developed countries through trade, investment and other means. Multilateral development institutions such as the World Bank and development finance institutions should faithfully fulfill their core mandate of promoting development and reducing poverty. They should expand and update the toolkit for poverty reduction support, link core poverty reduction indicators to financial assistance, and maximize the effectiveness of their assistance. Countries should increase their support for the relevant policies of multilateral institutions and secure resources for poverty reduction in low-income countries. The G20 Common Framework for Debt Treatments beyond the Debt Service Suspension Initiative should be implemented and a negotiation mechanism involving all creditors should be established.

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Chapter V

Working Together to Safeguard Global Food Security

"Zero Hunger", the second UN Sustainable Development Goal, is about creating a world free of hunger by 2030 in which food security is ensured, malnutrition improved, and sustainable agriculture promoted. Access to adequate food and freedom from hunger are basic human rights. In recent years, the global food security situation has deteriorated due to the combined effects of the COVID-19 pandemic, geopolitical tensions, climate change and extreme weather, economic slowdown and inflation, with developing countries being disproportionately affected. Although it is expected that global food security situation will gradually improve in 2023, the challenges in developing countries have not been effectively addressed. To ensure that all people have access to adequate food and to achieve a "Zero Hunger" world, it is recommended that the international community prioritize food security on the 2030 Agenda, help enhance developing countries' agricultural development capacity without compromising their sovereignty and in light of their national conditions, prevent and control the risks of food financialization, its use as an energy source and politicization of food trade, promote fairer international food trade rules, and improve the global food security governance mechanism with the UN at the center, thus jointly safeguarding global food security.

5.1 Global food security is facing severe challenges, with developing countries affected most

The key to food security is ensuring sufficient supply of affordable and nutritious food for all, meeting the basic objectives of availability, accessibility, stability and affordability. At present, global food insecurity has worsened as a whole, affecting developing countries disproportionately.

5.1.1 The global population suffering from food insecurity is increasing dramatically

The global population affected by food insecurity has reversed from a decline to a sharp increase. The global population suffering from moderate or severe food insecurity increased from 1.54 billion to 2.31 billion from 2014 to 2021, and their proportion in the global population rose from 21.2% to 29.2%. Though the global population of undernourishment declined from 2001 to 2017, this trend reversed from 2018 to 2021. The prevalence of undernourishment (PoU) increased from 7.8% in 2016 to 9.2% in 2022[1] (Figure 5-1). The global population with severe food insecurity increased from 192.8 million to 257.8 million from 2021 to 2022, an increase of 65 million people. The population in and above Phase 3 on the Integrated Food Security Phase Classification (IPC/CH) increased for four consecutive years from 2019, with the threat of severe food insecurity rising year over year (Figure 5-2). At this rate, the goal of "Zero Hunger" by 2030 will likely be missed[2], and eliminating hunger will be an immense challenge.

Global food insecurity is concentrated in developing countries in Asia, Africa and Latin America (Figure 5-3). In terms of regions, the prevalence of food insufficiency in Africa as a whole is as high

[1] Source: The State of Food Security and Nutrition in the World 2022. The FAO uses two indicators – the prevalence of moderate or severe food insecurity in the population and the prevalence of undernourishment – to monitor progress on "Zero Hunger", Goal 2 of the 2030 Agenda.

[2] The State of Food Security and Nutrition in the World 2023 report, jointly released by five UN agencies on July 12, 2023, predicts that by 2030, nearly 600 million people globally will be facing hunger.

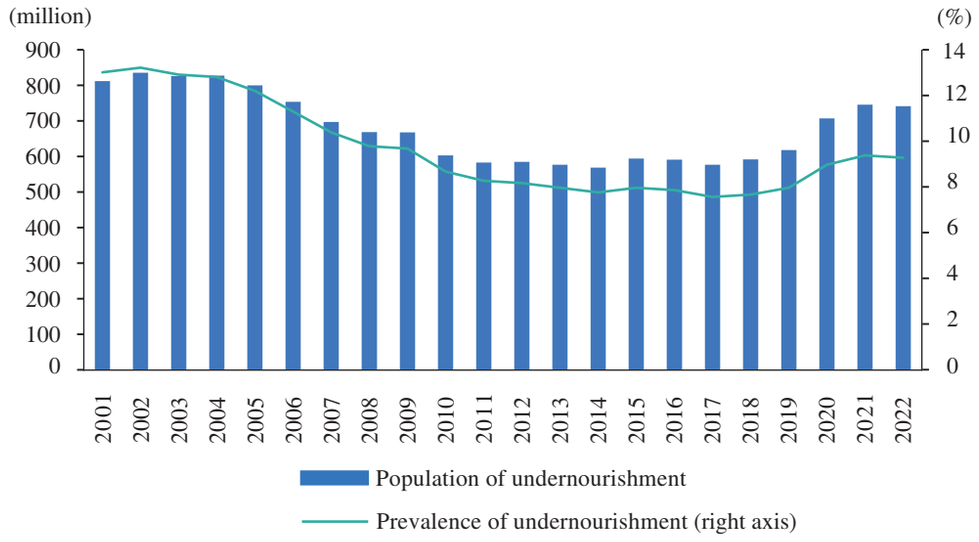

Figure 5-1 Global trends in the population and prevalence of undernourishment, 2001-2022

Source: FAO (SDG Indicators Data Portal)

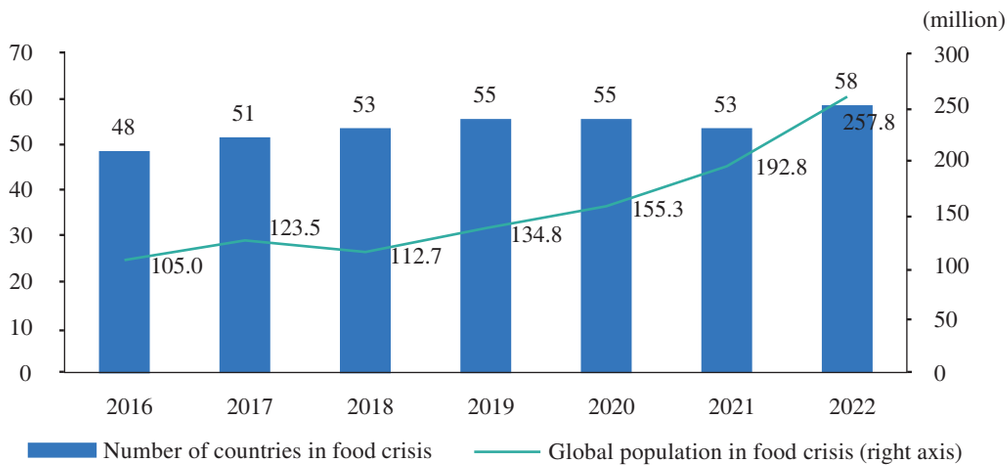

Figure 5-2 Changes in the global population and the number of countries in and above IPC/CH Phase 3, 2016-2022

Note: The IPC assesses indicators such as the severity of undernourished population and consists of five phases (IPC/CH 1-5): Less than 5% of malnourished children is Phase 1; 5%-9.9% of malnourished children is Phase 2; 10%-14.9% malnourished is Phase 3; 15%-29.9% children that are acutely malnourished with increased mortality and morbidity and potential impact on individual food consumption is Phase 4; and 30% and more children with severe malnutrition and widespread morbidity and/or very large gaps in individual food consumption is Phase 5.
Source: Global Report on Food Crises (GRFC) 2023

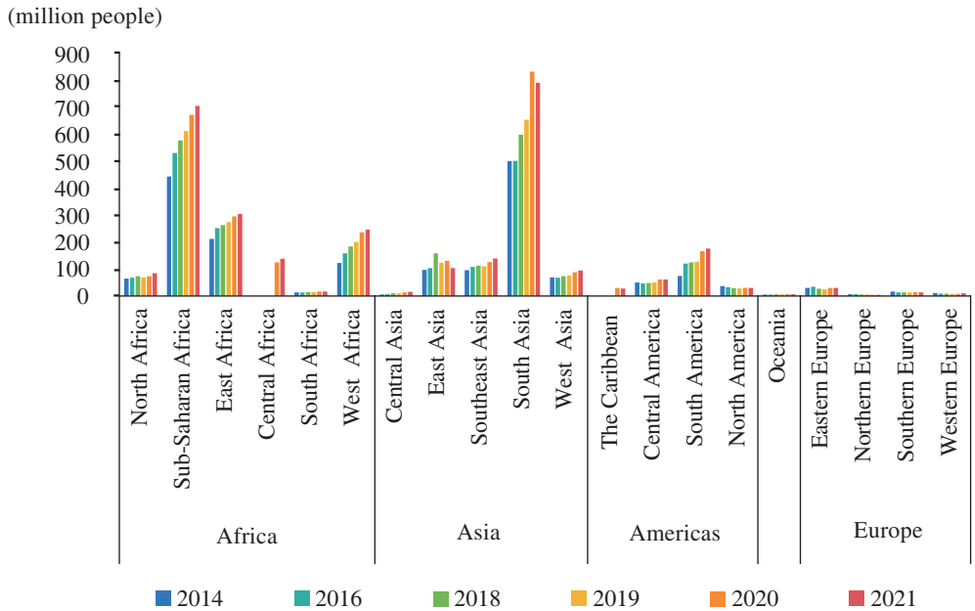

Figure 5-3 Number of people experiencing food insecurity at moderate or severe level by region, 2014-21021

Note: Number of people experiencing food insecurity at moderate or severe level is based on the 2014-2021 Food Insecurity Experience Scale.
Source: The State of Food Security and Nutrition in the World 2022

as 20.25%, with Central Africa, East Africa and West Africa at 32.8%, 29.8% and 13.95%, respectively; the Caribbean region is as high as 16.4%; and South Asia and West Asia are as high as 16.9% and 10%, respectively. Even South America, which has a high resource endowment, remains as high as 7.9%. North America, Europe and East Asia as a whole all have food insufficiency rates below 2.5%. Among the 45 countries in food crisis that need food assistance, 33 are in Africa and 9 in Asia (FAO, 2023). According to the Economist Intelligence Unit's assessment of the food security situation in 113 countries in 2022, all 28 developed countries scored above 70, while only 12 of 85 developing countries scored 70-79.9 and 39 scored 55-69.9; the other 34 scored below 54.9; the global average score of 113 countries is 62.2[1], with the average score of developed countries as high as 77.0, while that of developing countries is only 57.3; only 35% of developing countries are above the global average (Table 5-1). The clear gap in global food security between developed and developing countries is unlikely to be closed soon.

5.1.2 Global food supplies are sufficient yet the gap in developing countries is widening

Global food production and consumption remains in a tight balance (Table 5-2). According to FAO estimates, in 2022-2023 global cereal supply totaled 3.61 billion tonnes, a year-over-year decrease of 40 million tonnes; the production amounted to 2.76 billion tonnes, a year-over-year decrease of 50 million tonnes; cereal trade

[1] Data is based on the authors' calculations.

Table 5-1 Comparison of the food security situation in developed and developing countries in 2022

Category	Sample size	Score					Average score
		80+	70-79.9	55-69.9	40-54.9	0-39.9	
Developed countries	28	5	23	0	0	0	77.0
Developing countries and others	85	0	12	39	32	2	57.3
Total	113	5	35	39	32	2	62.2

Note: Food security in 113 countries was assessed using 68 key indicators in four dimensions: affordability, availability, quality and safety, sustainability and adaptation.
Source: Economist Intelligence Unit

Table 5-2 Changes in global supply and demand of cereal grains, 2015-2024

Year	Production	Supply	Consumption	Trade	End-of-period stock	Stock-to-use ratio	Stock depletion ratio of major exporting countries
	Unit: billion tonnes					Unit: %	
2015-2016	2.58	3.35	2.55	0.39	0.79	30.0	17.0
2016-2017	2.67	3.45	2.63	0.41	0.82	31.0	17.7
2017-2018	2.69	3.52	2.66	0.42	0.86	31.9	18.1
2018-2019	2.64	3.50	2.69	0.41	0.83	30.7	18.8
2019-2020	2.71	3.55	2.71	0.44	0.83	30.0	18.6
2020-2021	2.78	3.61	2.76	0.48	0.84	29.9	18.5
2021-2022	2.81	3.65	2.80	0.48	0.86	30.9	19.5
2022-2023	2.76	3.61	2.78	0.47	0.84	29.3	19.8
2023-2024	2.819	3.68	2.805	0.47	0.878	30.4	20.9

Source: FAO Cereal Supply and Demand Brief; data for 2023-2024 are FAO's projections.

reached 470 million tonnes, a year-over-year decrease of 10 million tonnes; and its consumption was 2.78 billion tonnes, a year-over-year decrease of 20 million tonnes. The stock-to-use ratio in 2022-2023 was 29.3%, well above the FAO food security threshold (17%-18%), but down 1.6 percentage points year over year. At the same time, major exporting countries continued to ramp up stock depletion with their stock depletion ratio growing from 19.5% in 2021-2022 to 19.8% in 2022-2023. In 2022-2023, global cereal supply, production, stock, trade and consumption declined year over year, showing a clear contraction in supply and demand. According to projections on global cereal supply and demand in 2023-2024 by the FAO and other organizations, although

cereal supply, production and inventory increased[1], consumption and the stock-to-use ratio also increased compared with the previous year. Cereal supply and demand is expected to recover gradually from a clear trend of contraction.

Developing countries as a whole have shifted from a surplus of production over consumption to a gap. In terms of food "availability", the global cereal production and consumption gap is more acutely felt in the populous regions of Asia and Africa, and the gap has continued to widen in recent years, while other regions as a whole have a surplus of production over consumption, especially North America (Figure 5-4). Comparing developing and developed countries, developing countries as a whole are generally production below demand, except for sugar and fish. Over the past three decades, developing countries as a whole have shifted from a production surplus to a production gap, and the gap has continued to widen for some food commodities, while developed countries as a whole have been in a state of surplus (Table 5-3). The imbalance between food production and consumption in developed and developing countries is unlikely to change in the near future.

5.1.3 International food trade and supply chain risks have increased

International food trade-consumption ratio is declining. In terms of the global food trade, the global cereal trade-consumption ratio reached a

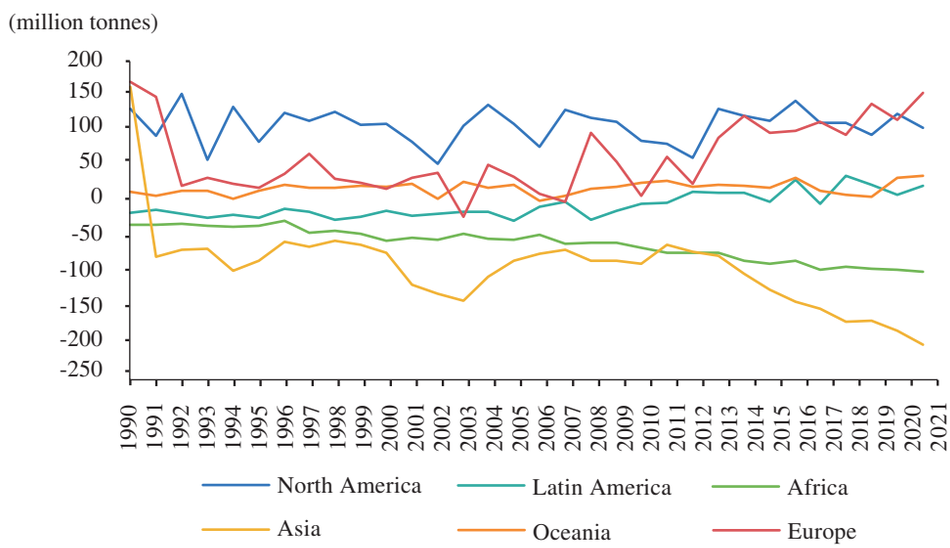

Figure 5-4 Trends in the global grain production and consumption gaps by region, 1990-2021

Note: Gap = production – consumption.
Source: OECD database

[1] The OECD-FAO Agricultural Outlook 2023-2032, the World Agricultural Supply and Demand Estimates released by the United States Department of Agriculture (USDA), and the International Grains Council all predict that the global food supply would be improved.

Table 5-3 Changes in food production-consumption ratios in developing and developed countries in 1990 and 2021

Unit: %

Varieties		Developing countries			Developed countries		
		1990	2021	Situation	1990	2021	Situation
Cereals	Wheat	134.9	74.9	Undersupply	200.3	154.4	Surplus
	Maize	160.5	90.9	Undersupply	112.5	116.4	Surplus
	Other coarse grains	89.4	73.8	Undersupply	167.1	125.8	Surplus
	Rice	103.6	101.0	Balance	116.2	88.7	Undersupply
Oilseeds	Soybeans	90.1	79.9	Undersupply	103.8	148.4	Surplus
	Other oilseeds	100.1	90.7	Undersupply	127.8	112.4	Surplus
Meats	Beef	102.5	96.9	Rough balance	119.4	103.7	Rough balance
	Pig meat	102.1	91.3	Undersupply	114.2	115.7	Surplus
	Poultry meat	123.0	97.4	Rough balance	111.6	106.3	Surplus
	Sheep meat	119.3	94.6	Undersupply	124.0	126.6	Surplus

Note: Production-consumption ratio = production/consumption.
Source: OECD-FAO Agricultural Outlook 2022-2031

recent high point of around 17.4%[1] in 2020; the trade-consumption ratio for rice, maize, wheat and soybeans was about 10.2%, 15.1%, 25%, and 44.2%, respectively. This shows that international trade plays an extremely important role in maintaining global food security. In terms of export trade mix, the top five exporting countries accounted for 78.9%, 66.3%, 88.5%, and 90.6% of total global export of rice, wheat, maize and soybeans, respectively, in 2021.[2] The top three fertilizer-exporting countries accounted for approximately 70% of total global exports of fertilizers. Due to the chronic imbalance of the global export trade mix of cereal and major agricultural materials, changing trade measures of the main exporters had an outsized impact on the international food market (Table 5-4). Following the outbreak of the COVID-19 pandemic in 2020 and the Ukraine crisis in 2022, 25 and 29 countries, respectively, adopted export restrictions. Coupled with other factors, the international grain trade suffered a shock. The global trade-consumption ratio of grain dropped from 17.4% to 17.0% in the period and was projected to drop further to 16.8% by 2023. Meanwhile, although export restrictions have been reduced, uncertainties remain in the international food market due to ongoing geopolitical conflicts, raising concerns about possible restrictions by major food-exporting countries in the future (Glauber & Laborde, 2023).

Developing countries are exposed to increased transmission risks from international food market fluctuations. From 1990 to 2021, developing countries saw widening deficits in all food varieties except for rice. Meat (e.g., pork and beef) and oilseeds (soybeans) saw the largest expansion

[1] Source: FAOSTAT, 2022. Trade-consumption ratio = international trade/consumption.
[2] Source: USDA.

Table 5-4 Export trade restrictions in 2020 and 2022

	2020				2022			
	Number of countries	Number of products	Trade value (US$ billion)	Trade share (%)	Number of countries	Number of products	Trade value (US$ billion)	Trade share (%)
Announcements	2	2	0.29	0				
Actual bans	22	34	26.22	2.5	26	50	31.89	3.0
Export license	6	7	0.72	0.1	9	11	14.19	1.4
Unbound	1	1	3.83	0.4				
Export tax					4	6	23.52	2.2

Source: International Food Policy Research Institute (IFPRI) database

of the deficit. By comparison, developed countries saw deficits only in rice and huge expansion of surpluses on soybeans and wheat (Table 5-5). Developing countries' higher dependence on the international markets resulted in increasing food security risks caused by international market fluctuations.

The global food supply chain has been disrupted. The global food supply chain is crucial to developing countries (Kassie et al., 2022). In 2022, the COVID-19 pandemic coupled with geopolitical tensions affected global food production, processing, trade, ports and terminals, and other logistics supply chain and trade infrastructure in different degrees. As one of the world's major food-producing areas, the Black Sea region was hit harder by the disruptions to food exports. Russia and Ukraine are important producers and exporters of wheat, barley, maize, oilseeds and oil crops, and Russia is an important producer and exporter of fertilizers, so the two countries' production and exports of grain and oilseeds are vitally important to the global food supply. The outbreak of the Ukraine crisis in February 2022 greatly affected global food security. From July 2022 when the Black Sea Grain Initiative came into force to July 2023[1], 57% of grain exports via the Black Sea went to developing countries (UN, 2023). This shows that any instability in the food supply chain around the Black Sea would send shockwaves to the global food supply and big agricultural producers' demand for fertilizer imports, with developing countries being affected most. Large international food commodity traders such as Cargill, Louis Dreyfus and Viterra stopped sourcing grain from Russia, and Archer-Daniels-Midland (ADM) scaled back part of its operations, which, to a certain extent, reduced the channels of supply for the international food market. Besides, infrastructure such as inland canals, land routes and ports in major food-exporting countries have an important impact on the international logistics corridors for exports. Geopolitical conflicts and extreme weather may

[1] Source: Black Sea Grain Initiative Joint Coordination Centre. As of July 12, 2023, 43% of the grain exports went to developed countries since the Black Sea Grain Initiative came into force. The per capita grains accessed by developed countries from the Black Sea exports are much more than that of developing countries.

Table 5-5 Changes in the international food trade balance of developing and developed countries in 1990 and 2021

Unit: thousand tonnes

Varieties		Developed countries			Developing countries		
		1990	2021	Situation	1990	2021	Situation
Cereals	Wheat	77,133	129,000	Surplus	-55,822	-126,855	Deficit
	Maize	24,178	59,381	Surplus	-18,442	-67,260	Deficit
	Other coarse grains	22,861	35,740	Surplus	-11,319	-34,252	Deficit
Oilseeds	Rice	1,439	-2,741	Deficit	51	2,520	Surplus
	Soybeans	-1,971	43,962	Surplus	6,767	-50,484	Deficit
Meats	Other oilseeds	-863	8,958	Surplus	-144	-6,905	Deficit
	Beef	-933	1,116	Surplus	307	-1,292	Deficit
	Pig meat	847	6,509	Surplus	320	-6,670	Deficit
	Poultry meat	1,278	3,242	Surplus	-456	-2,212	Deficit
	Sheep meat	361	725	Surplus	-221	-707	Deficit

Note: Trade balance = exports – imports. A positive trade balance indicates a trade surplus while a negative trade balance indicates a trade deficit.

Source: OECD-FAO Agricultural Outlook 2022-2031

impact the globally-important straits and canals, thus destabilizing the logistics channels for food.

5.1.4 Low-income populations' food affordability has declined

Global food prices are still fluctuating at high levels. The FAO Food Price Index (FFPI) indicates that the global average food price index was 126.8 in the first half of 2023, down compared with 2022, but still 33.3% higher than the pre-pandemic level in 2019, and food prices remain at elevated levels (Table 5-6). The transmission of high international food prices to developing countries, especially low-income countries and countries with high degrees of trade openness, triggered concurrent increases in domestic food prices, inflation, and the growing cost of living while suppressing demand and reducing purchasing power. The global food price crisis is not over at present (Glauber et al., 2023).

The high international food prices have had a significant impact on low-income populations in developing countries. A diet is deemed unaffordable if it costs more than 52% of a household's income (Hannah & Ritchie et al., 2023). Taking this as a threshold, up to 42% of the world's population could not afford a healthy diet in 2020, most notably in Africa and South Asia. In sub-Saharan Malawi and Nigeria, the proportion was as high as 97% and 96% respectively, and in South Asia it was 72%. It was 71% for India and 19% for Brazil, even though they are large food producers.[1] By comparison, in developed countries, the proportion was generally less than

[1] Although Brazil's figure is not high compared with other developing countries, it is not low as a large developing country, food producer and exporter. Brazil has not solved the food security issue.

Table 5-6 Global average food price indices in different periods

Major event	Year	Average food price index	Average food price index (by variety)		
			Cereals	Meats	Dairy
Last food crisis	2011	131.9	111.9	105.3	129.9
Pre-COVID-19	2019	95.1	96.6	100	102.8
First year of COVID-19	2020	98.1	103.1	95.5	101.8
Further into COVID-19	2021	125.7	131.2	107.7	119.1
Ongoing geopolitical tensions	2022	143.7	154.7	118.9	142.5
	1H 2023	126.8	137.5	115.3	124.7

Note: Take the average of 2014-2016 as the baseline 100.
Source: FAO

3.2%. By income level, the proportion in low-income countries, lower-middle-income countries, upper-middle-income countries, and high-income countries was 88.3%, 69.4%, 15.42%, and 1.4%, respectively. This led to trade-offs of eating less or not eating at all in developing countries, especially in low-income countries, and it also has a significant adverse impact on current and future food security and nutrition and health (FAO, 2022).

5.2 Multiple factors have affected global food security, especially for developing countries

In the context of deteriorating global food security, developing countries are facing even more daunting challenges due to two reasons. Internally, in many developing countries, agricultural development has remained consistently low, leading to inadequate capacity for food production, reserves and trade and low resilience against natural risks and external shocks. Externally, the negative effects of food financialization and politicization and its use as an energy source in major developed economies have spilled over; and the global food and agricultural governance is not as effective as expected.

5.2.1 The level of agricultural production and food security in developing countries is low

Most developing countries have a low level of food productivity, resulting in food insufficiency. Global food production is mainly concentrated in a small number of regions and agricultural countrie with a favorable climate, high endowment of arable land, and high agricultural productivity. Taking rice, wheat, maize and soybeans as examples, the output of the world's top five producers together accounted for 73.3%, 64.8%, 73.7%, and 82.4% of the global total production.[1] Global demand for food, however, is mainly concentrated in populous regions with relatively scarce soil and water resources, i.e., Asia and Africa. In terms of global food production per capita, with cereal as an example, North America has the highest production at 1,319.6 kg per capita, while Africa is the lowest at only 145.6 kg, the difference being 1,174 kg. The imbalance in production capacity

[1] Source: USDA, 2021.

has led to imbalance in consumption. The annual grain consumption per capita is the highest in North America at 1,053.9 kg, while Africa is the lowest at only 210.9 kg. The gap between the two is 843 kg. In terms of agricultural productivity, the situation is extremely unequal across the globe. Taking unit grain yield as an example, there is a difference of 5,390 kg/ha between North America, where the yield is 7,140 kg/ha, and Africa, where the yield is only 1,750 kg/ha (Table 5-7). In terms of self-sufficiency, regions with superior arable land per capita and high agricultural productivity have higher food self-sufficiency rates, such as Oceania, which has the highest self-sufficiency rate of 246% in 2020, and North America and Europe, at 128% and 125%, respectively, compared with 86% and 69.4% in Asia and Africa (Figure 5-5).

The low levels of agricultural development and agricultural modernization are the main reasons for food insecurity in most developing countries (Theodore W. Schultz, 1999; Hayami Yujiro & Vernon W. Ruttan, 2014). Some developing countries have lagging economic development and limited economic strength, resulting in insufficient support for agricultural development, especially agricultural infrastructure such as arable land and water irrigation, agricultural technology, and other agricultural inputs. Most developing countries lack agricultural mechanization, automation and modern agricultural equipment. The level of modern agricultural technology, especially modern agricultural biological breeding and biological pesticides, is low. They have low agricultural labor productivity and weaknesses in processing, logistics and warehousing along the agricultural supply chain and huge post-production waste and losses.[1] This is coupled with the resource constraints of too little land for too big a population, largely decentralized farming by smallholder farmers, and low preparedness for natural risks such as climate change and extreme

Table 5-7 Global agricultural factors of production and productivity by region in 2021

	Population		Arable land		Arable land per capita (ha)	Unit grain yield (1,000 kg/ha)	Share of regional GDP in global GDP (%)
	Population (million)	Share (%)	Arable land (million ha)	Share (%)			
World	7,909	100	1,388	100	0.18	4.15	100
Africa	1,394	17.63	246	17.70	0.18	1.75	2.8
Americas	1,031	13.03	340	24.49	0.33	4.68/7.14*	32
Asia	4,695	59.36	498	35.89	0.11	4.28	38
Europe	745	9.42	272	19.64	0.37	4.55	25
Oceania	44	0.56	32	2.28	0.73	2.58	2.2

Note: *North America has the highest unit grain yield at 7,140 kg/ha, compared to 4,680 kg/ha in South America.
Source: FAO and World Bank databases

[1] According to FAO estimates, annual losses on the global food value chain from production to consumption account for approximately 13.9% of the world's food production, with developing countries suffering mainly from food losses in the pre-production and post-production stages and developed countries in food consumption.

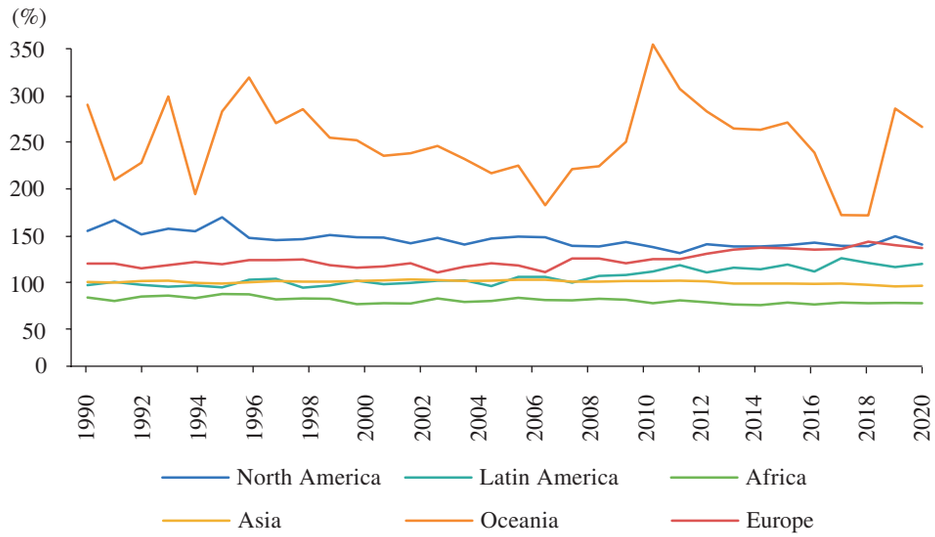

Figure 5-5 Changes in food self-sufficiency rates by region, 1990-2020

Note: Self-sufficiency rate = (production + imports - exports)/consumption.
Source: OECD-FAO Agricultural Outlook 2022-2031

weather.[1]

Most developing countries lack effective regulatory measures to deal with food security risks. Using the FAO food security threshold of 17%-18% for the stock-to-use ratio as a guide and based on OECD and FAO data, a comparison across different continents shows that Oceania's stock-to-use ratio has remained well above the line for a long time, at 58% in 2021; populous large developing agricultural countries in Asia, thanks to economic development and advances in agriculture, have gradually built up their reserves year over year as a cushion for food security and constantly enhanced Asia's overall stock-to-use ratio above the threshold; and North America and Europe have long maintained surpluses and have had stock-to-use ratios above the threshold for most years. Only Africa has consistently stayed below the food security threshold. This is because, first, most developing countries, especially low-income ones, have an insufficient food production capacity to build up their food reserves and lack effective means to regulate the market against external risks; second, their economic weaknesses mean insufficient purchasing power for food and greater vulnerabilities to geopolitical and economic shocks (Table 5-8) (FSIN, 2023).

Most developing countries are more vulnerable to external shocks. Over the past three decades, most developing countries have relied

[1] According to the *Global Report on Food Crises 2023* compiled by the World Food Programme, 12 countries are food insecure in IPC/CH Phase 3 and the number of people with insufficient food doubled in 2022 compared to 2021, an increase of 56.8 million people, due to extreme weather. These extreme weather events included persistent and devastating droughts in the Horn of Africa, tropical storms, droughts in Southern Africa, and drought in Ethiopia. A new update from the World Meteorological Organization in July 2023 forecast that there was a 90% probability of EI Niño events continuing during the second half of 2023. El Niño conditions have developed in the tropical Pacific for the first time in seven years, setting the stage for a likely surge in global temperatures and disruptive weather and climate patterns.

Table 5-8 Drivers of the food crises in IPC/CH Phase 3-5, 2018-2022

Drivers	Number of countries and population	2018	2019	2020	2021	2022
Geopolitics	Country (number)	21	22	23	24	19
	Population (million)	73.9	77.1	99.1	139.1	117.1
Economic shocks	Country (number)	6	8	17	21	27
	Population (million)	10.2	25.0	40.5	30.2	83.9
Extreme climate	Country (number)	26	25	15	8	12
	Population (million)	28.8	33.8	15.7	23.5	56.8

Note: Economic shocks include the COVID-19 pandemic in 2020 through 2021, and the Ukraine crisis in 2022.
Source: Global Report on Food Crises 2023

on imports to meet their domestic food demand because of their own production shortfalls, and the international trade deficit in food has gradually widened. At present, developing countries as a whole have long been in a food trade deficit, with the exception of rice. The trade surpluses they previously enjoyed in soybeans, pork and beef have turned into trade deficits. Besides, driven by global trade liberalization, some developed countries and agricultural powerhouses with strong international competitiveness in agricultural products have continued to export competitively-priced food and other agricultural products to developing countries and use their low-cost comparative advantage to crowd out domestic producers in developing countries with a high degree of trade openness and a less competitive agricultural sector. This has made it difficult for developing countries with weak agricultural foundations to drive up agricultural production and enhance agricultural competitiveness through market forces. Due to these two factors, developing countries have been experiencing a higher dependency on the international food market and vulnerability to international supply shocks. Volatile international food prices have had the most significant impact on the consumer price indexes for food of free-trade countries and low-income countries (Figure 5-6) (IMF, 2022).

5.2.2 The negative spillover effects of food policies in major developed economies have increased

The food financialization of major developed economies has intensified global food security risks. First, the major developed economies shifted from quantitative easing to contractionary monetary policy in 2022, resulting in accelerated currency depreciation, inflation, increased indebtedness and reduced purchasing power in low-income countries[1]. Almost all countries whose currencies depreciated sharply against the US dollar in 2022 are GRFC-identified countries and regions facing with high food security risks (FSIN, 2023). More than one-quarter of GRFC countries and regions have public debt exceeding

[1] According to the *Global Report on Food Crises 2023*, 27 countries were affected by economic shocks in 2022 (including the socio-economic impacts of COVID-19 and the knock-on effects of the Ukraine crisis), involving 83.9 million people, 2.78 times as many as in 2021.

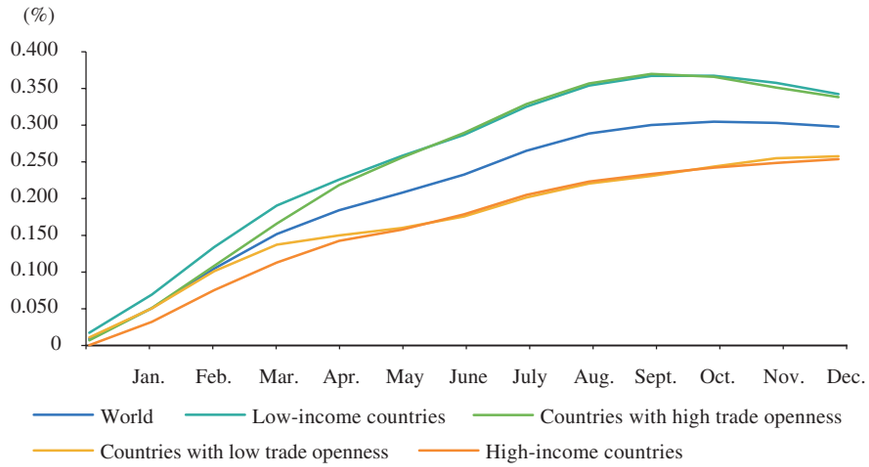

Figure 5-6 International food price shocks to the CPI for food in different countries in 2022

Source: IMF

60% of their GDP[1], and 36 out of 48 countries in the G20 DSSI experienced food crises. Second, in the midst of drastic turns in monetary policy, the financial attribute of food has become increasingly prominent; the volatility of international food prices was exacerbated by speculation in the futures markets by capital players (Han, 2022). At last, due to a long-standing oligopoly in the international markets and supply chains for food, seeds, fertilizers, pesticides and other agricultural inputs (Yang et al., 2017), the dominant market players could directly influence price trends and the ability of developing countries to produce and develop the agricultural sector[2] (Westhoff, 2011).

The use of food as an energy source by major developed economies has affected food security on both production and demand sides. On the production side, due to the elevated international prices of crude oil and natural gas in 2022, the prices of fertilizers, pesticides, gasoline and diesel required for agricultural production also increased, pushing up the cost of agricultural production and the prices of food (Figure 5-7). On the demand side, the major food-exporting countries adjusted their food-based energy policies in order to curb inflation. They accelerated the production of bio-gasoline from cereals such as maize, and bio-diesel from oil crops. This has taken up a certain amount of food available for trade and consumption from the market. At the same time, food and energy price rises triggered inflation (IMF, 2022), increasing the cost of food (Rother et al., 2023) and suppressing food demand (Figure 5-8). In 2022, all GRFC-identified countries and regions saw food price increases, among which 47 countries saw food inflation of more than 10%[3]. Between February and May 2023, food price inflation exceeded the average

[1] Source: IMF, October 2022.

[2] Major international grain traders are mainly from developed countries. They have an obvious monopoly on the international trade and markets of raw materials, fertilizers, pesticides and processed products of food and agriculture, thus being able to exert a great impact on international grain prices.

[3] Source: WFP, February 2023.

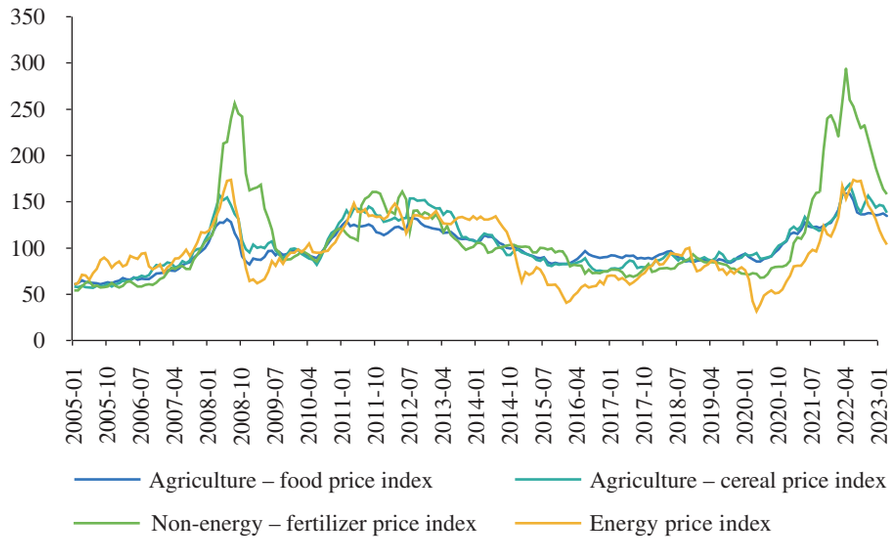

Figure 5-7 Correlated changes in international food, cereal, fertilizer and energy prices, Jan. 2005-Jan. 2023

Source: IMF

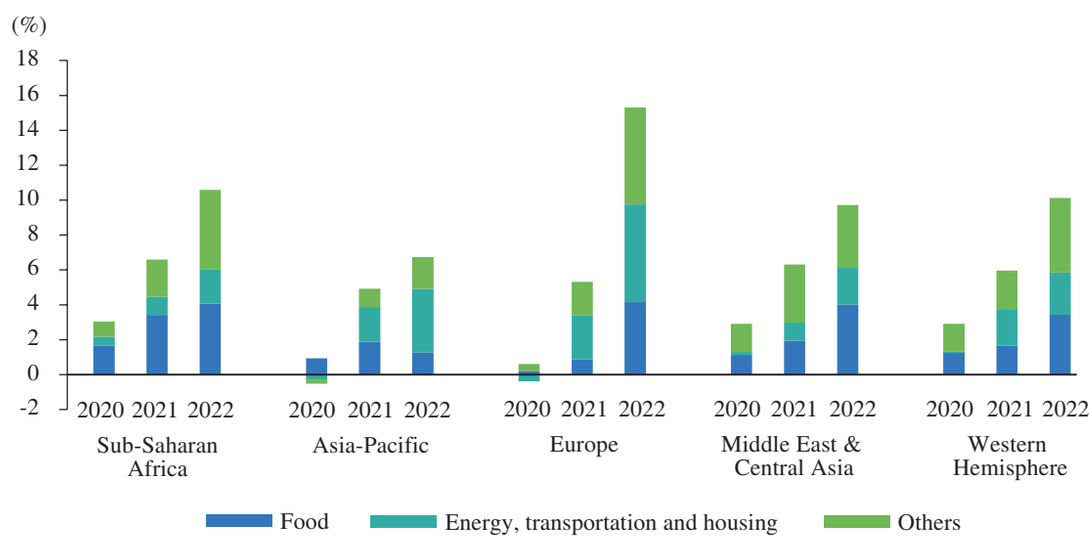

Figure 5-8 Impact of food- and energy-driven inflation by region, 2020-2022

Source: IMF

inflation in 79.8% of 163 countries globally, with Africa most affected (World Bank, 2023).

5.2.3 Food issues have been politicized and international agricultural and food trade rules are imperfect

The multilateral trade rules have been undermined. During COVID-19 in 2020 and the Ukraine crisis in 2022, the countries that introduced export restrictions did not notify the World Trade Organization (WTO) in advance, contrary to the WTO's rules of trade liberalization and facilitation. In 2022, as a result of the Ukraine crisis, although food and fertilizer exports from Russia, a major food exporter, were not directly sanctioned by the major economies, the financial and trade sanctions on Russia seriously disrupted food export (Glauber & Laborde, 2023). Food trade was increasingly politicized, instrumentalized and weaponized, seriously undermining multilateral trade rules.

The rules on domestic support for agriculture are unfair. Developed countries' first-mover advantage lies in their direct support for domestic agriculture; they have greater flexibility in providing restricted support for agriculture (Lars & Orden, 2023). They developed strong international competitiveness in agriculture very early on, while developing countries' subsidies and support for domestic agriculture, productivity enhancement and food security are forcibly bound by the current multilateral trade rules. The highlighted Matthew effect of accumulated advantage restricts the international agricultural competitiveness of developing countries.

The rules on public stockholding for food security are flawed. Under the current multilateral trade rules, the provisions for public stockholding by developing countries for food security purposes are unreasonably placed in the Amber Box. As a result, the efforts of some developing countries to build their own food stockholding programs to ensure domestic food security have been constrained and interfered with by relevant international rules.

5.2.4 The global food security governance mechanism is not smooth and less effective than expected

The global food security governance mechanism is imperfect. In 2022 the UN established the Global Crisis Response Group on Food, Energy and Finance (GCRG), which played a coordinating role in the short term. However, its programs, objectives and rules on areas such as food sovereignty, climate change, green development, international food trade, fiscal issues, finance and geopolitics were not harmonized with those of other UN agencies and other organizations (Li et al., 2022). The global food security governance has weakened (Fan et al., 2019) and the mechanism to coordinate short-term and long-term activities needs to be improved.

Coordination on food security issues in multilateral and regional governance mechanisms is inadequate. The unfair and irrational international economic and governance mechanism has long been an important reason for the underdevelopment of agriculture and food insecurity in developing countries (Amartya Sen, 2000; Hayami Yujiro & Vernon W. Ruttan, 2014). Multilateral and regional governance mechanisms such as the G7, the G20 and the OECD set up their own food security frameworks and topics which are not entirely aligned with the agricultural and food strategies and policies of developing countries. These global agendas fail to adequately respond to the most pressing need in developing countries.

The food assistance to developing countries is insufficient in size and inappropriate in modalities. In terms of funding, growth in humanitarian

aid funding lags behind the growth of the population facing food insecurity, and is thus unable to effectively address food crises and reduce food insecurity. Between 2020 and 2021, food, agriculture and livelihood aid to the 53 countries in food crisis increased by 20% to a record high of US$9.8 billion, but the number of people in "severe" food crisis increased significantly, resulting in a 40% drop in annual aid available for people in IPC/CH Phase 3 and above, from US$85 per capita in 2018 to US$51 in 2021. In terms of aid modalities, some large food-exporting countries used aid as a means to force developing countries, especially low-income ones, to further open up their food markets, and substituted short-term cash aid for the long-term, sustainable dissemination of modern agricultural technology, knowledge and expertise. "Giving fish" was often the approach used to provisionally address hunger and food insecurity issues, while "teaching how to fish", i.e., sustainable improvements in the resilience of the agricultural production system and agricultural productivity gains against natural risks, was rarely adopted (Li et al., 2020).

5.3 Jointly safeguarding global food security

In order to effectively address and eliminate food insecurity at the global, regional and national levels, the international community should prioritize food security on the 2030 Agenda, focus on key regions and difficult issues on the basis of respecting the developing countries' sovereignty and stage of development, pay more attention to and respond more quickly to the legitimate demands and urgent needs of developing countries for agricultural development and food security, work together to improve food security and supply capacity both in developing countries and globally, improve the governance system and policy framework for global food security, and enhance the resilience of the global food system for greater food security.

5.3.1 Improving developing countries' agricultural production and security levels

Sharing development experience in bilateral and multilateral forms should be promoted, with North-South cooperation as the main pillar and South-South cooperation as a supplementary pillar, to help developing countries, especially underdeveloped countries and low-income, food-deficit countries, promote modern agricultural development, increase food production and improve food self-sufficiency.

The concept of cooperative development should be upheld and developing countries helped to improve the yield of arable land and level of agricultural technology. Developing countries should improve their agricultural infrastructure such as arable land, irrigation and soil to increase the yield of arable land. Cooperation in agricultural technology innovation should be strengthened, restrictions on the transfer of high and new technology reduced, and the adoption of innovative agricultural technology promoted jointly. In particular, developing countries lagging behind in agricultural development should be helped in the research and application of large and medium-sized intelligent and multi-purpose agricultural machinery. Support for innovation in seed technology should be increased and research and application of core agricultural technologies promoted in germplasm innovation, new variety selection and breeding, and high-efficiency breeding to improve the catalytic effect of technology on food production. Additionally, cooperation on new technologies in digital

agriculture and green agriculture should be strengthened and developing countries supported to introduce modern agricultural inputs and improve their level of agricultural modernization.

Strengthening exchange and sharing of experience and knowledge, and jointly dealing with the key and difficult agricultural development issues in developing countries. Communication and cooperation should be strengthened among international organizations, governments, enterprises and social organizations to facilitate exchange of concepts, policies and knowledge. Proven practices, applicable technologies and successful experience on agricultural production and development should be shared with developing countries through workshops, agricultural technology demonstration centers, training in agricultural management and technology, and talent exchanges. Efforts should be targeted at addressing imbalanced global agricultural development and the real concerns of developing countries in terms of insufficient agricultural development in the medium and long term.

Focusing on the regions vulnerable to food insecurity, and helping enhance developing countries' food security resilience. Efforts should be made to change the food security governance mentality from "crisis reaction" to "crisis prevention". Global and regional cooperation should be strengthened to ensure food security. The concept of global food governance should be changed (Zhang, 2023). The important roles of food reserves in macro-regulation and emergency buffer should be correctly and objectively understood, politicization, instrumentalization and weaponization of food resisted, and the stockholding capacity improved.

Providing more assistance to developing countries to rectify weaknesses along the food value chain. The system of disaster prevention, mitigation and relief should be consolidated; practical experience in climate change adaptation should be shared; and resilience to climate change, extreme weather and natural disasters enhanced. An emergency reserve system backed by modern storage and transportation technologies should be built; construction of infrastructure for reserves, logistics and waste reduction should be promoted; and the capacity for using the reserves to regulate food supply and demand and manage risks should be enhanced. Market capacity building should be strengthened and efficiency and fairness of food distribution improved, along with food security for low-income groups. Collaborative research and technology development to conserve grain and reduce waste should be strengthened to reduce attrition throughout the food value chain before, during and after food production; food resource utilization should be improved; and food security should be maintained through collaborative efforts on both the supply and demand sides.

5.3.2 Preventing and controlling the negative spillover risks from food policies in major developed economies

Efforts should be made to make food commodities regain their primary attribute of meeting humanity's survival needs and encourage multinational agricultural businesses to take on greater social responsibility so as to maintain largely stable food prices.

Strengthening macro policy coordination. Major economies should maintain continuity, stability and predictability of their macro policies. The role and mandate of the IMF should be leveraged to prevent the negative spillover effects of monetary policy adjustments in developed economies. In an international monetary system centered on the US dollar, it is important to urge the US and other major developed countries to

adopt responsible macroeconomic policies and strengthen policy coordination to minimize the negative spillover effects of their monetary policy adjustments to the global food market and to prevent economic and financial systemic risks, thus protecting the fundamental right to food of developing countries, particularly low-income, food-deficit ones.

Strengthening supervision of food financial attributes. Regulation for the global futures market for agricultural commodities should be tightened. Regulatory oversight on financial derivatives, futures and options on food commodities in major food-producing and trading countries should be strengthened and review and supervision of food as a speculative commodity class should be enhanced.

Downplaying the energy attribute of food on the demand side. Priority should be given to meeting survival needs. Using food for energy production in large food-producing and exporting countries should be regulated. Energy and food policies should be further aligned. In the global food crises, large food-producing and exporting countries should sensibly curb the amount of food utilized for energy production and maximize food exports.

Persuading large multinational agricultural businesses and international grain traders to assume greater social responsibility. Diverse food market players and price hubs should be fostered to allow full competition and gradually break the oligopoly of the international food trade market. Multinational agricultural businesses and international grain traders should be persuaded to improve their public service capacity, especially in the upstream of the value chain such as breeding, agricultural inputs and agrochemicals. Trade flows in the downstream of the value chain of agricultural commodities trade should be facilitated to ensure that international food prices in the futures market at the end of the value chain are relatively stable with modest fluctuations.

5.3.3 Establishing fairer rules for international food trade

International agricultural trade rules should be improved to help developing countries achieve food security on the basis of self-reliance.

Incorporating food security into the scope of international trade rules. Food should be explicitly recognized as the most essential commodity and public good concerning the right to survival and development for humanity and exempt from the influence of geopolitics and international conflicts. The politicization, instrumentalization and weaponization of food due to geopolitics, trade tensions, unilateral hegemony and international strategy should be prevented.

Ensuring barrier-free international trade and trade corridors. The multilateral trading platform led by the WTO should be strengthened, and partnerships on commodity built to develop an open, stable and sustainable international food market and ensure barrier-free supply chains. Food export restrictions should be regulated and supervised. Open, transparent, justifiable and appropriately-scoped conditions for imposing trade restrictions should be set out, along with effective penalties and restraints for restrictive measures that go against these rules. Cooperation and consultation should be strengthened among multilateral trade organizations and international ports, logistics platforms and adjacent countries along key international trade corridors. Multilateral and bilateral economic and trade cooperation mechanisms should be established to ensure the smooth flow of food trade and barrier-free corridors and enhance the resilience of the global food supply chain.

All relevant countries' national food security objectives should be taken into account in the reform of multilateral trade agreements. Efforts should be made to include public stockholding for food security purposes in developing countries, especially in net food-importing countries and low-income countries, in the Development Box or Green Box policies appropriate to these countries' stage of development.

Promoting diversified and balanced development of the international food market. A global or regional cooperation network or alliance of food-importing countries should be established to improve their collective bargaining power in the global food market.

5.3.4 Improving the UN-centered global food security governance mechanisms

Coordination of the main bodies of food security governance should be strengthened and the inclusiveness, fairness and effectiveness of the global food security governance system should be enhanced.

Improving the UN-centered global food security governance mechanisms. The work of the UN GCRG and the three UN agencies on food and agriculture should be supported and their coordination strengthened under the UN framework. The international food security governance framework should be improved. Collaboration should be enhanced among international institutions working on food sovereignty, climate change, international food trade, finance, fiscal and geopolitical issues in times of global food crises. The goal of maintaining and enhancing global and national food security should be incorporated in the setting of food security agendas and the formulation of agricultural and food strategies and policies. Efforts should be made to ensure that the various institutions and platforms make joint contribution, form consensus, and act in concert. Incentives should be fully utilized while authority of the UN-centered mechanisms on food security governance should be enhanced.

Strengthening cooperation between the UN and other multilateral and regional mechanisms, and avoiding fragmentation and duplication of mechanisms. Multilateral and regional mechanisms should provide necessary support in food production, storage, investment and technology. The multilateral mechanisms such as the G20 and the existing mechanisms such as the agriculture ministers' meeting under the regional framework should be better utilized and the coordination of the multilateral mechanisms such as the G7 and the UN agencies strengthened to avoid conflicting policies that may lead to ineffective governance and other problems.

Enhancing the emergency response to global food crises. The system for identifying risks and crises in global food security based on the UN GCRG should be optimized. The early-warning signal identification mechanism for global food crises based on big data of food production, stockholding and trade across the globe should be improved. The sources of risk, the intensity of crises, and the specific causes of food insecurity in the world should be examined so that more targeted and effective emergency response actions such as food aid will be taken.

Multilateral financial institutions should play their role in maintaining global food security. The IMF, the World Bank and other international financial institutions, as important financiers of low- and middle-income countries, should prioritize support for economic stability and growth of low-income, food-deficit countries and for industries that create jobs for low-income groups, so as to improve their food affordability. Investment

should be increased in the construction of cross-border corridors for food trade and logistics infrastructure to facilitate the free flow of international food trade. Investment in the agricultural development of low-income, food-deficit countries should be increased.

Optimizing the modalities of assistance to developing countries, especially low-income, food-deficit countries. For developing countries, especially net agriproduct-importing countries and low-income, food-deficit countries, measures should be taken to address both the immediate food security challenges and the root causes. In the short term, food aid could be provided, for example, through donations and concessional loans, and timely emergency humanitarian aid provided to countries suffering from food crises. In the long term, in-kind and technical assistance such as fertilizer, agricultural machinery and irrigation technology that can help stimulate food production should be increased and help for those vulnerable countries continued to build lasting, climate-resilient agricultural development systems and enhance their self-reliance. Food aid should not be politicized. Monitoring and evaluation of international food aid programs should be strengthened to ensure that food aid matches the needs of the recipient countries.

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Chapter VI

Working Together to Improve Public Health and Wellbeing

Health, the core of people's wellbeing, is an important foundation of global economic and social development. But global health today faces grave imbalance and inadequacy caused by an unsound global healthcare system, increasing inequality in medical resources because of the "digital divide", the gap between the ideas and practice in the Health in All Policies, and the shortages and deficiencies in global health governance. The COVID-19 pandemic has severely impacted life security and human health, as well as socioeconomic development and global governance. It will not be the last public health crisis, and global health challenges are far more than pandemics. The only way out is to increase cooperation and accelerate action, increasing the inclusiveness and resilience of health systems, improving global health governance, jointly building a global community of health for all, and collaboratively creating a better future for human health.

6.1 Imbalanced and inadequate development of global public health

6.1.1 The COVID-19 pandemic has triggered serious life and health consequences

Both COVID-19-related mortality and the number of long COVID patients are rising. As of August 17, 2023, the pandemic had resulted in 769.8 million cases of infection and directly caused more than 6.95 million confirmed deaths worldwide (WHO, 2023a). It is estimated that global excess deaths attributable directly and indirectly to COVID-19 may be three times as high, or more than 20 million (Figure 6-1). A study calculating the years of life lost across 81 countries by January 2021 due to deaths attributable to COVID-19 found that over 20.5 million years of life have been lost globally (Pifarré i Arolas H. et al., 2021). It is estimated that at least 65 million people worldwide are suffering from long COVID, or 10% of the infected will have long-term sequelae (Davis H. E. et al., 2023), especially new chronic fatigue syndrome and dysautonomia, which are likely to be lifelong.

The pandemic caused a decline in global life expectancy. According to statistics, in 2020 when the pandemic was at its worst, average life expectancy dropped across the world. Although it recovered somewhat in 2021 in many countries, it generally did not return to the pre-pandemic level, and in some countries fell even below the 2020 level (Figure 6-2).

The health and wellbeing of vulnerable groups face significant threats. Vulnerable groups exhibit higher infection and death rates. People such as the poor, the elderly, those with disabilities, those with chronic diseases, and ethnic minorities usually face higher risks of infection and death (UN, 2021). This difference is not due to physiological factors but living conditions, occupation, socioeconomic status and access to health care. The pandemic also negatively impacted the mental health of children and youth. Between March 2020 and May 2022, worldwide 10.5 million youngsters aged below 18 lost a direct caregiver to COVID-19 (WHO, 2023b). Infant immunization coverage fell from 86% in 2019 to 83% in 2020 (UN, 2022a). An estimated 25 million children under the age of one did not receive basic vaccines in 2021, the highest number since 2009. In addition, the number of children missing out on one or more vaccinations in 2021 increased by 5 million compared with 2019 (UNICEF, 2023a).

Services for the prevention and control of other infectious diseases were disrupted. In 2020, as many as 73 countries experienced barriers

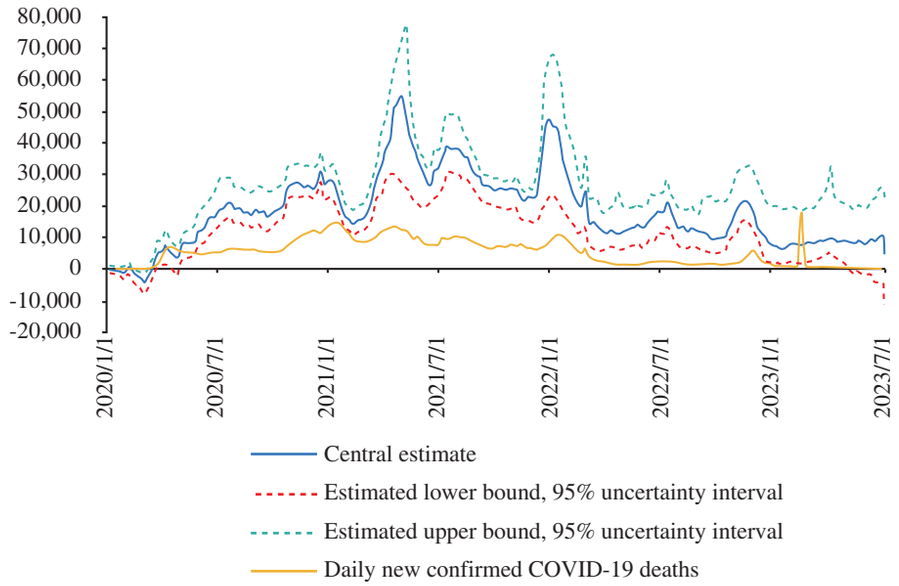

Figure 6-1 Estimated global daily excess deaths

Note: The excess deaths refer to the difference between the number of deaths that have occurred and the estimated number of deaths based on data from previous years in the absence of a pandemic. It includes deaths directly (due to illness) or indirectly (due to the impact of the COVID-19 pandemic on health systems and society) associated with COVID-19.
Source: Our World in Data

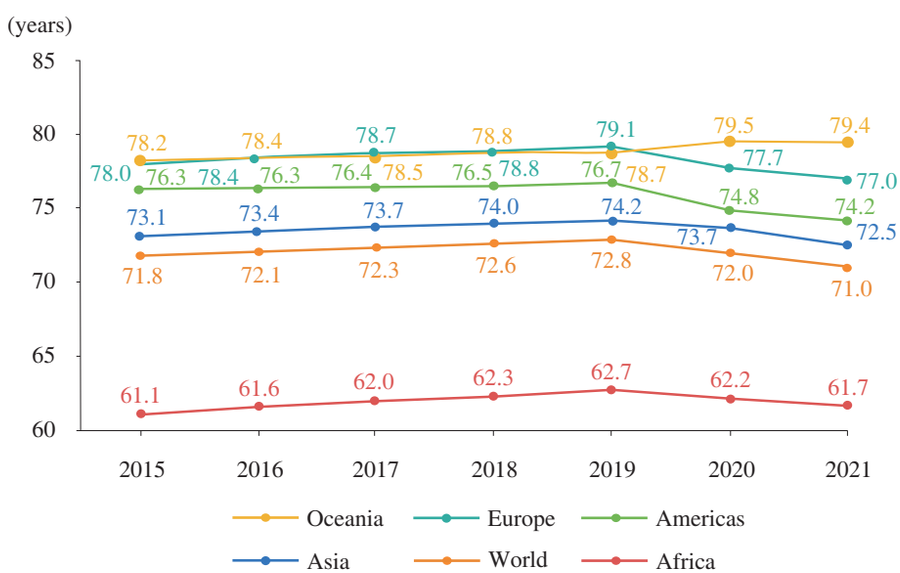

Figure 6-2 Average life expectancy by continent, 2015-2021

Source: Our World in Data

and interruptions to treatment services, affecting about 17 million HIV-positive people (Chow E. P. F. et al., 2020). Progress in AIDS and TB response stagnated, resources dwindled and millions of lives were at stake under the combined impact of COVID-19 and other global crises (UNAIDS, 2022). In 2021, 10.6 million people contracted TB, up by 4.5% from 2020. Between 2020 and 2021, patients with drug-resistant TB (DR-TB) increased by 3% (WHO, 2022a). This was the first time in many years that an increase in both the number of TB patients and DR-TB patients was reported. In addition, 30%-40% of malaria-endemic countries reported that malaria diagnostic and treatment services were also affected to some extent. Malaria killed 627,000 people worldwide in 2020, with an estimated 241 million cases of infection; about two-thirds of the deaths were due to service disruption during the COVID-19 pandemic (UN, 2022b).

Challenges posed by noncommunicable diseases (NCDs) and mental health have increased. Nearly half of the world's countries reported one or more disruptions to basic services for NCDs during the COVID-19 pandemic. This, in the long term, may lead to complications in people with NCDs or associated risk factors, and hence increased deaths. The pandemic also had a serious impact on the mental health of people around the world. Incidences of anxiety and depression increased by 25% worldwide in 2020.

6.1.2 Global health systems face grave challenges

The supply and utilization efficiency of health services has decreased. The COVID-19 pandemic put sustained pressure on global health systems and severely affected health service supply. At the peak of the pandemic, medical institutions and related services were overloaded, suffering severe shortages of personnel and materials (Myers and Liu, 2022), delivering significantly fewer services in total. Compared to the pre-COVID levels, global health services as a whole declined by 37% during the pandemic, with 42% reduction in visits, 28% in admissions, 31% in diagnostics, 30% in therapeutics (PWC, 2021), 18% in the average number of visits per doctor per day (Table 6-1), and 15% in discharges. The discharge figure dropped as high as over 20% in some countries. There was also a decline in hospital bed utilization and average length of stay, two indicators of hospital bed efficiency. Compared with 2019, the bed utilization rate declined across countries in 2020 and it even decreased by more than 20% in some countries (Table 6-2), with varying degrees of increase in patients' average length of stay (Table 6-3).

Progress on universal health coverage (UHC) has nearly stalled. Achieving UHC is crucial to improving access to essential health care for people of all countries and its affordability. COVID-19 has almost undone years of efforts towards UHC. From 2015 to 2019, the UHC Service Coverage Index[1] showed a steady upward trend. Since the outbreak of COVID-19, UHC progress has basically stalled globally and regionally, with even a downward trend in Africa (Figure 6-3).

Healthcare workers have suffered a heavy blow. COVID-19 has had a profound impact on healthcare workers around the world. The WHO estimated that 180,000 healthcare workers worldwide might have died from COVID-19 between January and May of 2021. The International Council of Nurses reported that the pandemic had exacerbated the existing shortage of nurses.

[1] The UHC Service Coverage Index (SDG Indicator 3.8.1) was developed by the WHO, with a maximum score of 100. The index has increased from 45 in 2000 to 68 in 2019.

Table 6-1 Average number of patients seen by a doctor per day by country, 2015-2020 Unit: person-time

Country	2015	2016	2017	2018	2019	2020
Australia	6.8	7.0	7.1	7.3	7.3	6.8
Germany	10.0	10.0	9.9	9.9	9.8	9.5
Italy	9.6	9.9	10.1	10.3	10.4	5.2
China	8.4	8.3	8.2	8.0	8.1	6.8
ROK	16.6	17.1	16.7	16.9	17.2	14.7
Mexico	2.7	2.6	2.5	2.4	2.3	2.1
Norway	4.3	4.4	4.5	4.5	4.4	3.7
Slovakia	11.3	11.4	10.9	10.9	11.1	10.1
Türkiye	8.4	8.6	8.9	9.5	9.8	7.2
Brazil	2.6	2.4	2.3	2.0	2.0	1.4

Source: OECD

Table 6-2 Hospital bed utilization rates by country, 2015-2020 Unit: %

Country	2015	2016	2017	2018	2019	2020
Canada	91.6	91.8	91.6	91.7	91.6	82.7
France	75.3	75.6	75.7	75.7	75.9	69.9
Germany	79.8	80.2	79.8	79.1	78.9	69.6
Italy	78.9	77.5	78.9	78.7	78.1	67.7
China	79.5	79.8	79.7	78.8	78.0	67.7
Japan	74.5	74.8	75.5	75.8	76.1	71.2
Mexico	78.0	72.3	75.9	73.4	74.1	56.7
The Netherlands	65.0	66.3	65.4	63.8	63.7	59.6
Portugal	80.9	81.7	82.6	82.0	82.0	74.1
Türkiye	68.8	67.3	67.4	66.1	65.5	52.2

Source: OECD

Table 6-3 Average patient length of stay by country, 2015-2020 Unit: day

Country	2015	2016	2017	2018	2019	2020
Denmark	5.5	5.4	6.0	5.5	5.7	5.4
France	8.8	8.8	8.8	8.8	8.8	9.1
Germany	9.0	8.9	8.9	8.9	8.8	8.7
Japan	29.1	28.5	28.2	27.8	27.3	28.3
ROK	17.9	17.4	18.4	19.1	17.9	19.1
Mexico	4.2	4.0	4.3	4.5	4.4	4.9
Türkiye	3.9	4.0	4.1	4.2	4.2	4.5
Brazil	5.4	5.4	5.2	5.2	5.1	5.2
China	9.6	9.4	9.3	9.3	9.1	9.5
South Africa	6.2	6.2	6.2	6.0	6.1	5.9

Source: OECD

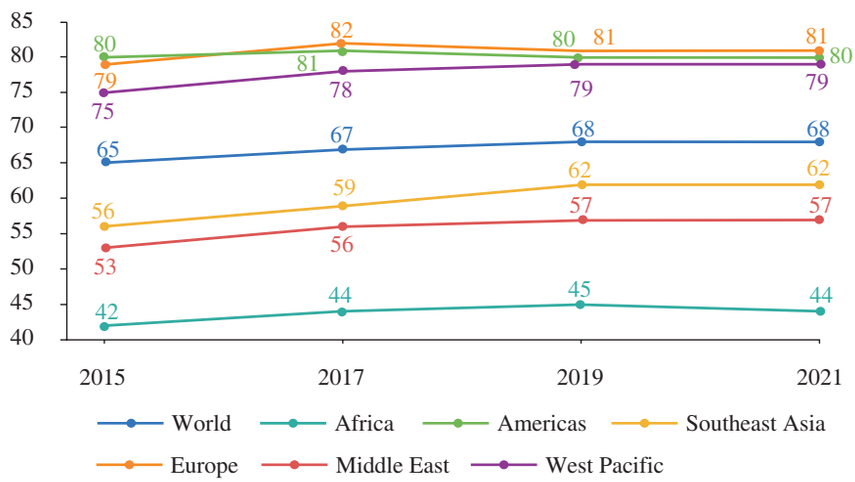

Figure 6-3 UHC Service Coverage Index by region, 2015-2021

Source: WHO

The surge in critically ill patients and mortality have had a serious impact on the mental health of healthcare workers (Africa Europe Foundation, 2022).

6.1.3 Inequalities in access to healthcare services and resources have exacerbated

Inequality in access to COVID-19 vaccines. COVID-19 vaccines play a crucial role in reducing mortality and infection in the pandemic, but vaccine access problems persist. There is a clear gap between low-income and high-income countries in COVID-19 vaccination. As of June 2023, 72.96% of people in high-income countries had received at least one dose, compared with 34.27% in low-income countries (WHO, 2023d). Geographically, most countries with low vaccination coverage are in sub-Saharan Africa. In countries such as Burundi, the Democratic Republic of the Congo and Chad, less than 1% of the population is fully vaccinated (UN, 2022a). The "vaccine gap" made the COVID-19-related death rate in low-income countries four times higher than that of high-income countries (UNDP, 2023).

Severe inequality in COVID-19 diagnostics and therapeutics. Regarding diagnosis, as of March 2022, only 0.4% of the 3 billion diagnostic tests performed globally happened in low-income countries (Balakrishnan, 2022). Regarding treatment, by November 2022, only eight low-income countries had access to oral therapeutic treatments (UNICEF, 2023b).

Inequality in healthcare human resources. Access to primary health care is constrained by the size of the health workforce. Estimates show that the global shortage of health workers fell from 20 million in 2013 to 15 million in 2020 and is expected to fall to 10 million by 2030. Despite the significant increase in the global health workforce, the proportion of health manpower in regions with the highest burden of disease remains the lowest. Statistics for 2014-2021 show that the WHO European region had the highest health worker densities for medical doctors, nursing and midwifery personnel, and dentists at 36.6, 83.4 and 6.2 per 10,000 population respectively. The lowest health worker density was in the WHO African region, with only 2.9 medical doctors and 12.9 nursing and midwifery personnel per 10,000 population (Figure 6-4). At least 55 countries are facing acute shortage of health workers, and 37 of them are in Africa (UN, 2023). The challenge posted by health worker shortage is especially acute in rural and remote areas.

6.1.4 Developing countries face mounting pressure in health financing

Investment in health has increased sharply due to the COVID-19 pandemic, but developing countries suffer problems of inadequate health expenditure. Global health expenditure accounted for 7.1% of GDP in 2020, up 9.6% from the previous year; government expenditure on health reached 10.68% of total health expenditure[1], up 2.2%. In Africa, Southeast Asia and Central Asia, government spending on health did not reach the global average[2]. Per capita health spending in Africa and Southeast Asia was well below the global per capita level, being just 4% of the European level, making it hard for them to cope with health challenges such as the COVID-19 pandemic. There is a wide gap between developing and developed countries in the total and per capita

[1] In addition to government expenditure, there are also social and personal expenditures in health expenditure.

[2] Health expenditure in Africa accounts for only 5.49% of GDP, and government health expenditure accounts for only 7.29% of total health expenditure.

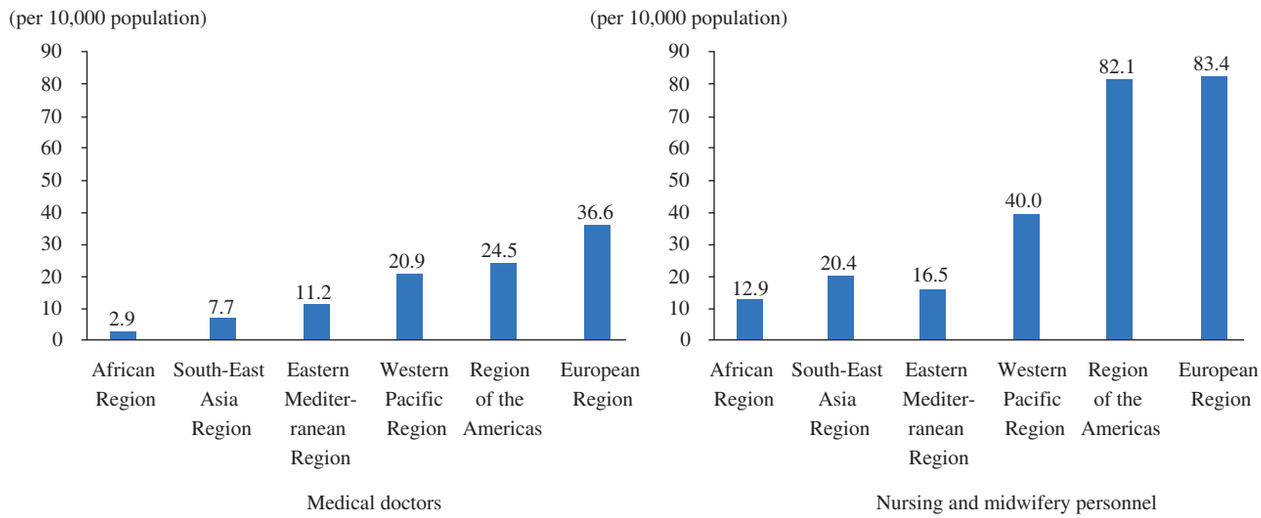

Figure 6-4 Numbers of doctors and nurses/midwives per 100,000 population, 2014-2021

Source: World Health Statistics 2023

health expenditure related to COVID-19 infection. Zimbabwe, for example, spent US$39 million on COVID-19 infection, while Canada spent US$22.728 billion; Ethiopia spent US$1 per capita, while Germany spent US$250 (WHO, 2023c).

The proportion of COVID-19 health spending to total health expenditure is high in developing countries, with considerable spending on vaccines. While the increase in healthcare costs resulting from the COVID-19 vaccination program is globally widespread, the pressure is more pronounced in low-income countries (UNDP, 2021). High-income countries must increase health spending by an average of 0.8% to cover the cost of vaccinating 70% of the population, while low-income countries have to increase it by an average of 56.6% for that purpose (UNDP, 2023). Furthermore, since only a limited number of countries have the capacity and infrastructure to develop and produce vaccines, there is a risk of supply shortages and uneven regional distribution due to overconcentration of production sites. Lower-middle-income countries pay a higher price for COVID-19 vaccines than high-income countries. Low-income countries spend just US$41 per person per year on health, and the COVID-19 vaccines, coming at a delivery cost of US$3.7 for two doses each person, represent a significant financial burden for them (WHO, 2021b).

Developing countries' health financing capacity has declined. The COVID-19 pandemic has had a huge impact on the global economy, crippling countries' health spending ability. It is projected that by 2027 government spending will remain below pre-pandemic levels in 41 countries and regions, severely limiting their ability to invest in health. Additionally, some countries' capacity to invest in health has been further weakened by the high interest they have to pay on public debt. By 2027, interest payments are estimated to reduce health spending capacity by an average of 7% in low-income countries, 10% in lower-middle-income countries and by as much as 15%-30% in some countries. The decline in government spending will make it difficult for many developing countries to prevent and control pandemics of infectious diseases, thereby slowing UHC progress, exacerbating inequalities among

countries and jeopardizing global health and security (Kurowski et al., 2022).

Global health financing has suffered a huge deficit. The G20 High-level Independent Panel estimated that the total global annual financing need for creating a global Pandemic Preparedness and Response architecture is at least US$31 billion and the current financial gap is US$10.5 billion per year (WHO & World Bank, 2022). Developed countries have failed to fulfill their ODA commitments for a long time, and the global economic recession can lead to further sharp cuts in aid budgets, widening the health financing gap. Amidst the global macroeconomic downturn, countries find it difficult to meet co-financing requirements for HIV and immunization programs, among other health services. Health financing difficulties will make it difficult for recipient countries to meet health challenges and even create larger health crises, further stretching limited donor resources (Glassman A. et al., 2023).

6.1.5 Climate change has increased health risks

Climate change is one of the major threats to human health. More than 13 million people worldwide die each year from avoidable environmental causes[1]. Climate change and extreme weather conditions increase the risk of infectious diseases. For instance, extreme weather and climate have led to the displacement of growing numbers of people in Africa, Asia, and North, Central and South America (IPCC, 2023), increasing the incidence of TB in vulnerable countries and regions (Maharjan B. et al., 2021). Malaria will spread to higher latitudes in Africa, Asia and North, Central and South America as a result of climate warming (Tanser F. C. et al., 2023). The incidence of dengue fever is likely to increase with climate change and continued rapid urbanization (WHO, 2021a). The geography of schistosomiasis will gradually expand. Climate change and induced migrations and development of global trade and tourism have led to an increase in the incidence of zoonotic diseases, which may cause another global pandemic. It is estimated that 75% of emerging viral infections are of zoonotic origin, with the Zika virus, Ebola virus and others likely to have come from animals (Leifels M. et al., 2022).

6.2 Multiple factors behind global health challenges

6.2.1 The global healthcare system needs to be improved

UHC remains a long way off. The social security system should ensure equitable access to medical services, and prevent vulnerable groups from falling into poverty due to illnesses or disasters. The world was far from meeting the targets under SDG 3 or the goal of extending health coverage to additional 1 billion people by 2023, and the paths to achieving UHC varied widely across regions and countries and their progress differed. The UHC Service Coverage Index (service capacity and access) averaged 68 globally in 2021, with Europe (81), the Americas (80) and the Western Pacific Region (79) achieving the highest and Africa at 44 scoring the lowest. It began a

[1] These causes include the accelerating climate crisis, air pollution, inadequate sanitation and clean water, exposure to chemicals and radiation, and unsafe urban environments.

downward trend after the COVID-19 outbreak[1].

Developing countries lack basic social security coverage. If the impact of the COVID-19 pandemic is not taken into account, given the current rate of progress in health coverage and catastrophic health expenditure by households[2], projections indicate that by 2023, only approximately 270 million people will have access to essential health services and 730 million people will face the burden of catastrophic out-of-pocket health expenditures. The COVID-19 pandemic has increased catastrophic health expenditure by households, exacerbating poverty in many affected communities. In lower-middle-income countries, a higher proportion of households have given up health care because of financial difficulties. Nearly 19% of households in a sample of 39 lower-middle-income countries reported being unable to access needed health services, according to a World Bank survey. Financial constraints are the predominant barrier to accessing health services, as revealed in the survey.

Global emergency preparedness is inadequate. Despite the lessons learned from transboundary outbreaks of SARS, MERS, Ebola and other epidemics in recent decades, the initial outbreak of COVID-19, characterized by its suddenness and unprecedented severity, clearly surpassed humanity's existing knowledge and capacity to respond effectively. The health systems in nearly all countries were overwhelmed, experiencing shortages of essential equipment and unprecedented shocks. These issues have exposed global weaknesses in public health response capacity, stockpiling and coordination and international cooperation. Surprisingly, the COVID-19 pandemic prevention and control outcomes have shown that they are not directly determined by past evaluations of a health system's performance and capacity. Some countries with high-performing health systems, comprehensive infrastructure and significant technical expertise and investment experienced the highest rates of COVID-19 morbidity and mortality. This reality demands a critical reexamination of the performance and resilience of both global and national health systems.

6.2.2 The digital divide has led to greater disparities in health resources

In general, digital transformation is beneficial for the global response to health issues, but the uneven development of digital technology and the digital economy also poses challenges to global health. Against the backdrop of the digital divide, rich countries and high-income groups have more opportunities to enjoy the health benefits brought by new technologies, while developing countries and the poor find it difficult to reap them (Center for Global Health Inequalities Research, 2020), widening the health resource gap between countries and people (Saeed and Masters, 2021).

The digital divide has widened the gap in accessing to health information. Individuals or regions not covered by digital technology lack crucial health information or may be exposed to incorrect or false information, leading to delayed

[1] The SDGs emphasize achieving universal health coverage, including financial risk protection, access to quality essential healthcare services, and access to safe, effective, quality and affordable essential medicines and vaccines for all (SDG Indicator 3.8.1). Monitoring and evaluating progress in UHC is crucial for implementing this target, and to this end, the WHO monitors indicators such as UHC Service Coverage Index, and household budget-related medical expenditures at the global, regional and national levels. Monitoring indicators cover the following categories: reproductive, maternal, newborn, and child health; infectious diseases; non-communicable diseases; service capacity and accessibility.

[2] Catastrophic health expenditure (CHE) is defined as medical and health expenses paid in cash by households as a ratio of household consumption exceeding a certain level.

treatment or ineffective interventions. In contrast, communities and individuals with access to health information can respond more effectively to illnesses, especially infectious diseases.

The digital divide has resulted in disparity in medical expertise. Digital tools and methods can enhance the skills of health workers and expand their reach, helping to address the shortage of healthcare professionals. However, the digital divide has made impoverished regions unable to access the digital tools that could significantly supplement health services.

The digital divide has led to disparity in accessing medical products and interventions. Digital tools and methods can streamline supply chains and improve data forecasts, addressing supply shortages. For example, the Electronic Logistics Management Information System ensures proper stock levels and efficient medicine dispensation. However, regions without digital technologies face potential mismatches between need and supply or delivery delays.

The digital divide has produced disparity in public health services. Digital technologies may seriously underestimate the size of vulnerable communities when data is not available, resulting in inequities in diagnostics and health services. Some old and young people or groups unable to use digital tools face difficulties accessing services through digital tools due to challenges in obtaining their health data.

The digital divide has brought disparity in support for catastrophic medical costs. Health insurance and government digital financial services can protect individuals and families from falling into poverty due to illness, and are important protections for individuals and families. However, those without bank accounts or unable to use digital tools often lack access to such protection (WEF, 2021).

6.2.3 Global health governance suffers from deficiencies

The WHO's role in leading global health governance needs to be enhanced. A strong, neutral and professional multilateral institution that transcends national borders is essential to effectively lead and coordinate actions in tackling a global public health crisis. In the response to COVID-19, the WHO played an important role in the prevention and control of global outbreaks through its leadership and management, supply of global public goods, preventive and surveillance actions, global mobilization and solidarity. But it now faces multiple constraints, such as weakened decision-making capacity due to funding problems.

Other key multilateral organizations on global health governance also face multiple challenges. In the past years, particularly in the context of the response to COVID-19, the G20, the World Bank and other multilateral organizations played an active role in global health governance and financing agenda-setting and promoting solidarity among the members in the fight against the pandemic. For instance, during the pandemic, the G20 held a special summit on the response to the pandemic as well as a global health summit. It also held a joint meeting of its finance and health ministers to discuss global health governance and financing, and proposed to establish a pandemic fund in the World Bank to strengthen the capacity of developing countries to prevent and respond to pandemics. MDBs such as the World Bank also made important contributions to global health financing. However, multilateral global health organizations also face many challenges as they participate in global health governance, such as insufficient representation and voice of developing nations, and ineffective implementation mechanisms.

Role of non-state entities is increasing, but the coordination with other governance mechanisms needs to be improved. In global public health governance, charities and specialized organizations outside the formal state system are playing a bigger role. Non-state entities such as the Gates Foundation, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and GAVI, the Vaccine Alliance, typically focusing on one or multiple global health governance issues, are capable of achieving their goals reasonably fast thanks to their expertise, clear objectives, adequate funding, financial transparency and auditability. They are increasingly valued by developed countries and international institutions as key global health partners. Their work, however, is often influenced by donor countries and institutions, and multiple actors and conflicting or overlapping priorities can impact their agenda-setting and consequently, fail to form a synergy.

6.3 Jointly building a community of health for all

Protecting global health and establishing an efficient and sustainable global public health system for the benefit of all is an urgent issue. At this critical juncture in history, all stakeholders must come together to build a global community of health for all through collective efforts, adhering to the principle of putting the people and life first, effectively protecting everyone's life and health, and respecting the value and dignity of all life. It is only through this unified approach that the international community can effectively confront global health challenges, triumph over pandemics that threaten human security, and jointly protect human health (Box 6-1).

Box 6-1 China and the US fought Ebola together in Africa

During the Ebola outbreak in West Africa, Chinese medical workers and public health experts worked with their US counterparts to combat the epidemic, showcasing a remarkable example of international anti-epidemic cooperation. In Sierra Leone, personnel from both countries worked together in a Chinese laboratory. In Liberia, the US Air Force provided large forklifts so that critical Chinese emergency supplies could be unloaded. Additionally, the US offered to extend medical treatment and transportation services to potentially infected Chinese individuals.

The two countries also worked closely in research and production of Ebola therapeutics and vaccines. American company Mapp Biopharmaceutical developed ZMapp, an Ebola treatment drug, but its production was constrained by technical and equipment limitations, preventing a swift response to the crisis. To address this, the PLA Academy of Military Medical Sciences and Chinese company Mabworks Biotech, after obtaining permission from the intellectual property rights holder of ZMapp, modified the technical process to develop MIL-77, a drug suitable for large-scale production. MIL-77 was procured in substantial quantities by the non-profit organization Doctors Without Borders and widely distributed in the areas affected, significantly contributing to the control of the epidemic. Mapp Biopharmaceutical and Mabworks Biotech later signed an agreement for MIL-77 to be marketed worldwide (excluding China).

Source: The Carter Center

6.3.1 Continuing major infectious disease prevention and response

Working together to mitigate the COVID-19 impact. Countries and regions must adhere to science-based prevention and control strategies, adopt a comprehensive approach of medical and non-medical measures, and carry out prevention and control in accordance with ways and means that can be effectively promoted in each country and region. They must optimize and adjust prevention and control strategies and means in accordance with the characteristics of the occurrence and development of epidemics, based on the principles of scientific precision and according to the times and circumstances. They must also address the "immunization gap", recognizing COVID-19 vaccines as a global public good, and ensuring its equitable and just distribution worldwide. International cooperation should be promoted in research, development and utilization of medicines and vaccines for mutant strains. Affordable and effective COVID-19 medicines and vaccines should be made accessible to countries.

Keeping emerging infectious diseases under constant monitoring. Global and regional emergency surveillance systems should be improved through joint efforts and the regional resources of different parties should be effectively coordinated and managed. Monitoring and control of infectious animal sources of zoonoses should be reinforced, and national and regional animal disease surveillance capabilities and infrastructure strengthened. Technical cooperation and policy coordination on health security should be increased, community resilience promoted and more effective prevention and response measures explored. Supervision of food markets and food supply chains should be strengthened. The risks of new or emerging infectious disease outbreaks should be assessed. Collaboration should be maintained on research, surveillance and experience sharing on the link between plant/animal use and the risk of emerging epidemics, and the relationship between biodiversity loss and infectious disease outbreaks should be explored.

Global cooperation on vaccine and drug research and development should be accelerated. Global joint research and development centers should be established for vaccines and medicines, as well as technology transfer centers and joint research laboratories. There should be collaboration on research and development of vaccines and medicines for emerging infectious diseases and a network of epidemiologists to promote cross-border exchanges and visits. Enterprise-university-research institute cooperation and public-private partnerships should be strengthened.

Emergency reserves and resource mobilization system should be enhanced. First, the speed of response to public health emergencies should be accelerated, global and regional reserve and transport mechanisms for medical emergency supplies set up, and emergency medical reserve centers established with features such as rapid responsiveness, accessible distribution, and 24-hour readiness for immediate deployment. Regional alliances for information sharing, reserve enhancement, unified distribution and standardized coordination should be promoted. Second, public-private cooperation and temporary production capacity should be promoted. Industrial and logistics parks should be leveraged to deepen production capacity cooperation and promote localized production, and developing countries' temporary production of medical emergency supplies and emergency response capabilities enhanced. Third, there should be cooperation on health emergency training and developing emergency response workforces while tailored training courses and

simulation exercises based on the specific needs of individual countries and regions should be designed.

6.3.2 Building a more resilient and equitable UHC system

UHC needs to be accelerated. More effort should go into enhancing the accessibility and affordability of public health services and basic medical services. It is imperative to ensure equitable access to healthcare services for all population groups and bridge the gap in health inequalities, particularly among vulnerable groups and those with lower socioeconomic status. This approach will help mitigate the risk of these groups falling into poverty due to illness. To address the burden of NCDs, it is essential to expand the range of diseases covered by health services and health insurance.

The primary healthcare system needs improvement. To promote the resilience of the public health system, it is vital to establish a health emergency response system that integrates routine service and emergency with emphasis on disease prevention, and to coordinate public health services and basic medical services. Upgrading medical service facilities should be a key area of focus, particularly community-level medical and health service facilities. Demographic forecasts and evaluations for different countries and regions should be given a crucial role in providing tailored medical and nursing services for senior citizens in various localities.

The health workforce needs to be future-oriented. There should be greater investment in the education of health professionals, who should be given enhanced protection and support, and medical education and health programs should be aligned with demographic changes, so that there will be a steady and reliable supply of well-trained health workers. Health workers' employment rights and interests should be protected, wage equality among different genders and groups promoted, their mental health promoted, and community services and support strengthened.

Domestic health financing should be scaled up. Countries must recognize the significance of good health for sustainable human development and prioritize health financing in their budgets. Access to essential health services, such as child immunization, prenatal care, and the management of infectious and noncommunicable diseases, should be guaranteed. Improving the management of public finance is essential, and countercyclical regulation must be implemented in the health system to ensure medical service coverage and basic welfare for the poor and vulnerable. To achieve these objectives, innovative health financing mechanisms should be explored, and public-private partnerships strengthened. Moreover, increased investment and financing in health infrastructure, health workforce and public health products are crucial for advancing the healthcare system.

6.3.3 Tapping the full potential of digital health technology

Information infrastructure should be enhanced to ensure the sustainability of new technology applications. Countries should prioritize the development of new information infrastructure. Developing countries need to enhance communication technology and infrastructure, closing gaps in digital production capacity and digital technology. It is essential to establish laws and regulations on personal information security and privacy protection, accelerate the universal coverage of digital health care and implement digital health solutions. Cross-border research and development cooperation in digital medical technology should be encouraged, protection of intellectual property legislation on digital medicine accelerated, and joint

research on digital medical technology promoted.

Digital empowerment of biomedical research and development should be advanced to promote accessibility and affordability of new medicines. Countries should proactively expand the application of AI technologies in pharmaceutical research and development, fostering a deeper integration of the internet and biomedicine. Leveraging digital tools in drug development can significantly reduce the time and costs associated with research and development. It is imperative to accelerate efforts in AI pharmaceutical technology development and application, as this will reduce the overall cost of new drug research and development and improve accessibility and affordability of medicines.

A protection mechanism should be established for the application of digital technology. Countries must enhance their top-level design in the application of new technologies, breaking the barriers in public health, disease control and health surveillance data. They should maintain quality management and information security in medical services, which requires a robust medical information security system. Policy incentives and safeguard measures should be improved, and the transformation and innovation of service models under the new normal of our times encouraged.

6.3.4 Improving the WHO-led global health governance system

The WHO should be enabled to play a central role in global health governance. The decision-making power and voice of developing nations should be elevated by assigning them key positions within the WHO and other health-related organizations. The leadership and coordination capabilities of the WHO must be strengthened. It is essential to maintain and improve the global health governance system with the WHO at its core, and the WHO's leadership and authority in global health governance. The WHO should be empowered to coordinate resources and regulate the actions of member states in response to public health emergencies.

Multilateral institutions like the G20 and regional organizations such as the ASEAN should play a constructive role in global health governance. The G20, BRICS, Asian Infrastructure Investment Bank and the New Development Bank should play a greater role in global health governance, while upholding the central and coordinating role of the WHO. Regional mechanisms such as the ASEAN, African Union, and Community of Latin American States should play a flexible and innovative role, foster greater consensus among member states and jointly promote institutional innovative and breakthroughs in rules. They should better align with the interests and aspirations of developing countries, and function as exemplary pioneers in the global health system and as valuable supplements.

Health aid, particularly financing mechanisms, should be improved and innovated. It is crucial to draft health aid agendas, priorities and solutions based on the needs of developing countries, ensuring the sustainability of international health assistance and cooperation. Particularly, assistance to vulnerable regions such as Africa should be significantly increased and their development needs should be learned in depth to ensure pertinent and accurate health cooperation. To achieve this, health financing mechanisms must be innovated, and institutions, especially those of developed countries and conventional multilateral development institutions such as the World Bank, should fulfill their ODA commitments and continue to increase assistance to vulnerable countries. Efforts are to be made to promote integrated management and coordinated utilization of resources from ODA and special funds from the World Bank

and regional development banks, key earmarked funding organizations such as the Global Fund, and philanthropic organizations. Funds should be allocated rationally and equitably based on global health needs, especially those of developing countries, clear priorities for resource usage set, and duplication and waste minimized, thus enhancing funding deployment efficiency. Policies should be made to encourage and regulate global health funding support from the private sector, and robust accountability and review mechanisms should be established to ensure equitable access to funding and its use in disease prevention.

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Chapter VII

Working Together to Promote Sustainable Development Finance

Three years after the onset of the COVID-19 pandemic, the global economy is confronted with the challenges of weak economic recovery, deterioration of the ecological environment, inadequate global governance, heightened geopolitical tensions, enlarged development gaps, and polycrises, which include a health crisis due to the aftermath of the pandemic, an energy and food crisis, and a global climate crisis. Progress in achieving the SDGs has been rolled back, with millions of people falling back into hunger and poverty in many countries. Developing countries in general are facing an increased demand for development finance and inadequate supply. Industrial nations have not provided their committed funds for development finance and addressing climate change, and traditional international financial institutions (IFIs) are responding slowly, exacerbating the inadequate development finance among developing countries.

To meet these rising global challenges and propel global development to its right track, there is a great need to improve the system and reduce the gaps in global development finance. This chapter explores the issues of development finance from three aspects: It examines the concept of development finance and reviews its current landscape; it analyzes the causes of inadequate global development finance; and it explores the approaches to meet the gaps in global development finance and provide support for global shared and sustainable development. The focus is on the bilateral and multilateral public and official providers of development finance as they play a key role in comprehensively supporting the economic and social development in developing countries.

7.1 Evolution and the changing landscape of development finance

7.1.1 Evolution of development finance

Traditionally, global development finance includes mainly the ODA from the industrial countries (Global North) to developing countries (Global South).[1] According to the Development Assistance Committee (DAC) of the OECD, since the 1960s, over US$5 trillion (in constant 2021 US dollars) has been provided as ODA, including bilateral and multilateral aid and a portion of non-transferred aid (Figure 7-1), but its effectiveness is still contested. There is no clear consensus among economists and scholars on its effectiveness.[2]

The forms of global development finance have changed significantly, from the North-South cooperation dominated by Western donors to South-South cooperation and multilateral cooperation, which have become important trade and financing channels for developing countries. Within the framework of South-South cooperation, BRICS, Saudi Arabia and other emerging

[1] According to the OECD, ODA includes grants and concessional loans (with grant elements of 25% and above) to eligible recipients for the promotion of economic development and welfare from an official source (a bilateral government or multilateral organization) to a set of developing countries agreed to by the DAC (Development Initiatives 2013).

[2] Following the influential studies by Boone (1996) and Burnside and Dollar (2000), one group of scholars believe that ODA is ineffective because it creates dependency, fosters corruption, encourages currency overvaluation and crowds out private investment (Easterly et al., 2004, 2006; Moyo 2009). In the other camp, Sachs (2009) and Stiglitz (2002) believe that aid volumes have been too low, and that large increases could really help reduce poverty. They advocate a major rethinking of how international aid is provided. Rajan and Subramanian (2008) found that aid had no significant impact on growth, while Arndt, Jones and Tarp (2010) reached the opposite conclusion: "Aid has a positive and statistically significant causal effect on growth over the long run."

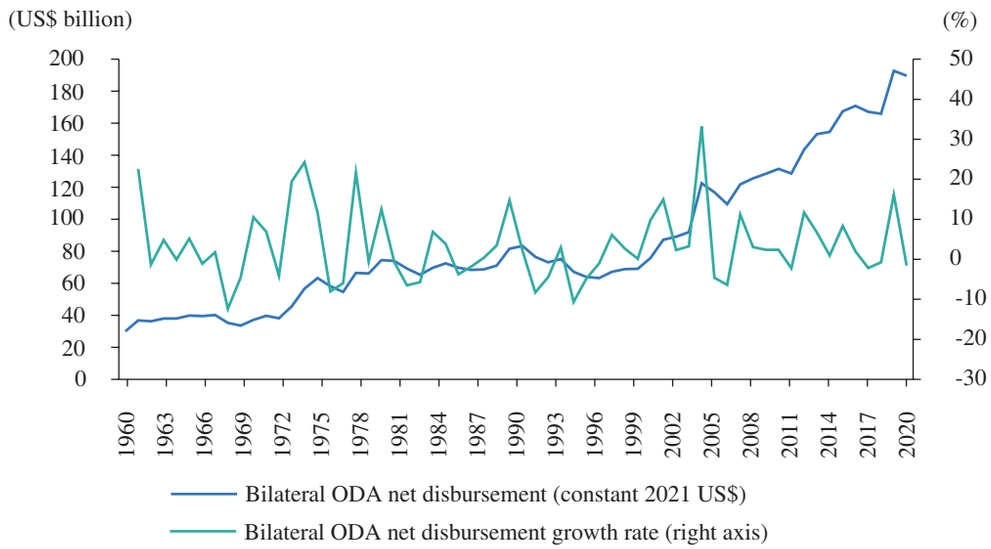

Figure 7-1 OECD-DAC countries' total net ODA to developing countries and growth rate, 1960-2020

Source: World Bank AidFlows data

market economies have become increasingly important providers of development finance to other developing countries, contributing to global development cooperation. South-South development cooperation (SSDC), different from the concept of ODA, is characterized as combining trade, aid and investment, and mobilizing development finance from multi-channels and forms, with less emphasis on the concessionality of aid and loans. For example, SSDC mobilizes other official flows (OOF) like commercial loans and goes further to leverage the private sector in public-private partnership (PPP) projects and innovative approaches such as blended finance. Influenced by the SSDC model, the OECD-DAC went beyond traditional ODA and promoted the concept of total official support for sustainable development, including all concessional and non-concessional funds that are "officially provided" and "officially mobilized".

Based on the new trend in global development finance, this chapter defines a broader concept of comprehensive development finance. The traditional concept is narrowly defined, including ODA and OOF but not all forms of funds supporting development. The monetary policy instruments include M0, M1, M2 and M3. Similarly, in development finance (DF), we can define DF1, DF2, DF3 and DF4, from a narrow to wide concept, so that most, if not all, forms of development finance can be included (Figure 7-2).

DF1 = ODA

DF2 = DF1 + OOF, including preferential export credit

DF3 = DF2 + OOF-like loans (non-concessional loans from state entities for development but at market interest rates)

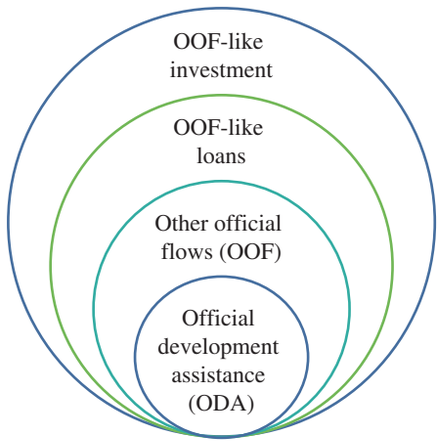

Figure 7-2 Expanding the definition of development finance

Note: The circles correspond to DF1 = ODA; DF2 = DF1 + OOF; DF3 = DF2 + OOF-like loans; and DF4 = DF3 + OOF-like equity investment.
Source: Lin, J. Y. et al., 2017

DF4[1] = DF3 + OOF-like investment: equity investments by sovereign wealth funds, public wealth funds, or development projects supported by state guarantees, or PPP projects

Conceptually, development finance can include a wide array of instruments, include ODA, financing from bilateral and multilateral development finance institutions (DFIs)[2], philanthropy, private foundations, and even proceeds from green and sustainable bonds issued by developing countries. Among these, bilateral DFIs and multilateral DFIs are the main institutions carrying out the functions of development finance and are the focus of analysis in this chapter.

7.1.2 Growing demands and gaps in global development finance

Stable and sufficient financing support is key to development. Irrespective of their development stage, all countries have comparative advantages in certain sectors based on the structure of their endowments. The failure of development in a country is most likely caused by bottlenecks in soft and hard infrastructure, whereby its comparative advantages remain latent and its enterprises fail to become competitive in the domestic and

[1] The concept of DF4 is consistent with but different from the total official support for sustainable development (TOSSD) proposed by the OECD-DAC. The TOSSD framework includes the "private sector mobilized by the official sector" (See OECD https://www.tossd.org/). This chapter does not discuss foreign direct investment and other private flows since the issues related to these flows differ significantly from those of official flows.

[2] A DFI is a specialized financial institution that provides funding and support to promote economic development in developing countries. DFIs typically provide long-term loans, equity investments, guarantees, technical assistance and other financial services to businesses and governments in emerging markets that may not have access to traditional financing. Examples of multilateral DFIs include the World Bank Group, the European Bank for Reconstruction and Development, the African Development Bank and the Asian Development Bank (ADB). Bilateral DFIs refer to those established in developed countries, providing development finance in developing countries. Examples include the Agence Française de Développement of France, Department for International Development of the United Kingdom, Japan Bank for International Cooperation, Kreditanstalt für Wiederaufbau of Germany, and the United States International Development Finance Corporation.

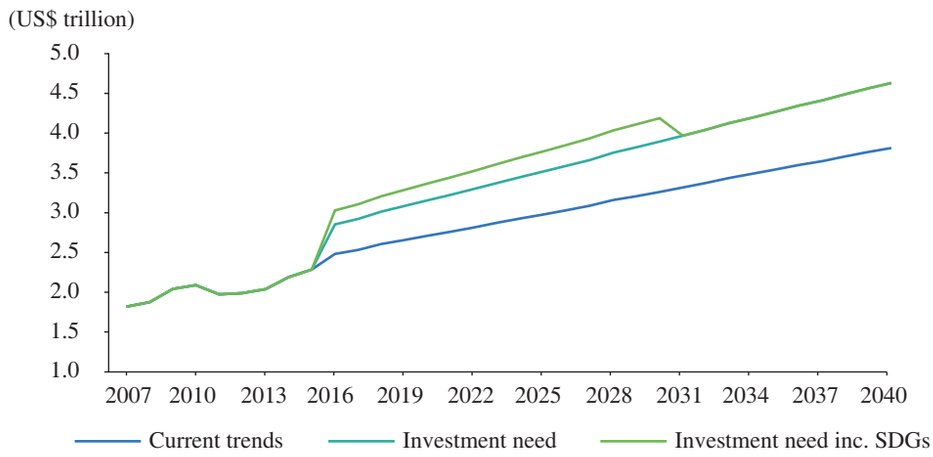

Figure 7-3 Global infrastructure needs, 2007-2040

Source: Global Infrastructure Hub

international markets due to high transaction costs. If development assistance is used to remove the infrastructure bottlenecks of structural transformation in developing countries, they would be able to tap into their potential advantages, grow faster than developed countries, and provide the material conditions to achieve many of the SDGs. Otherwise, the development assistance will not be effective despite the best intentions of the partner country or institutions. In recent decades, most of the development assistance to developing countries from multilateral and bilateral development institutions is used for social development (e.g. health and education) and improvements in governance (e.g. transparency, law, democracy, and the business environment). Such projects fall largely into the category of improving soft infrastructure. The hard infrastructure has to some extent been neglected.

Infrastructure investment bottlenecks remain the major obstacle to structural transformation, and there is a great funding gap in hard infrastructure. According to a projection by the G20's Global Infrastructure Hub (GIH), global infrastructure investment needs will reach US$93.9 trillion by 2040 to keep pace with profound economic and demographic changes and to close infrastructure gaps (Table 7-1). It also forecasts a global infrastructure investment gap of about US$14.9 trillion, which is equal to a 15.9% infrastructure investment deficit. In addition, to achieve universal household access to drinking water and electricity in line with the SDGs, a further US$3.7 trillion is needed, widening the gap to about US$18.6 trillion (Figure 7-3). Closing the global investment gap will require annual infrastructure investment to increase from the current level of 3.0% of global GDP to 3.5%. Meeting the SDGs will require this to increase further to 3.7% by 2030 (GIH, 2018).

The estimates have been updated by the Independent High-Level Expert Group (IHLEG) from the angle of climate finance. The IHLEG report pointed out that climate change is occurring at a faster pace than previously anticipated, the impacts and damage are greater than foreseen, and the time for remedial action is rapidly narrowing. Second, the failure to deliver the climate finance commitment of US$100 billion per year by 2020 made by developed countries at successive

Table 7-1 Global sustainable infrastructure investment gaps by region, 2016-2040 Unit: US$ trillion

	Africa	Asia	Americas	Europe	Oceania	Total
1. Current Investment	4.3	46.0	14.0	13.0	1.7	79.0
2. Investment need	6.0	51.0	20.0	15.0	1.9	93.9
3. Investment gap without the SDGs	1.7	5.0	6.0	2.0	0.2	14.9
4. Additional investment needed to meet the SDGs	1.6	1.6	0.3	0.1	0.1	3.7
5. Investment gap including meeting the SDGs	3.3	6.6	6.3	2.1	0.3	18.6
Total gap as a percentage of total need (5)/(2)%	55.0%	12.9%	31.5%	14.0%	15.7%	19.8%

Source: Global Infrastructure Hub

Conferences of the Parties has eroded trust. Third, the world needs to mobilize US$1 trillion per year in external finance that will be needed by 2030 for other EMDEs except for China (Songwe and Stern, 2022). Although climate change is discussed in other chapters of this book, the estimate of the climate financing gap for EMDEs is critical for policymaking.

7.1.3 Supply of development finance flows

Financial flows to developing countries grew steadily after the global financial crisis, but declined after the pandemic (Figures 7-4 and 7-5). During 2010-2022, official loan commitments by multilateral and bilateral agencies amounted to US$1.737 trillion in total. Of this, 59% was provided by multilaterals and 41% by bilaterals. Over the 13-year period, the share of loans provided by multilaterals compared to bilaterals remained relatively stable, but picked up in recent years, from 58% in 2016 to 68% in 2021. However, in 2022, this proportion plummeted dramatically to 43%. At the individual partner level, the World Bank Group provided the highest volume of loan financing, followed by China, the ADB and Japan. In addition, the World Bank provided US$37 billion of grants during this time frame through its International Development Association (IDA) basically to countries at high or moderate risk of debt distress (World Bank International Debt Statistics, 2022).

The net transfer of resources (NTR)[1] to developing countries has shown greater volatility. The net transfers by multilateral institutions became negative in the period between 2000 and 2007, showing that repayments were higher than disbursements (Figure 7-4). Therefore, publishing only the gross disbursement by the World Bank is misleading. In 2020-2021, both gross disbursement and NTR for multilaterals rose rapidly in response to the COVID-19 pandemic but declined thereafter in 2022. This decline is not sufficiently countercyclical, as the World Bank has claimed, and has been one of reasons for a "World Bank evolution" process.

For bilateral institutions, the NTR differs significantly from those of gross disbursement.

[1] The NTR and commitment data is up to 2021. Only gross disbursement data is updated to 2022.

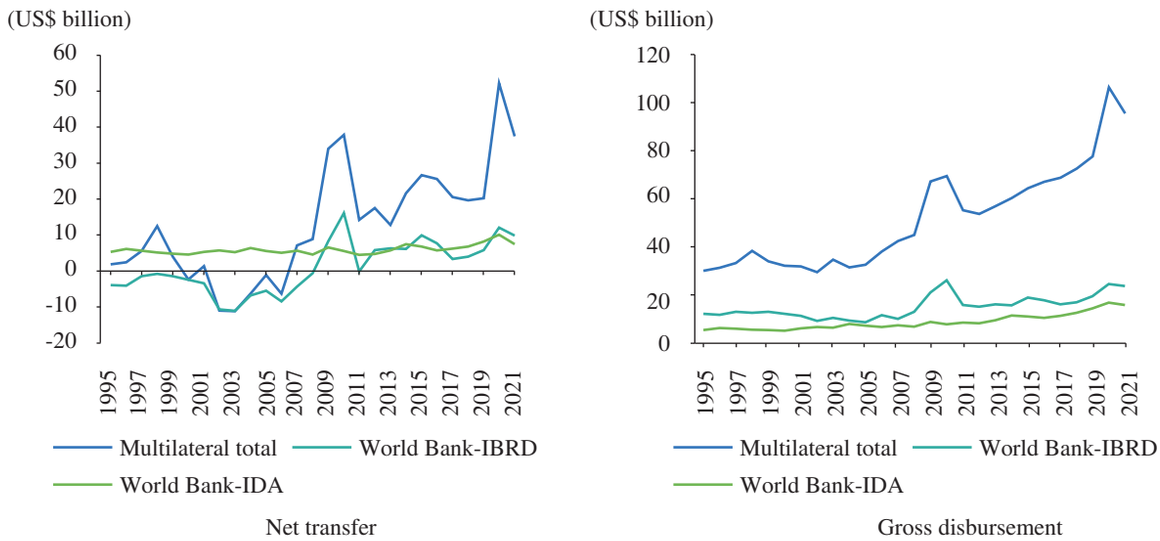

Figure 7-4 Multilateral financial flows (net transfer and gross disbursement) to developing countries, 1995-2021

Source: World Bank International Debt Statistics Database

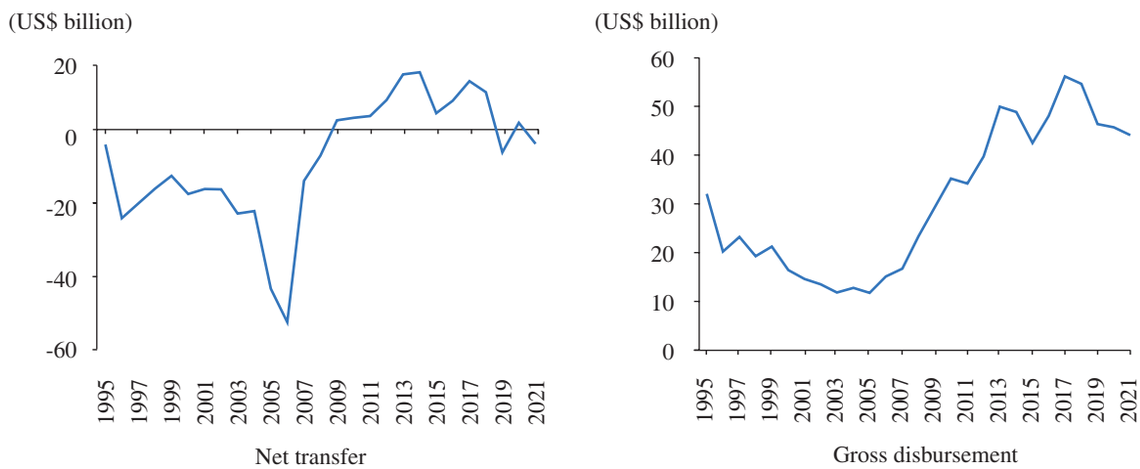

Figure 7-5 Bilateral financial flows (net transfer and gross disbursement) to developing countries, 1995-2021

Source: World Bank International Debt Statistics Database

In particular, from 1996 to 2008 the NTR from bilateral DFIs was negative, indicating that repayments (debt services) were much higher than new disbursement from the traditional donor countries.

Emerging market economies have contributed significantly to global development finance under the framework of South-South cooperation. Since the global financial crisis, the BRICS countries provided US$358 billion of loans, or 26% of loan financing globally. They played a significant role in filling the global development financing gap. In

addition to BRICS countries, Middle East countries are also emerging loan financiers.

The current supply of global development finance is far from the demand for sustainable development. Table 7-2 aggregates the total official development finance for 2010-2022, including ODA (grants only), gross disbursement of multilateral financial flows and bilateral financial flows to lower-middle-income countries, as well as annual averages. These loans have not been classified as concessional or non-concessional since this chapter covers a wider range of development cooperation including SSDC. The sum of these three categories was the total official development finance, standing at US$2.8 trillion for 2010-2022. The average annual amount was US$232 billion, which was 23% of the external financial need for sustainable development (estimated by Songwe and Stern, 2022).

In future, the challenge of inadequate supply of global development finance will remain, with a huge funding gap. To estimate the prospects of development finance, projections were made for the period 2022-2025 by using autoregressive integrated moving average (ARIMA) regressions based on annual gross disbursement data from 2010-2021.[1] The projected total development finance for the four-year period is US$1,138 billion with the average annual development finance at US$284.5 billion. Using the total development finance needed for sustainable investment, estimated by the IHLEG (Songwe and Stern, 2022) at US$1 trillion per year for external finance, it was found that the share of total official development finance in the average annual need of lower-middle-income countries was merely 28.5% of the external finance needed. The rest (71.5%) was a huge financial gap to be filled in by better

Table 7-2 Official development finance flows to lower-middle-income countries in 2010-2021, and projections for 2022-2025

Unit: constant 2021 US$ billion

	2010-2021 total	2010-2021 average	Projections for 2022-2025 total	Projections for 2022-2025 average	Share in the global annual average need (%)
ODA (grants only)	1,232.9	102.7	516.2	129.0	12.9
ODA total	1,301.6	108.5	729.3	182.3	18.2
Bilateral official development finance flows	610.7	50.9	194.6	48.6	4.9
Multilateral official development finance flows	945.2	78.8	427.3	106.8	10.7
Total official development finance flows	2,788.9	232.4	1,138.0	284.5	28.5

Note: ODA and ODA-only grants have been deflated to 2021 US dollars using a deflator sourced from the OECD database. The denominator of the last column is US$1 trillion dollars per year (Songwe and Stern, 2022).
Source: Authors' calculations based on World Bank International Debt Statistics Database

[1] The theory of forecasting is based on the premise that current and past knowledge can be used to make predictions about the future. See Petropoulos et al. (2022) for a review of forecasting methodology.

Table 7-3 Official development finance flows to lower-middle-income countries in 2021, and projections for 2022-2025

Unit: constant 2021 US$ billion

	2021	2022	Projections for 2023	Projections for 2024	Projections for 2025
ODA (grants only)	116.9	122.1 (projection)	127.9	131.1	135.0
ODA total	129.3	158.2	173.4	188.2	209.3
Bilateral official development finance flows	46.0	99.2	34.2	32.1	29.0
Multilateral official development finance flows	99.6	76.3	112.4	119.1	119.4
Total official development finance flows (1+3+4)	262.5	297.7	274.6	282.4	283.4

Note: Due to the asset-liability restructuring announced by the World Bank in April 2023, which includes an increase of US$50 billion in loans over the next 10 years, the forecast values for the years 2023-2025 in this table have been adjusted to reflect an additional US$5 billion annually.

Source: Authors' calculations based on World Bank International Debt Statistics Database

leveraging public and private resources, reform of multilateral international financial institutions (such as the World Bank), national development banks (Xu Jiajun et al., 2020), and sovereign bonds as well as FDI that focuses on sustainable development.[1]

Table 7-3 presents the annual projections of development finance from 2022 to 2025, in which an implicit assumption is that MDBs are not able to achieve a significant capital increase, but includes the US$5 billion increase in the World Bank's annual lending (decided at the spring meetings of April 2023). However, bilateral financial institutions' lending will decline from the peak of 2022, considering these lenders' risk aversion to geopolitical risks.

Box 7-1 China's contribution to global development finance

China, the largest developing country, has been a good friend/development partner of other developing countries. Bearing in mind that development is meaningful only when it is inclusive and sustainable, China has been helping other developing countries in accordance with its capacity, based on the principle of equality and mutual benefit through investment and financing cooperation.

China has been steadily increasing the scale and expanding the scope of its foreign aid and development finance. According to a white paper, *China's International Development*

[1] Sovereign bonds and FDIs are beyond the scope of this chapter because a) it is difficult to identify the uses of these funds and b) issues related to them are very different from those with respect to official development finance flows.

Cooperation in the New Era, from 2013 to 2018, China allocated a total of RMB270.2 billion for foreign assistance, covering 122 countries and 20 international organizations. It has established the Global Development Initiative project pool and fund, channeled US$10 billion of its special drawing rights (SDRs) allocation to support African countries, upgraded the South-South Cooperation Assistance Fund to the Global Development and South-South Cooperation Fund, and added US$1 billion more to its original commitment of US$3 billion. It has increased its input in the China-UN Peace and Development Fund, officially launched Phase III of the China-FAO South-South Cooperation Trust Fund, contributing its share of US$50 million to international development resources, and put US$50 million into the Pandemic Fund to help developing countries better prepare for and respond to future pandemics.

China has raised the level of development finance for developing countries by promoting trade and investment cooperation. China has become the major trade partners of 140 countries and regions, and its outward FDI remains steady. Ten years since the Belt and Road Initiative (BRI) was launched, more than 180 countries and international organizations have signed memorandums of understanding with China for jointly developing the initiative. So far, it has garnered nearly US$1 trillion of investment globally and created more than 3,000 projects and 420,000 jobs for the participating countries and lifted 40 million people out of poverty. As of 2022, the total volume of trade in goods between China and other BRI countries exceeded US$12 trillion, and non-financial market direct investment crossed US$140 billion.

China gives high priority to providing debt relief to countries in financial difficulty. Between 2013 and 2018, China canceled 98 zero-interest loans with the cumulative amount of RMB4.184 billion to least developed countries, heavily indebted poor countries, landlocked developing countries and small island developing states. Together with other G20 countries, China implemented the DSSI for the poorest countries with the largest total outstanding debt amount deferred, accounting for nearly half of the total. China is also committed to the Common Framework for Debt Treatment beyond the DSSI endorsed by the G20 and contributes to supporting the poorest countries to respond to the pandemic and other crises.

The development finance offered by China has promoted economic and social development in host countries. China has assisted countries to improve their trade infrastructure and capacity. Such finance is based on real demand from developing countries, aimed to build their self-development capacity and guided by development goals, prioritizing investment in infrastructure and productive sectors. Between 2000 and 2020, China built 13,000 km of highways and railways, more than 80 power stations, and more than 130 health facilities for African nations. In the short term, projects financed by China boosted local economy and improved welfare and employment. In the long term, Chinese development finance helped the host countries improve their business climate and attract more investment, and promoted economic and social development, shifting from simply injecting help into these countries to enabling them to help themselves. Compared with the development cooperation projects led by developed countries and international development institutions, China-financed projects were implemented faster, with higher efficiency, and were more effective in helping "funding constrained" developing

countries out of the "development trap" and "poverty trap". A study investigating over 3,126 completed projects in Africa co-financed and jointly built by China and the host countries found that 76% of the hard infrastructure projects and 73% of the soft infrastructure projects addressed African countries' bottlenecks in 2000-2017. These completed projects have become a part of the countries' public operational assets, generating essential social services, jobs, government revenues, exports and growth. (Wang and Xu, 2022)

7.2 Addressing development finance gaps

The problem tree analysis is a visual tool used to identify, analyze and map out the root causes of a problem. These identified root causes can later be used to find possible solutions or interventions that can be implemented to address the problem. Figure 7-6 uses this model to break down the root causes of the core problem, namely the perennial gaps in development finance and the inability of bilateral and multilateral public and official providers of development finance, such as bilateral and multilateral DFIs, to meet developing countries' demands. If the core problem is left unaddressed, developing countries will find themselves unable to transform their economic structure towards sustainable growth. They will fail to mitigate the risks associated with the boom-bust cycle and end up in repeated debt crises. They will also face continued challenges in reaching the SDGs and improving people's welfare. There are three major causes for the development finance deficit, namely the misguided direction of development finance support, a poor ecosystem preventing development finance from being effective, and the institutional and financing capacity constraints of DFIs.

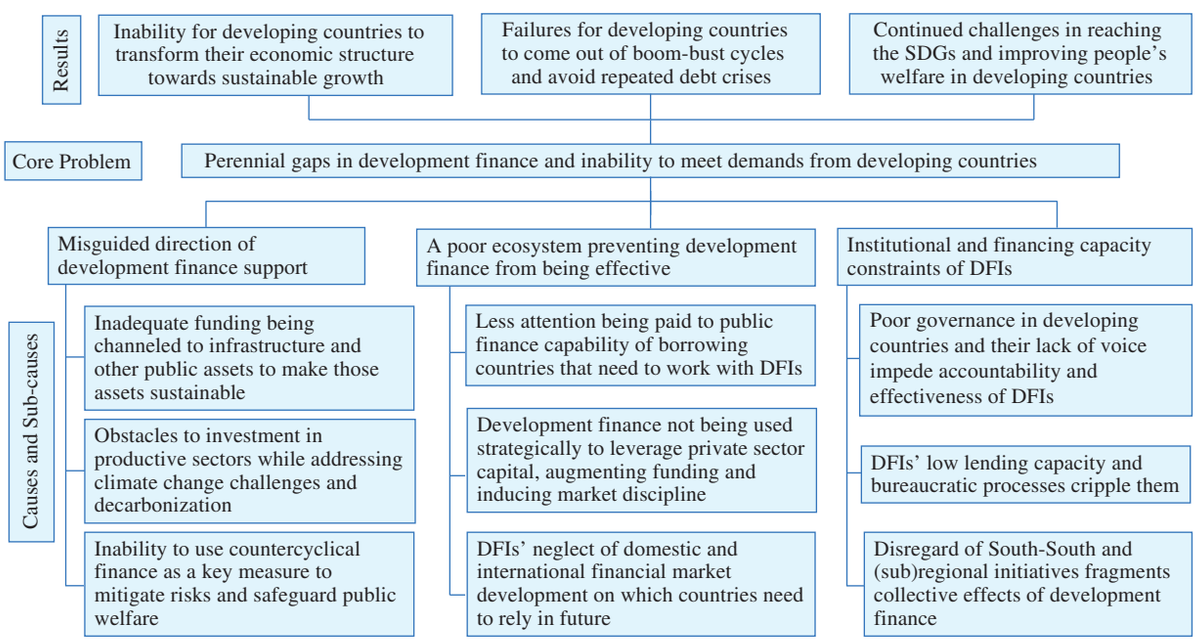

Figure 7-6 Problem tree: global development finance

7.2.1 Misguided direction of development finance support

This is demonstrated by (i) the inadequate funding being channeled to infrastructure and other public assets to make those assets sustainable; (ii) obstacles to investment in productive sectors while addressing climate change challenges and decarbonization; and (iii) the inability to use countercyclical finance as a key measure to mitigate risks and safeguard public welfare.

The World Bank used to direct 70% of its lending to infrastructure in the 1950s and 1960s, but by 1999, its infrastructure financing had dwindled to 19%. The Inter-American Development Bank allocated 70% of its lending to infrastructure in 1981, but that fell to 10% in 2003. The ADB's infrastructure investment declined less dramatically, but until the early 2000s, the trend was downward as well (Humphrey, 2015a).

There are several reasons for the inadequate proportion of development finance going to infrastructure and other public assets: (i) Some developing countries and international organizations may have limited resources to allocate to different areas of development, and could be prioritizing other sectors such as health or education over infrastructure and public assets; (ii) some governments may not prioritize infrastructure and public assets because they do not see the immediate benefits or face political pressures to prioritize other areas; (iii) inadequate infrastructure plans and an insufficient number of well-prepared investable projects (ITFFD, 2023); (iv) weak institutions, including poor governance and corruption, can hinder the efficient use of resources and discourage investment in infrastructure and public assets; (v) investing in infrastructure and public assets can be risky, particularly in developing countries where political and economic instability may create uncertainty for investors; (vi) there may be a lack of data and information on the benefits and costs of investing in infrastructure and public assets, making it difficult for countries and international organizations to make informed decisions about resource allocation; and (vii) infrastructure and public assets require coordination between different stakeholders, including governments, private investors and communities. Lack of coordination can create inefficiency and discourage

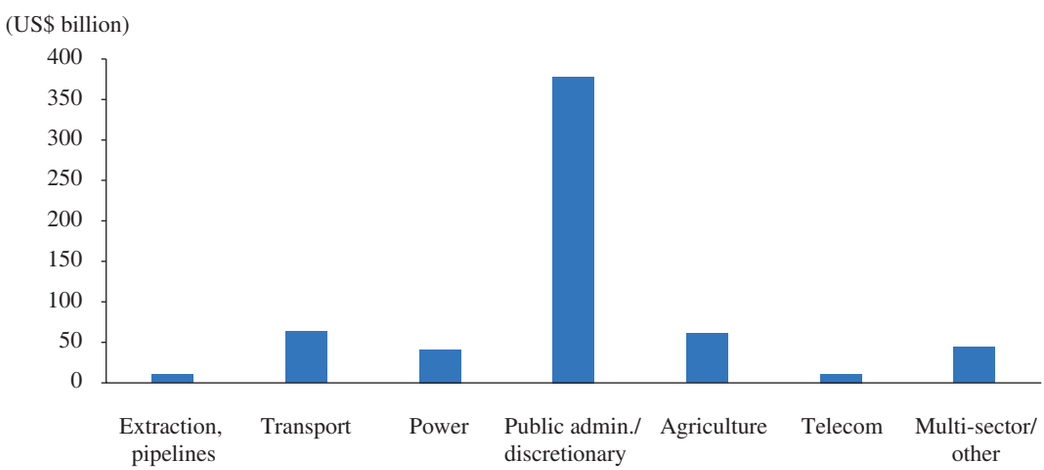

Figure 7-7 Sector-wise distribution of World Bank development lending, 2008-2021

Source: World Bank

investment (WEF, 2019).

The engagement of DFIs in manufacturing and other productive sectors has been limited and DFIs are usually focused on specific segments of the markets such as small and medium-sized enterprises or specific aspects such as energy efficiency. This is partly due to the facts that (i) low-income countries may have limited access to counterpart financing for manufacturing projects due to weak domestic financial markets; (ii) lack of adequate infrastructure as manufacturing requires significant infrastructure, such as power supply, transport networks, and access to raw materials (Runde et al., 2019); (iii) weak regulatory environments that do not adequately protect workers' rights, ensure health and safety standards, or protect the environment (WHO, 2017); and (iv) political instability and conflict which can make it difficult to attract investment and establish a stable business environment necessary for manufacturing (Hussain, 2014).

Overall, bilateral and multilateral DFIs' support to industrial sectors in developing countries has been focused on policies and systems that create a level playing field for businesses and promote sustainable and inclusive economic growth. Previously, industrial policy was taboo among IFIs, as it was often seen as being connected with government interventions and "subsidies", distorting the free market. Gradually, DFIs' industrial policy began to accept the importance of government interventions that are market-friendly, inclusive and transparent. It recognized that governments can play a role in creating a supportive environment for private sector development and promoting the growth of strategic industries, but this should be done in a way that does not distort markets or unfairly advantage certain firms or industries (Dickinson, 2008). Nevertheless, their distancing from direct financing support to industrial sectors does limit DFIs' capability to directly influence and guide the transition of traditional industries to low-carbon and climate-resilient new industries or leapfrog the stages of industrial development and help developing countries benefit from the new low-carbon development model.

Countercyclical financing suggests that during a downturn or recession, the governments and financial institutions in developing countries should take measures to increase public spending, reduce taxes and increase lending to stimulate economic growth (IMF, 2023b). Conversely, during an

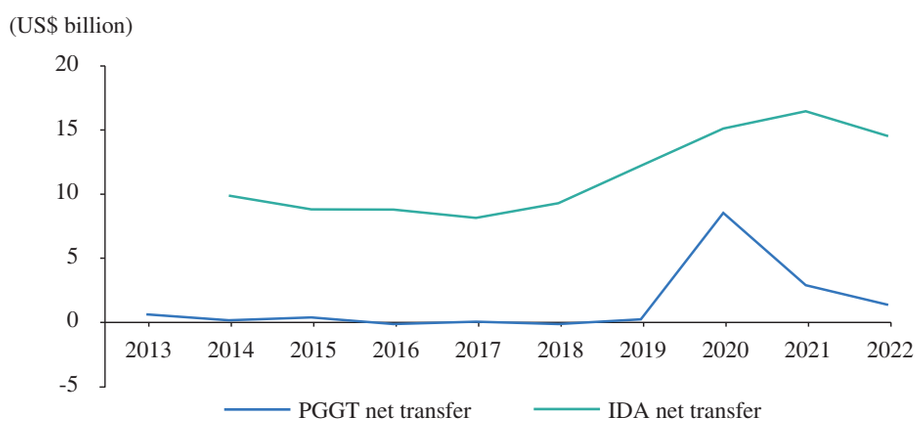

Figure 7-8 Net transfers in the World Bank's IDA and the IMF's PRGT, 2013-2022

Source: Center for Global Development

economic expansion, policymakers should reduce spending or increase taxes to prevent overheating and inflation. Despite the theory, DFIs in general have no ability to play a key role in countercyclical finance to mitigate risks and safeguard public welfare in developing countries in crisis. On the contrary, declines or even negative transfer of resources to developing countries are seen during crises, which end up exacerbating economic problems instead of mitigating them. Figure 7-8 shows net transfers in the World Bank's IDA and the IMF's Poverty Reduction and Growth Trust (PRGT). The need for pandemic assistance saw the transfers increase in 2020 but they were not sustained and fell both in 2021 and 2022.

The 2018 World Bank capital increase was designed only for a mid-scale crisis occurring once in a decade. The multiple global crises today have significantly exposed the World Bank's scale limits (Ye, 2023). At the end of 2022, the World Bank released a new Evolution Roadmap, initiating a new round of debate on its vision, mission, and financial and operational models. According to the roadmap, the World Bank is exhausting its crisis buffer and will once again face a financial cliff in 2024. Yet a meaningful World Bank resource expansion faces various constraints, such as the need to maintain a high level of capital adequacy, financial pressure faced by traditional donor countries, and further fragmentation of the support both in funding sources and the agenda, harming the consistency of World Bank programs (Ye, 2023).

Negative transfer occurs when the aggregate disbursement from a lender to a borrower is less than the aggregate repayments from the borrower to the lender. This can happen in a variety of situations such as inability to fulfill disbursement conditions connected with policy reforms, which may not be suitable in the local context as certain policies may exacerbate existing economic problems, such as inequality or social unrest, particularly in economic crises. Moreover, DFIs may consider reducing new lending as they face challenges in managing risk during times of crisis when the business environment can be volatile in developing countries. If DFIs are not able to manage risk effectively, they may end up with a high level of non-performing loans, which can exacerbate economic problems in borrowing countries.

Another countercyclical measure when an economic crisis and boom-bust cycle occurs is to

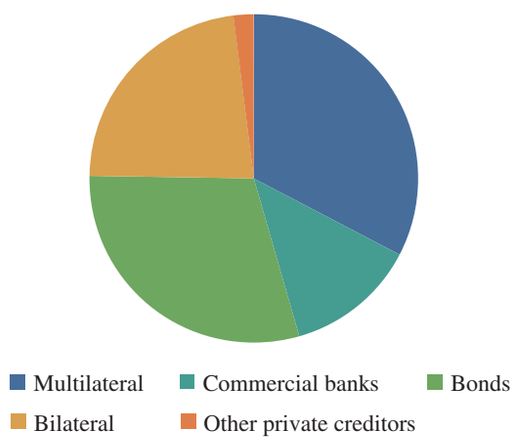

Figure 7-9 Distribution of debt in 49 African countries in 2021

Source: World Bank International Debt Statistics Database

help developing countries deal with the debt crisis and possibly distressed debt resolution (Qian, 2023). Taking the current debt distress in developing countries as an example, the multilateral DFIs have not yet shown leadership in distressed debt resolution, which is needed critically given the increasingly complex market conditions. The lack of commitment by multilateral DFIs to provide concessions on their own loans also makes other creditors doubt how to reach a final agreement on debt forgiveness and restructuring. Figure 7-9 shows that multilaterals' share accounted for one-third of 49 African countries' external debt in 2021, while the share of private sector creditors, i.e., commercial banks, bond holders and other private creditors, increased substantially to nearly half.

7.2.2 A poor ecosystem hindering development finance from being effective

This is due to less attention being paid to the public finance capability of borrowing countries that need to work together with DFIs; development finance is not used strategically to leverage private sector capital, augmenting funding and strengthening market discipline; also, it neglects domestic and international financial market development on which countries need to rely in future.

DFIs have seen difficulties in addressing public finance challenges in developing countries (Te Velde, 2011) partly due to (i) lack of institutional capacity in terms of inadequate staffing, poor organizational structure and limited financial resources; (ii) weak governance and accountability in DFIs which can result in poor decision-making and weak surveillance of corruption, leading to ineffective use of funds and limited impact on public finance in developing countries; (iii) inadequate channeling of resources to the areas where they are needed most, resulting in limited impact on public finance and exacerbating existing inequalities; (iv) insufficient coordination with other institutions including governments, civil society organizations and other development partners, ending in duplication of efforts, inefficient use of resources and limited impact; and (v) limited focus on long-term sustainability of DFIs' own investments, leading to limited impact on public finance.

Overall, addressing public finance in developing countries requires a multi-faceted approach that involves strong institutions, effective governance and accountability mechanisms, targeted and sustainable investments, and coordination among various stakeholders. DFIs can play a critical role in this process, but they must have the necessary resources and capabilities to do so effectively.

DFIs face multiple challenges. One is their inability to leverage private sector capital effectively (Ingram et al., 2018). This could be due to various reasons: (i) Private sector investors are often risk-averse and may perceive some projects DFIs are investing in as too risky and be reluctant to join; (ii) private sector investors may not have the resources or appetite to invest in large projects, which often require significant capital investments, with DFIs; (iii) potential private sector investors may not be aware of or be familiar with the projects DFIs are supporting and the opportunities associated with them; (iv) regulations and restrictions on currency exchange, tax, and foreign ownership of companies in developing countries may make private investments from overseas difficult; (v) private sector investors are often motivated by incentives, such as tax breaks or investment guarantees, and DFIs may not be in a position to provide these incentives, making it less attractive for private sector investors to engage in their projects.

DFIs' neglect of domestic and international

financial market development can have several negative consequences (ADB, 2023) for business and projects in development countries: (i) They may have limited access to capital, leading to lack of investment in critical sectors such as infrastructure, energy and health care; (ii) they may be exposed to higher levels of risks due to the shortage of working capital and inadequate insurance coverage, making it harder for them to attract investment; and (iii) they may miss out on opportunities for innovation and growth, which need support from financial innovations, and may struggle to remain competitive.

7.2.3 Institutional and financing capacity constraints of DFIs

The governance of DFIs needs to be improved (Prizzon et al., 2022). Poor governance can lead to mismanagement of funds and inefficient allocation of resources, resulting in development projects that do not effectively address the needs of the target population or fail to achieve their intended outcomes. DFIs are often large organizations with significant financial resources, which makes them vulnerable to corruption. Poor governance practices, such as lack of transparency, can create opportunities for corruption, resulting in the diversion of resources from development projects towards personal gain. In some cases, DFIs may be subject to political interference from the governments that fund them. Poor governance practices can exacerbate this problem, leading to development projects that are designed to meet political objectives rather than the needs of the target population. Poor governance practices can also damage the reputation of DFIs, making it difficult for them to attract funding and partnerships and ultimately limiting their ability to achieve their development goals.

Developing countries often lack voice in the decision-making processes of DFIs. This can lead to funding decisions that do not adequately address the needs and priorities of these countries (Nelson, 2020). This can be attributed to several reasons: (i) Developing countries may not have equal representation in the governance structures of DFIs, which are skewed towards the interests of developed countries or other powerful stakeholders; (ii) developing countries may lack the capacity to engage effectively with DFIs and articulate their needs and priorities due to limited resources, expertise, or institutional capacity; (iii) languages barriers can result in communication deficiency; and (iv) developing countries may have limited access to information and data to understand the criteria and priorities for allocating resources. The World Bank's 2020 review found that the 10 most under-represented countries in the Bank's share structure were all from the group of developing and transition countries (World Bank, 2021b). However, the World Bank decided not to adjust its International Bank for Reconstruction and Development shareholdings in the 2020 shareholding review but to defer it to the next review in 2025.

Both bilateral and multilateral DFIs need to show higher lending capacity. They often have limited financial resources, partly due to limited funding from donor countries and the low returns on their previous investments, which reduce their earning capacity and capability to strengthen their own capital base. Other factors are DFIs' limited access to capital markets as they have to maintain high prudential standards, and their limited capability to attract private sector participation.

DFIs need to pay more attention to South-South regional initiatives (UNDESA, 2017). One reason for this may be that they tend to focus on individual countries or specific projects, rather than broader regional initiatives. Additionally,

some DFIs may be more familiar with certain regions or have established relationships with specific governments, which may make it easier for them to operate in those areas.

Fragmentation of development finance occurs where funding for development projects is spread across multiple sources and channels, leading to duplication of efforts, inefficiencies and challenges in coordination. This can occur at both the domestic and international levels, where a range of actors are involved in development finance, including governments, multilateral institutions, bilateral donors, philanthropic organizations and private sector entities.

Fragmentation of development finance can have several negative consequences (Nishio et al., 2021). It can result in overlapping activities and competing agendas, reducing the impact of individual programs and making it difficult to measure their progress. It can also lead to lack of transparency and accountability, as in a multiple-actor scenario, the actors may not be fully aware of each other's activities or priorities. Finally, fragmentation can also make it harder to coordinate efforts and resources, which can lead to inefficiencies and gaps in coverage.

7.3 Approach and recommendations

Development finance must be able to meet the demands of developing countries and help them transform their economic structure for sustainable growth, successfully coming out of the boom-bust cycles of economic growth and recession which lead to repeated debt crises. Development finance should also help developing countries reach the SDGs and improve their public welfare.

The following objective tree has been drawn based on problem tree analysis (Figure 7-10). The objective tree breaks down a high-level objective or outcome into smaller, more manageable and specific sub-objectives or outputs. Development finance's key outcome should be meeting the demands of developing countries and it can be supported by outputs such as a well-guided direction, an effective ecosystem and strong institutional and financing capacity. If those measures are taken, there will be a beneficial impact in the form of the transformation of developing countries' economic structure for sustainable growth, helping them come out of the boom-bust cycles and avoid repeated debt crises, and make good progress in reaching the SDGs and improving public welfare.

7.3.1 Reorienting development finance support

DFIs should follow a well-guided direction of development finance support so that (i) an adequate proportion of their financing can be channeled to infrastructure and other public assets, making projects and assets sustainable; (ii) proactive investment can be made in productive sectors to address climate change challenges and support decarbonization initiatives[1]; and (iii) they can play a key role in countercyclical finance to mitigate risks and safeguard public welfare.

DFIs can invest more in infrastructure and other public assets through a variety of initiatives and approaches (Dickinson, 2008), including (i) collaborating with the governments of developing countries to identify priority areas for infrastructure investment and develop strategies for financing and implementing public projects through technical project preparatory assistance, as well as partnering with local stakeholders to

[1] Bilateral DFIs should fulfill their respective governments' promise of providing 0.7% of their gross national income as ODA and both bilaterals and multilaterals combined should meet the promised US$100 billion for climate finance.

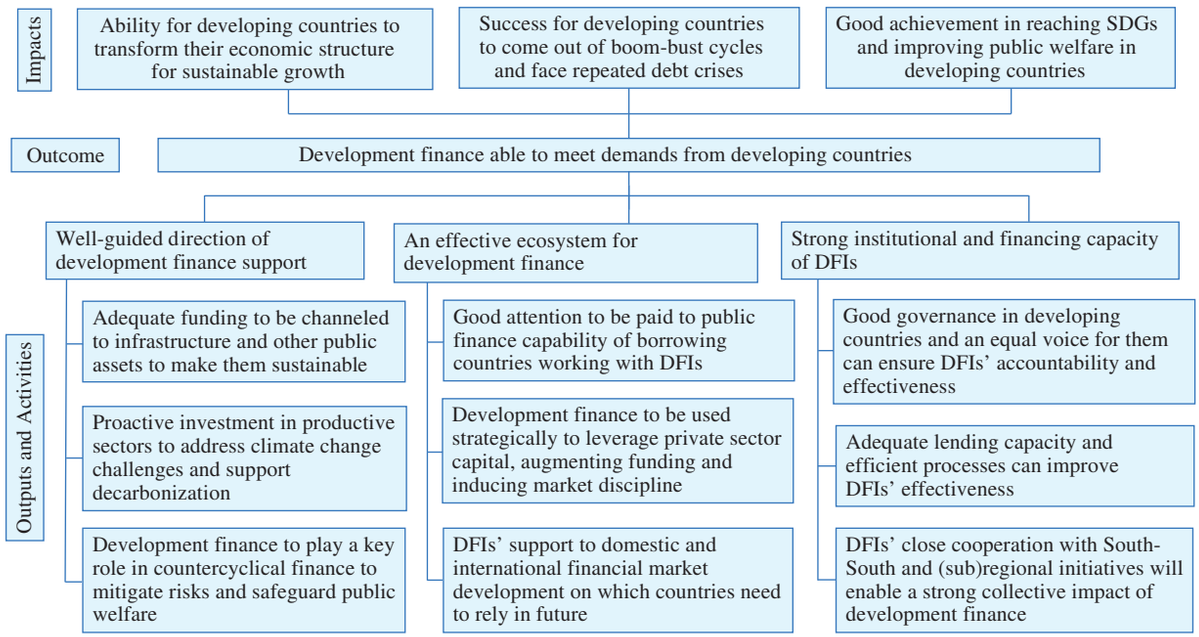

Figure 7-10 Objective tree: global development finance

ensure that projects meet the needs of communities; (ii) offering innovative financing solutions to support infrastructure development, such as long-term loans, mezzanine financing and PPPs to attract private sector investment and reduce the risk for investors, making infrastructure projects more financially feasible; (iii) concentrating their investments in specific sectors that are critical for economic development, such as transportation, energy and telecommunications, to address key infrastructure gaps and promote sustainable economic growth; (iv) investing in capacity-building to help countries and communities better manage and maintain their public assets, including providing technical training to local officials, investing in institutional development, and promoting knowledge sharing among stakeholders (Hanif et al., 2021); and (v) prioritizing investments that promote social and environmental sustainability, such as renewable energy projects, green infrastructure, and initiatives that support vulnerable communities to address key development challenges and promote more equitable and sustainable growth.

Overall, DFIs have a critical role to play in financing and promoting infrastructure development and other public assets. By working closely with governments, offering innovative financing solutions, targeting specific sectors, investing in capacity-building, and promoting social and environmental sustainability, they can help to unlock the potential of infrastructure as a driver of economic growth and social progress.

DFIs play a critical role in promoting investment in productive sectors and supporting economic development in developing countries that produce goods and services (Massa et al., 2013). These sectors may include manufacturing, agriculture, infrastructure, energy and technology. Investment in productive sectors is important because it can lead to job creation, increased productivity and economic growth. By providing financing for

businesses operating in these sectors, DFIs can help stimulate economic activity and support sustainable development. They can also provide technical assistance and other non-financial support to help businesses improve their operations and become more competitive. This will help businesses to grow, create jobs and contribute to the development of their local communities.

Investment in productive sectors should take into account the challenges posed by climate change and prioritize decarbonization efforts (World Bank, 2017). This is critical for creating a sustainable future for our planet. There is a growing awareness of the need to transition to a low-carbon economy, shifting from fossil fuels to cleaner and more sustainable sources of energy, such as renewable energy. Investment in productive sectors can help to reduce greenhouse gas emissions and mitigate the impact of climate change. In addition to investing in clean energy, there are other ways in which investment in productive sectors can address climate change challenges. For example, investing in sustainable agriculture practices, such as regenerative agriculture, can help to sequester carbon in the soil and reduce emissions from agriculture. Similarly, investing in sustainable transportation solutions, such as electric vehicles and public transportation, can help to reduce emissions from the transportation sector.

The IMF's US$100 billion commitment at the Paris Summit for a New Global Financing Pact in June 2023 in SDRs for climate-vulnerable developing countries and the World Bank's proposal at the same summit to allow developing countries hit by climate disasters to suspend their debt repayments are welcome, but these institutions and other DFIs need to do serious work to help developing countries achieve a paradigm shift in their infrastructure and economic structure to embrace the climate change agenda.

Developing countries need support to establish a conducive policy and legal environment that will incentivize industries and businesses to follow a low-carbon growth path and help them identify and arrange finance for such green and climate projects. Multilateral and bilateral DFIs have a lot to contribute in these regards. The Multilateral Cooperation Center for Development Finance, currently administered by the Asian Infrastructure Investment Bank, is a good example of providing planning, capacity-building, and project preparation assistance to developing countries.

DFIs can play an important role in countercyclical finance. DFIs are specialized financial institutions that provide long-term financing and investment for development projects, particularly in emerging economies (Lee et al., 2020). They can help to counteract economic downturns by providing financing for critical infrastructure projects and supporting SMEs. During a recession, private sector investment tends to decline, leading to a reduction in economic activity. DFIs can step in to fill the gap by providing financing for development projects, including infrastructure projects such as roads and railways and energy projects. These investments can create jobs and stimulate economic activity and help to counteract the downturn. Moreover, DFIs can provide countercyclical finance by supporting SMEs, which are often the hardest hit during an economic downturn. They can provide financing and technical assistance to SMEs, helping them to weather the recession and emerge stronger once the economy recovers.

DFIs can also help to stabilize financial systems during a crisis. By providing long-term financing and taking on risk, they can help to address market failures and support the financial sector during periods of economic stress. Overall,

they can play an important role in countercyclical finance, particularly in emerging economies where private sector investment may be limited. By providing long-term financing and supporting critical infrastructure projects and SMEs, they can help to counteract economic downturns and promote sustainable economic development.

To avoid negative transfers, DFIs need to be mindful of the local context and work closely with local stakeholders to ensure that their investments align with local priorities and needs, and disbursements can be maintained particularly during the time of crisis. They should also strive to maintain a diversified portfolio of investments across sectors and regions, which can help to mitigate economic imbalances. Moreover, DFIs should develop effective risk management strategies and capabilities to ensure that their investments are sustainable and contribute to long-term economic growth and development.

Multilateral DFIs need to show leadership in distressed debt resolution for developing countries, given the increasingly complex market conditions. They can launch special programs such as the Heavily Indebted Poor Countries Initiative (Ramos et.al., 2023) and the Brady Plan (Qian, 2021) to help debt-distressed countries restructure their debts and improve sustainability. Multilateral DFIs can also take the lead in collective efforts among all sovereign creditors to provide loan forgiveness as part of the restructuring and establish specialized agencies for distressed debt resolution as asset management companies (Qian, 2023). Multilateral and bilateral DFIs should continue to provide new grants and new concessional financing for developing countries.

Recently, the IMF has issued an additional US$650 billion in SDRs. Distressed debt restructuring negotiations can make full use of the additional SDRs to provide new liquidity, promote credit enhancement to support proposals like the Brady Plan, and help debtor countries lower the cost of refinancing or debt restructuring. Financial instruments such as the "green debt swaps" and "debt-for-climate swaps" can transform creditors' rights into investment in sustainable development goals in debtor countries. SDRs can also be used to leverage multi-party funds from public welfare organizations, international organizations, and environmental, social and corporate governance investors. This, at the same time, serves as a demonstration and generates good publicity. The IMF and the World Bank should also improve the existing debt sustainability analysis so that the analysis can provide a better reference for policy practices to improve the debt sustainability of developing countries (Xu, et al., 2022).

The G20's agenda of enhancing the capacities of the World Bank and other multilateral DFIs is an important initiative. The G20 has been urging multilateral DFIs to increase their efforts to propose options for expanding their lending capacity within their own governance framework while safeguarding their long-term financial sustainability, robust credit ratings and preferred creditor status.

7.3.2 Building an effective ecosystem

DFIs need to help build an effective ecosystem for development finance, paying special attention to the public finance capability of the borrowing countries working with them. They should ensure development finance to strategically leverage private sector capital, augmenting funding and strengthening market discipline. They should also support the development of the domestic and international financial market on which developing countries need to rely more in the future.

The public finance capability of borrowing countries is an important aspect to consider when

DFIs are investing in developing countries. Public finance capability means the capacity of a country's government to effectively manage public finances, including revenue collection, budgeting and expenditure management.

DFIs should work with the borrowing countries to strengthen their public finance capability as it is a critical component of sustainable economic development. However, in practice, DFIs may not always pay sufficient attention to this aspect when making investment decisions (Saldinger et al., 2019). One reason for this is that DFIs often focus on specific development goals, such as specific development or poverty reduction, rather than broader public finance issues. While these goals are important, they are closely linked to a country's public finance capability, and neglecting this aspect can undermine the effectiveness and sustainability of DFI investments. Another reason is that public finance issues can be complex and may require a long-term, multi-stakeholder approach to be addressed effectively. DFIs may not have the expertise or resources to address these issues on their own, and may need to work closely with other stakeholders, such as governments, civil societies and international organizations, to build the necessary capacity and infrastructure.

To address these challenges, DFIs should work closely with the borrowing countries to develop a comprehensive understanding of their public finance capability and needs (Runde et al., 2019). They should also engage in capacity-building efforts, such as providing technical assistance and training, to strengthen public finance management at the national and sub-national levels. Moreover, DFIs should collaborate with other types of international organizations to develop a coordinated approach to public finance capacity-building. This can help to ensure that their efforts are aligned with national priorities and are sustainable over the long term. Overall, strengthening public finance capability is critical for sustainable economic development, and DFIs should work with the borrowing countries and other stakeholders to address this issue.

DFIs face several challenges when it comes to leveraging private sector capital effectively (Belot, 2020). To address these challenges, they need to work closely with private sector investors to develop investment opportunities that are attractive and feasible for both parties. DFIs can also provide technical assistance to help private sector investors navigate the complexities of investing in developing countries. Finally, DFIs can work with governments to remove regulatory barriers and provide financial incentives to encourage private sector investment in developing countries.

It is also essential for DFIs to prioritize financial market development both domestically and internationally (Energy Catalyst, 2020). By doing so, they can help to promote economic growth, create new jobs and support the development of critical infrastructure and services in developing countries. They have a critical role to play in the development of the financial market in developing countries. Financial market development is essential for economic growth and poverty reduction as it provides access to credit, promotes investment and encourages entrepreneurship.

DFIs should prioritize support for financial market development because it helps to create an enabling environment for private sector investment. This can include supporting the development of capital markets, promoting financial sector reform, and strengthening regulatory frameworks. Financial market development can help to increase access to finance for SMEs and other underserved segments of the population. This can include providing access to credit,

promoting financial literacy and supporting the development of innovative financial products and services. DFIs can also support financial market development by investing in financial institutions that provide finance to SMEs and other underserved segments, such as banks and microfinance institutions. By doing so, they can help to increase the availability of finance for these groups, which will promote economic growth and reduce poverty.

7.3.3 Building strong institutional and financing capacity

DFIs need to strengthen their institutional and financing capacity. An adequate lending capacity and efficient processes can improve DFIs' effectiveness; good governance by developing countries and an equal voice for them can also ensure DFIs' accountability and effectiveness; and DFI's close cooperation with South-South and (sub)regional initiatives will enable development finance to have a strong collective impact.

Poor governance in DFIs needs to be addressed. Strong governance structures and practices, including transparency, accountability and independence, should be implemented (Kenny et al., 2020). This can help ensure that DFIs effectively allocate resources to development projects and maintain the trust of their stakeholders.

It is necessary to ensure a more prominent role for developing countries in the governance structures of DFIs (Prizzon et al., 2022). This can be done by increasing developing countries' representation on DFI boards, providing capacity-building support to help the former engage more effectively with DFIs, and increasing the transparency of DFIs' decision-making processes so that developing countries can better understand how funding decisions are made. Additionally, DFIs should ensure that they are providing information and data in languages used by developing countries, and seek inputs and feedback from stakeholders in developing countries.

To address the low lending capacity of DFIs, a range of strategies may be considered (G20 Expert Panel, 2022), such as: (i) increasing the capital of multilateral and bilateral DFIs; (ii) mobilizing additional resources from donor countries, capital markets, or other sources to increase their lending capacity; (iii) managing risk effectively by developing strong risk management systems, investing in due diligence and monitoring activities, and diversifying DFIs' lending portfolios; (iv) strengthening the private sector in developing countries by providing technical assistance, capacity-building support and other resources to help private sector actors participate in development projects; and (v) coordinating with other development partners, such as other multilateral institutions, to leverage resources and expertise to increase DFIs' lending capacity.

The World Bank and IMF for example, should pay special attention to their respective 2025 Shareholding Review and the 16th General Review of Quotas in 2023, so that the formulas used are simple and well defined, transparent and democratic, reflecting the dynamisms of the global economy. They should treat all their members fairly, particularly developing and transition countries (Gu and Liu, 2022).

DFIs need to recognize the potential benefit of investing in South-South regional initiatives. These initiatives can help to foster greater economic integration and cooperation between countries, which can lead to more sustainable development outcomes (UNDESA, 2019). DFIs can support regional initiatives by providing funding and technical assistance, as well as working with regional organizations and governments to promote policy reforms and regulatory

harmonization. Overall, DFIs should strive to be more inclusive and supportive of South-South regional initiatives as these can play an important role in promoting economic development and reducing poverty in these countries.

To address fragmentation in development finance, greater collaboration and coordination among stakeholders is needed (World Bank, 2021). This can be done by establishing platforms for dialogue and information-sharing, as well as developing mechanisms for joint planning and monitoring. Additionally, efforts should be made to streamline and harmonize funding mechanisms and procedures, which can reduce transaction costs and increase the effectiveness of development finance. Finally, greater transparency and accountability can help to ensure that development finance is used effectively and efficiently, and that all stakeholders are held accountable for their contributions.

7.4 Conclusion

The global economy is facing huge uncertainty and an overlapping of three crises: the aftermath of the pandemic, the climate crisis as reflected in severe weather disasters, and humanitarian crises. The G20's GIH projects that US$97 trillion will be needed in infrastructure investment globally by 2040 to support economic development and achieve the SDGs, leaving a financing gap of US$19 trillion, or 3.7% of global GDP. From another angle, the IHLEG estimates that the external climate finance needed for EMDEs is US$1 trillion per year (Songwe and Stern, 2022). However, if the multilateral DFIs are not able to achieve significant capital increase, the projected supply of total development finance for 2022-2025 is around 28.5% of this amount, leaving a gap of 71.5%, or US$715.5 billion (Table 7-2).

If the core problem is left unaddressed, developing countries will find themselves unable to transform their economic structure towards sustainable growth, end up in repeated debt crises and face continued challenges in reaching SDGs and improving people's welfare. The key objective for development finance is to meet developing countries' demands. This can be supported by well-guided directions to support infrastructure and productive sectors and offer countercyclical finance, a development-effective ecosystem for development finance, and strengthening DFIs' institutional and financing capacity.

To fill the gaps in global development finance, international coordination is urgently needed to enhance global investment/financial architecture, reform multilateral development institutions, and reduce and resolve the debt overhang. Countries must build on their endowments and tackle infrastructure bottlenecks to unleash their potential for sustainable development. With the right policy and financing, they can mobilize the required resources to accelerate their sustainable, resilient and inclusive development.

Here are some proposals for sustainable development financing.

First, prioritizing green infrastructure that addresses country-specific bottlenecks to structural transformation and job creation, and is consistent with a country's NDCs and plans to reduce carbon emissions.

Second, advanced industrial countries should fulfill their commitment of providing ODA that is 0.7% of their gross national income, as well as the US$100 billion additional funding to developing countries each year, extended to 2025, for investing in mitigation, resilience and green transformation.

Third, enhancing the public sector balance sheet analysis, using the net worth of the public

sector (public asset minus liability) as a comprehensive measure for debt sustainability, to support building key infrastructure in developing countries. The heads of 24 African states have called for improvement of the traditional Debt Sustainability Analysis (DSA) in the "Dakar Call to Action": "We believe that public sector assets and liabilities should now form the basis of country-specific risk analysis beyond traditional debt sustainability analysis." (Item 14, Dakar Call to Action, July 9, 2022).

Fourth, strengthening innovation for debt treatment, and exploring the feasibility of applying innovative approaches to meet the current debt challenges such as debt-for-bond swaps, debt-for-nature swaps, and public asset-based refinancing (Wang and Xu, 2023; Qian, 2023; Ramos et al., 2023).

Fifth, policymakers everywhere need to work with patient capital holders such as multilateral DFIs, regional and national DFIs, sovereign wealth funds, public wealth funds and asset management companies to ensure a steady increase of development finance for developing countries.

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Chapter VIII

Working Together to Advance Green and Low-carbon Energy Development

Energy is the foundation and driving force for the progress of human civilization. From fuelwood and coal to oil, gas and new energy sources, energy revolutions have been propelling the evolution of ways of human production and life. Since the Industrial Revolution, energy, mainly fossil fuels such as coal, oil and natural gas, has become the material foundation that human society relies on for survival. However, the energy sector also generates more than three-quarters of the world's total greenhouse gas (GHG) emissions[1] and most of the air pollutants. Low-carbon energy transformation is essential to climate change response and eco-environmental improvement, but progress in climate action lags behind expectations. Despite the fact that energy transition is a global consensus and that renewable energy accounts for most of the newly installed power generation capacity globally with its costs dropping fast, the development of renewable energy has not yet benefited all. Some developing countries are still challenged by unsatisfying energy accessibility, stability, affordability, sustainability as well as funding and inclusiveness. The crux lies in the stagnated transition of developed countries and their failure to fulfill climate commitments as well as the insufficient funds, technologies and capabilities that consistently constraining developing countries.

The Paris Summit for a New Global Financing Pact in 2023 reached the consensus that "no country should ever have to choose between reducing poverty, achieving a green transition and preserving the planet". It is the common responsibility of all humanity to realize the UN SDG 7 and ensuring access to affordable, reliable and sustainable modern energy for all. Accelerating global green, low-carbon energy transition is key to winning the race between humanity and climate change. The principle of common but differentiated responsibilities is the cornerstone of global climate governance. Developed countries should show greater ambition and action in the process of green, low-carbon energy transition while recognizing the contribution of developing countries and taking into account the national conditions and special difficulties of some developing countries. International financial institutions and countries should provide financial, technological and capacity-building support to developing countries under the frameworks of North-South and South-South cooperation to help them achieve green, low-carbon transition in the development of their energy systems and to promote transformation and development mutually.

8.1 Green and low-carbon energy development needs to accelerate globally

8.1.1 Progress in global climate action falls short of expectations

Annual GHG emissions have repeatedly reached record highs amid multiple crises. Before the COVID-19 pandemic broke out, newly installed coal power generation capacity was on a downward trend globally as the deployment of renewable energy accelerated and the substitution, transformation and upgrading of coal consumption progressed steadily. Consequently, annual GHG emission growth slowed down. From 2010 to 2019, the average annual global GHG emission growth was 1.1%, significantly lower than

[1] GHGs are gaseous components of the atmosphere produced naturally or by human activities that contribute to the greenhouse effect. They mainly include water vapor, carbon dioxide, nitrous oxide, methane and ozone, among which carbon dioxide has the greatest impact on global warming.

the rate of 2.6% between 2000 and 2009 (UNEP, 2022). The pandemic brought global GHG emissions in 2020 down by 4.7% compared with 2019, the largest single-year decline since 1970. Nevertheless, the pandemic and the Ukraine crisis have profoundly impacted global industrial chains and the energy supply and demand landscapes. The urgent need for economic recovery and the volatile international situation forced countries to prioritize energy security, causing fossil fuel consumption, and probably fossil fuel investments, to rebound. Emission prospects remain highly undecided. In 2021, global energy-related carbon emissions reached a record high of 36.3 Gt (IEA, 2022b), and atmospheric CO_2 was 149% of the pre-industrialization level (WMO, 2022), hitting new records of concentration and annual growth since they began to be recorded systematically.

Insufficient global emission reduction ambitions created notable emission gaps. Achieving the Paris Agreement's goal of limiting global temperature rise to below 2℃ requires global carbon neutrality or net zero CO_2 emissions by the early 2070s, but current NDC targets are not adequate to meet the goal, with the emission gap between the stated policy scenario and the 2℃ goal being about 14 to 23 Gt of carbon dioxide equivalent[1] ($GtCO_2e$). Under the stated policy scenario, global warming will increase by 2.8℃ by the end of this century (IPCC, 2022; UNEP, 2022), and the gap between the expected emissions in 2030 and emissions when the NDCs are fully realized is about 4 to 7 $GtCO_2e$. The annual implementation gap of G20 members is about 1.8 $GtCO_2e$. The NDC update in 2021 was to bring about an annual additional reduction of 4.8 $GtCO_2e$ per year theoretically, but it was only 0.5 $GtCO_2e$ in reality due to the policy implementation gap (IPCC, 2022).

8.1.2 Tight global energy supplies has caused negative ripple effects

Energy prices are high globally. The compounding effects of the pandemic, frequent extreme weather events, and the Ukraine crisis have tightened global energy supplies and rocked the commodity market since 2020. Countries are increasingly concerned about energy security. Actual global crude oil production remains below the agreed targets with limited room for production increases. In 2022, the average annual price of Brent crude oil reached about US$100 per barrel, the highest since 2013. In March 2022, energy prices peaked with a year-on-year increase of 100% (World Bank, 2023). The EU was affected most by the rising energy prices. Europe's wholesale electricity and gas prices in September 2022 rose 15 times compared to the prices at the beginning of 2021, making energy consumption expenditures soar (Heussaff et al., 2022). Average electricity bill in the UK increased from £760 in 2021 to £1,220 in 2022, a rise of nearly 60% (Bolton et al., 2023). Electricity prices for non-household consumers in the EU reached €0.16 per kWh in the first half of 2022, the highest price and rate of increase on record (Eurostat, 2023). Figure 8-1 shows the electricity tariff fluctuations in the EU and some European countries from 2018 to 2022. Governments have to prioritize energy security. According to the World Bank's projections, global energy prices will fall back

[1] Carbon dioxide equivalent (CO_2e) is a unit of measurement used to compare different GHG emissions. In order to harmonize the results of measuring the overall greenhouse effect, a unit of measure allowing comparison of the emissions of different greenhouse gases was needed. Since carbon dioxide contributes most to global warming, carbon dioxide equivalent was established as the basic unit of measurement of the greenhouse effect in order to compare the warming effects of different GHGs under a uniform standard.

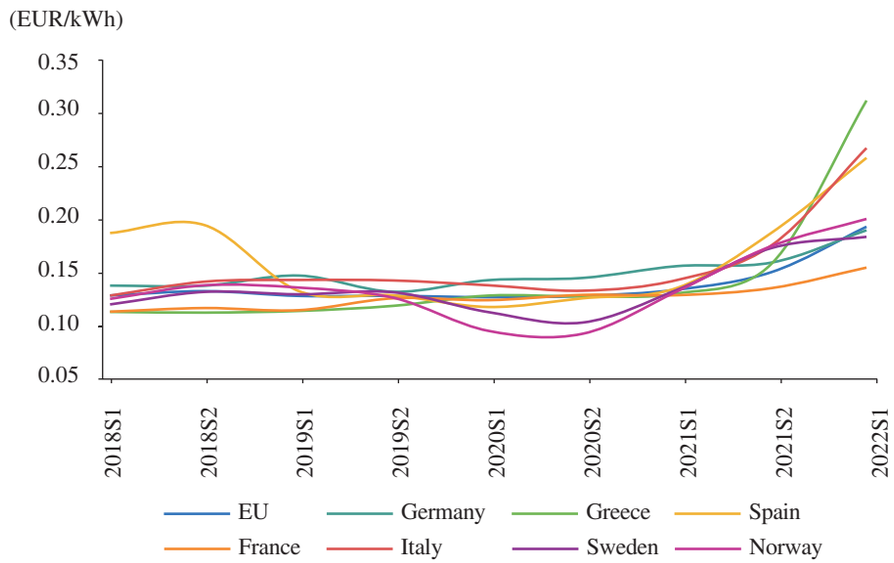

Figure 8-1 Electricity tariff fluctuations in the EU and some European countries, 2018-2022

Source: Eurostat

in 2023 but remain well above the average of the past five years and previous projections (World Bank, 2022).

Global energy supplies and demands are imbalanced. Geopolitical conflicts have restructured the global energy landscape and undermined the stability of global energy supplies. Russia, a leading fossil energy exporter, was once the EU's most important energy trading partner. In 2021, the EU imported 40% of its natural gas, 27% of its oil and 46% of its coal from Russia, accounting for 77% of its total trade (European Commission, 2022). Following the Ukraine crisis, although the EU is striving to end its energy dependence on Russia through programs such as REPowerEU, energy policy reforms and infrastructure construction cannot be delivered overnight. Global oil supply stabilized at 101.6 million barrels per day (mbpd) in the first quarter of 2023, but global oil demand in 2023 was expected to reach a new high of 101.9 mbpd (Figure 8-2). The rest of the year would see a projected daily supply increase of 1.2 mbpd. With the recovery of commerce and transportation, in the second half of the year, global oil supply would rapidly evolve from a tight balance to significant shortage, and the EU may face a natural gas supply gap of 27 billion m^3 (IEA, 2022d).

EMDEs are undergoing worsening economic difficulties. Europe, in search of alternatives to Russian energy supplies, began to purchase natural gas at high prices on the global energy market, dragging emerging and less developed economies reliant on energy imports into energy bidding races. Inflation soared in many countries, deepening their economic woes. In 2022, natural gas consumption in Asian emerging economies declined by 4%. Pakistan and Bangladesh, unable to afford costly imported natural gas, suffered severe power outages and foreign exchange losses, with the worst contractions in their natural gas imports – by 18% and 17% respectively (IEA, 2023d). The climbing energy prices have also affected other industrial chains, especially agriculture. Growing

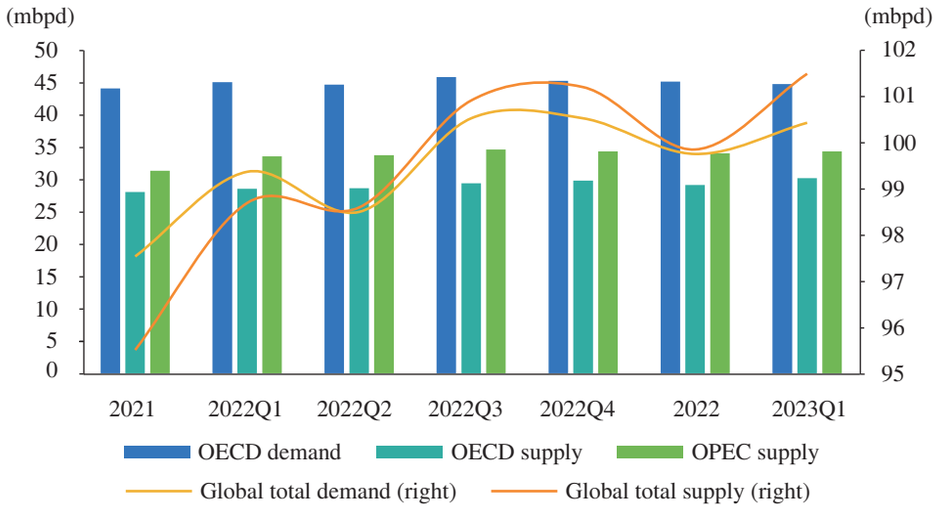

Figure 8-2 Global oil supply and demand, 2021-2023

Source: IEA

demands for biofuels have brought about food shortages, and high energy prices have led to higher prices of fertilizers, pesticides and other agricultural materials and machinery and in turn higher global agro-product prices. A food crisis is developing parallelly and convergently with the energy crisis. The World Bank predicted that as energy and food prices continue to rise, the economic growth of EMDEs dependent on imported commodities will fall from 6.9% in 2021 to 4.0% in 2023 (World Bank, 2023).

8.1.3 Energy accessibility and affordability in developing countries are gravely concerning

Improvement of global energy accessibility is slowing down. Global energy accessibility improved significantly over the past decade. The electricity penetration rate rose from 84% in 2010 to 91% in 2021 (Figure 8-3) (IEA et al., 2023). However, due to multiple constraints, including the pandemic, infrastructure, geography, weather and economic conditions, it is now slowing down. Around the world 675 million people still do not have access to electricity. The population without electricity access in Africa in 2021 rebounded for the first time since 2013. Energy accessibility is falling behind on SDG 7 (IEA et al., 2023).

Energy poverty continues to plague developing countries. More than half of the global population without electricity live in low-income countries. The 20 countries with the lowest levels of electricity penetration are all located in sub-Saharan Africa. In Nigeria and the Democratic Republic of the Congo, which have the largest population without access to electricity, population growth outpaces electricity penetration. In 2020, 90 million people in developing African and Asian countries were not able to afford electricity (IEA et al., 2022). By 2030, the number of people without electricity access will still be about 670 million to 764 million globally, and most of them will be living in sub-Saharan Africa (UN, 2022a).

Energy affordability in developing countries will further deteriorate. The average annual household energy bill in EMDEs is projected to soar by 80% by 2050 compared with the average

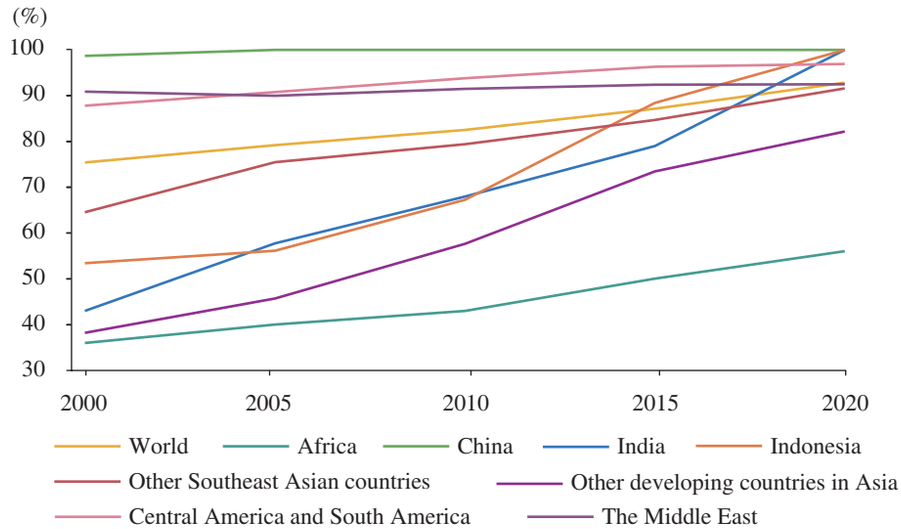

Figure 8-3 Electricity access rates in different countries and regions, 2000-2020

Source: IEA

over the past five years, growing faster than the average disposable income (IEA, 2021b).

8.1.4 Fossil energy still dominates the global energy mix

Fossil fuels still serve as the major energy source in the near and medium term, and energy efficiency improvement lags behind. Fossil fuels accounted for 82% of the primary energy consumption in 2021, only marginally lower than the 83% in 2019 (BP, 2022). Despite the coal-to-gas conversion trends, CO_2 emissions from burning coal still reached a new high of 15.5 Gt in 2022, an increase of 243 Mt from the previous year, far offsetting the emission reductions due to using natural gas (IEA, 2023a). Global fossil energy demand is expected to peak around 2030, with oil demand peaking at 103 mbpd. Natural gas demand is projected to plateau at 4.4 trillion m^3 between 2030 and 2050, and coal demand decline by 25%. By 2050, fossil energy will account for about 60% of the global energy mix, remaining the dominant energy source in the global market (IEA, 2022g). The global energy intensity decline rate was merely 2.1% between 2010 and 2015, and a lesser 1.6% between 2016 and 2019, which is a far cry from the average of 2.6% between 2010 and 2030 needed for realizing the SDGs (IEA et al., 2022).

Development and deployment of renewable energy needs further improvement. The cost of renewable energy has declined significantly over the past decade, and the installed capacity has continued to increase (Figure 8-4). Specifically, the rapid renewable energy development in China has brought down renewable costs globally. The global weighted average levelized cost of energy (LCOE)[1] of newly commissioned utility-scale solar PV projects declined by 88% between 2010 and 2021, while that of onshore wind fell by 68% and offshore wind by 60% (Figure 8-5). In the same time span, newly installed renewable

[1] LCOE refers to the estimated revenue required to build and operate a generator over a specified cost recovery period. It is used to compare the costs of a wide variety of power generation projects (such as photovoltaic, wind power, and thermal power).

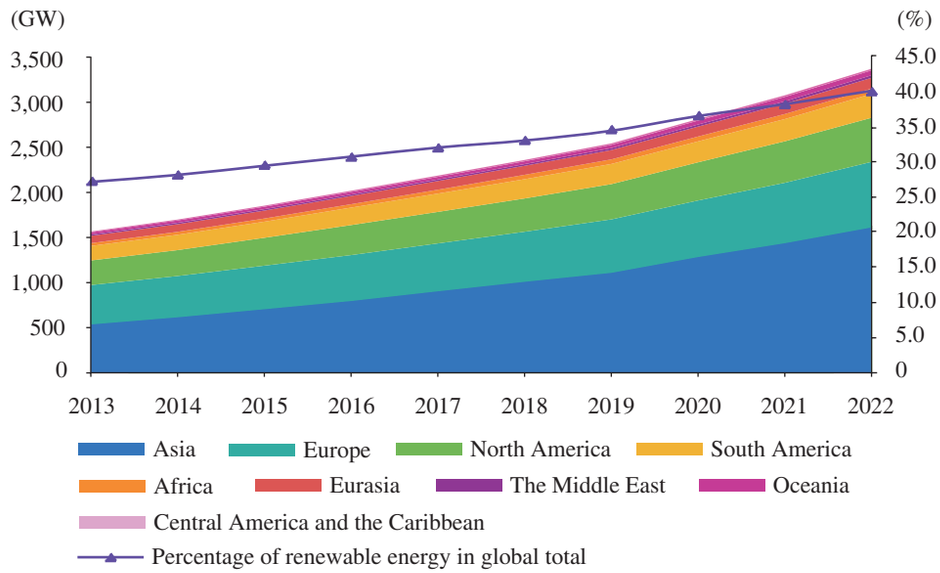

Figure 8-4 Global installed capacity of renewable energy, 2013-2022

Note: The left axis shows the installed capacity of renewable energy. The right axis shows the percentage of renewable energy in total global installed capacity.
Source: IRENA

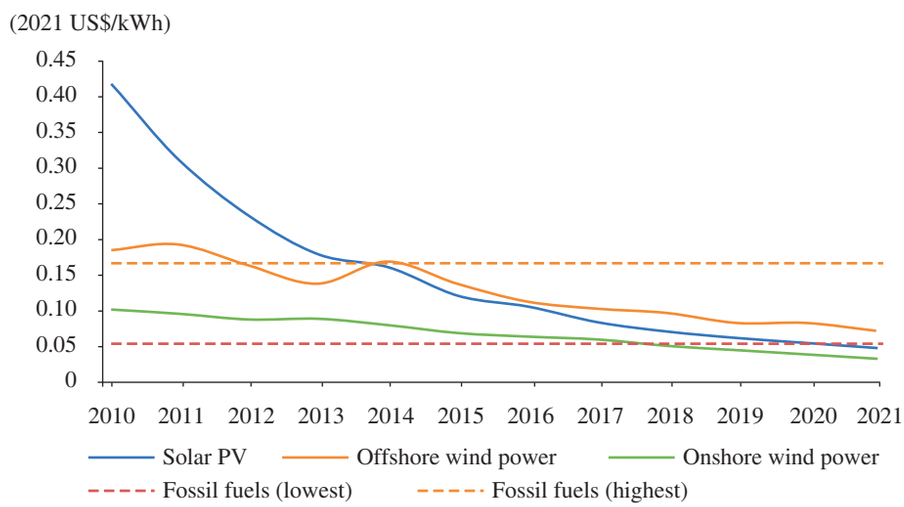

Figure 8-5 Global LCOE of wind and solar power generation, 2010-2021

Source: IRENA

energy capacity in China took up 42.8% of the global sum (IRENA, 2020; IRENA, 2023a). In 2021, the global weighted average LCOE for new grid-scale solar PV and hydropower was 11% cheaper than the cheapest newly established fossil fuel power projects, reflecting a seismic improvement in the competitiveness of renewables (IRENA, 2022). By the end of 2022, global installed renewable generation capacity was 3,372 GW, taking up 40.2% of the global total generation capacity with an annual increase of 9.6%. Among the renewable capacity facilities installed in 2022, 60% are in Asia, and more than 90% are solar and wind (IRENA, 2023a). Despite the momentum, the share of renewable energy in power generation still falls behind that of coal (Figure 8-6), and the share in final energy consumption is growing slowly – merely 11.46% in 2019 (Figure 8-7) (IEA et al., 2023). In countries and regions with considerable renewable energy resources, renewable energy development is far from satisfactory. For example, renewable energy took up only 8.46% of final energy consumption in the ASEAN in 2022 (ASEAN, 2022).

Fossil fuel subsidies have increased rather than decreased. The energy crisis has encouraged countries, especially EU members, to vigorously promote energy transition in search of energy security. Newly installed renewable capacity in the next five years is expected to reach 2,400 GW, an increase of about 85% over the past five years, pushing renewables above 90% of the world's new capacity (IEA, 2022e). The energy crisis, hence, could be a turning point in the history of global green energy transition. Nonetheless, urgent energy needs are forcing countries to lean towards fossil fuels. Despite the consensus on phasing out inefficient fossil fuel subsidies reached in the Glasgow Climate Pact at COP 26, global subsidies for fossil energy consumption soared to a record high of US$1 trillion in 2022, twice as much as in 2021 and 10 times as much as in 2020 (IEA, 2023c).

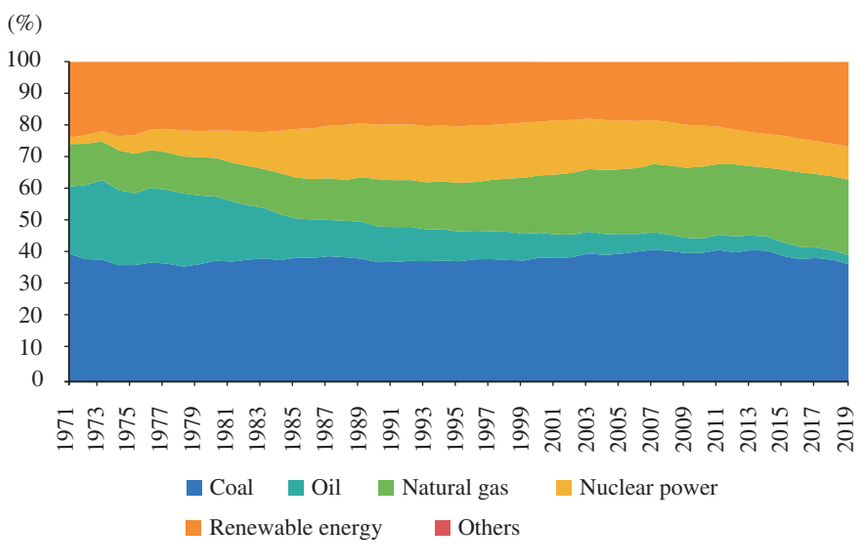

Figure 8-6 Shares of various energy sources in power generation, 1971-2019

Source: IEA

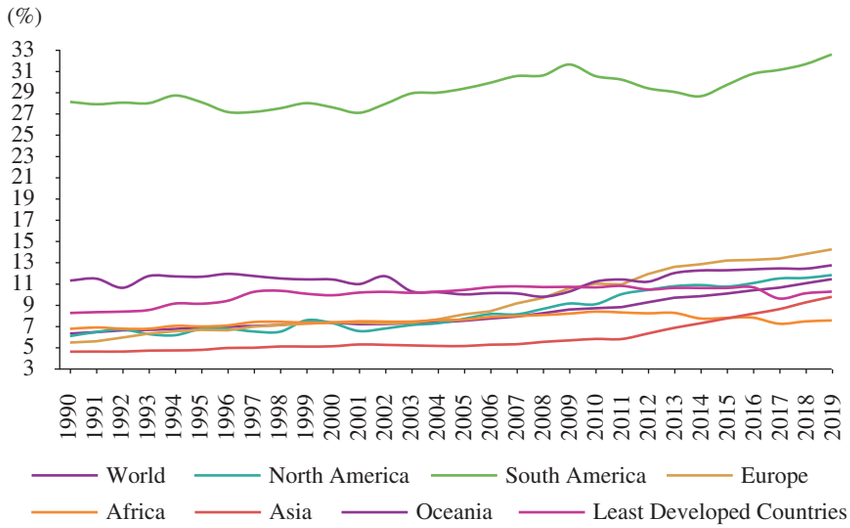

Figure 8-7 Share of renewable energy in final energy consumption by region, 1990-2019

Source: UN

8.2 Multiple factors constrain green and low-carbon development of the global energy system

8.2.1 Developed countries fail to lead emission reduction and fulfil aid commitments

Developed countries are making insufficient emission reduction efforts. Most of the GHG emissions since the Industrial Revolution are attributable to developed countries, who are the major responsible parties for global climate change and historical emissions. Developing countries face the urgent need to eradicate poverty and develop their economies, while also suffering disproportionate damage from climate crisis. In terms of historical emissions, the LDCs accounted for only 3% of the world's total cumulative emissions over the past 170 years, compared with 58% for developed countries. Yet 69% of the deaths caused by climate-related disasters globally over the past 50 years occurred in the LDCs. As for current emissions, per capita emissions in the LDCs and small island developing states are well below the global average of 6.8 tCO_2e, with the LDCs accounting for only 1.1% of total global carbon emissions (IPCC, 2023). However, lacking the ambition to reduce emissions, developed countries have failed to take up their historical responsibility to combat climate change or work effectively to deliver transformations in key areas. In 2021, on the eve of COP26, countries updated their NDCs, many of which, sadly, had not been improved compared to 2015. Some had even regressed. The updated NDCs reduce annual GHG emissions only by 7.5% from the original projection for 2030, well below the 30% reduction in the least costly pathway to the Paris Agreement's 2℃ target (UNEP, 2021). Nearly 80% of US primary energy consumption is fossil energy. In 2022, US carbon emissions were 0.8% higher than in the previous year (IEA, 2023a).

Developed countries have not fulfilled their climate commitments. While many developing countries are facing severe financial and technological shortages and struggling to realize a green, low-carbon transition on their own, developed countries have failed to provide due financial and technical support. On one hand, developed countries and MDBs have yet to honor their 2009 commitment to mobilize US$100 billion for developing countries annually. Developed countries have not lived up to their pledge to provide ODA equivalent to 0.7% of their GDPs, bringing an annual shortfall of around US$150 billion per year (UN, 2023c). Climate-related ODA in total grew from US$23.2 billion in 2012 to merely US$52.9 billion in 2020. Neither the growth rate nor the volume appears to be adequate for realizing the Paris Agreement targets. In 2020, 45% of the ODA provided for green development was delivered through debt tools, and 75% and 67% of the ODA received by lower-middle-income countries and upper-middle-income countries respectively were in the form of debt tools (UN, 2023a). On the other hand, while existing financing mechanisms in support of transitions in developing countries, for example, the EU's Just Transition Mechanism, the ADB's Energy Transition Mechanism, the Climate Investment Funds' Accelerating Coal Transition Investment Program, refuse to support fossil fuel infrastructure, they also fail to adequately support sharing and transfer of green technologies. In 2020, only 2% of the world's total ODA was spent on technological innovation, of which less than 2.5% went to R&D in the energy sector. From 2018 to 2021, total green technology imports and exports of developed countries grew by about US$99 billion and US$96 billion respectively, but developing countries saw only a US$15 billion increase in green technology import (UN, 2023b). It is expected that by 2030, cutting-edge technologies such as artificial intelligence, green hydrogen, biofuels and the internet of things will have created a market of US$9.5 trillion, three times the size of the current Indian economy. However, most of the market opportunities will be enjoyed by developed economies, and the technological gap faced by developing countries will further widen (UN, 2023b).

Green barriers to investment and trade are growing. Developed countries, having naturally achieved peak carbon emissions in the post-industrialization phase, are pursuing a radical climate agenda and basically refraining from investing in oil and gas, requiring developing countries to raise their emission reduction ambitions and vigorously promote rapid coal exit and decarbonization. However, natural resource extraction and commodity production still play a key role in the economic structure of most developing countries. For example, the East Africa Crude Oil Pipeline project, the world's longest heated oil pipeline scheduled for completion in 2024, is expected to generate an annual net revenue of US$1.5-3.5 billion, create more than 60,000 jobs, and boost GDP by 22%, which is critical to Uganda's economic and social development. However, in 2022, the European Parliament passed a resolution condemning the project on the grounds of human rights and environmental protection as well as carbon emission control. Oil and gas insurer Allianz has withdrawn from the project, and Barclays and Credit Suisse have refused to finance it. In the meantime, the climate policies of the EU, the US and other developed countries and regions are creating new green trade barriers. For example, on January 1, 2023 the EU launched the Carbon Border Adjustment Mechanism (CBAM), which introduces a carbon price on imports and imposes environmental standards chosen by EU member states on developing

trading partners. The mechanism directly impacts the exports of carbon-intensive industries in developing countries and, if implemented at a price of US$44 per tonne of embedded CO_2 emissions, would result in a reduction of 1.4% in the exports of carbon-intensive industries in developing countries and a reduction of US$5.9 billion in revenues, compared with an increase of US$2.5 billion in revenues in developed countries (UNCTAD, 2021).

8.2.2 Developing countries face huge financing gaps and high cost of financing

The global energy transition faces a huge investment gap, with particular needs for greater investment in transition technologies. To achieve carbon neutrality or net zero emission by 2050, the global energy transition would require investments totaling about US$150 trillion, with a shortfall of about US$47 trillion. Rising costs and increasing economic uncertainty, energy security risks, and climate urgency are further undermining the efficiency of energy transition investments. Technology is key to realizing the transition and requires 80% of the transition investment. A record US$1.3 trillion in global energy transition technology investment in 2022 and about US$38 billion in global public expenditure on energy technology R&D in 2021, 90% of which was spent on low-carbon energy technology R&D, still fell short of the transition needs. To significantly reduce the share of fossil energy and achieve carbon neutrality or net zero emission, total annual average investment in energy transition technologies would have to increase to more than four times the current levels (IEA, 2022a).

Transition financing is unevenly distributed, and public investment needs to be significantly increased. Since the pandemic, 95% of global clean energy investment has gone to developed economies (IEA, 2022f). Two-thirds of the world's population reside in EMDEs, but clean energy investments flowing to these regions account for only one-fifth of the global total. In 2022, Africa's new renewable energy capacity accounted for only 1% of the global increment. It is estimated that by the end of the 2020s, EMDEs will need to receive more than US$1 trillion per year in clean energy investment, more than seven times the current levels, to ensure carbon neutrality or net zero emission by 2050. Global public investment in energy R&D is on a downward trend, from 0.1% of GDP in 1980 during the fossil energy supply crisis to just 0.04% today. Total public investment in clean energy in developing countries was just US$10.9 billion in 2019, less than half of what it was in 2017 (IEA et al., 2022).

Developing countries are facing huge economic recovery pressure with tight fiscal resources, which is limiting energy transition investments. Economic recovery amidst the multiple crises has been slow globally. The international community is generally cautious about the growth prospects of developing countries. The World Bank pointed out that growth forecasts had been revised down for 70% of EMDEs for 2023 and that the expected growth for EMDEs other than China was about 2.7% in 2023. In the next two years, per capita income growth in EMDEs is projected to average 2.8%. By 2024, the overall GDP will be about 6% lower than the pre-pandemic level. GDP growth in sub-Saharan Africa is unlikely to return to pre-COVID levels, with growth projected to be 3.8% in 2023 before recovering to over 4% in 2024 and 2025 (IMF, 2023; World Bank, 2023; UN, 2023a). The slowing growth, bringing further fiscal burdens, has made it more difficult for developing countries to increase energy transition inputs. For example, technological R&D expenditures in EU

countries generally account for about 2.3% of their GDPs, and Israel and the Republic of Korea spend up to 5% of their GDPs, whereas the proportion is only 1% in developing countries such as Brazil, Egypt and Thailand, 0.5%-1% in South Africa and Viet Nam, and 0.3% in Mexico, with an average of 0.53% for lower-middle-income countries (Figure 8-8) (UN, 2023b). Insufficient investment in energy technology R&D will inevitably dampen energy transition.

With deteriorating debt outlooks and high financing costs, developing countries are seeing a slowdown in green and low-carbon energy investments. Global public debt as a share of GDP remained high at 91% in 2022, 7.5 percentage points above the pre-pandemic level. The lingering impacts of the pandemic, continued interest rate hikes by the US, weakening economic prospects and the volatile international situation have further undermined the balance of payments of developing countries. The nominal cost of financing in EMDEs is about seven times that in the US and Europe (IEA, 2021a). The attractiveness of investing in higher-risk fields, such as infrastructure construction and clean energy, has further declined, leaving the abundant and excellent renewable energy resources in many countries untapped. For example, in 2021, the cost of constructing a solar PV power plant in EMDEs was about two to three times that in developed economies, with financing cost accounting for about half of the total levelized cost, notably higher than the share in developed economies, which was only 25-30%. If the cost of capital in EMDEs can be lowered by 200 basis points, under the stated policy scenario, their clean energy

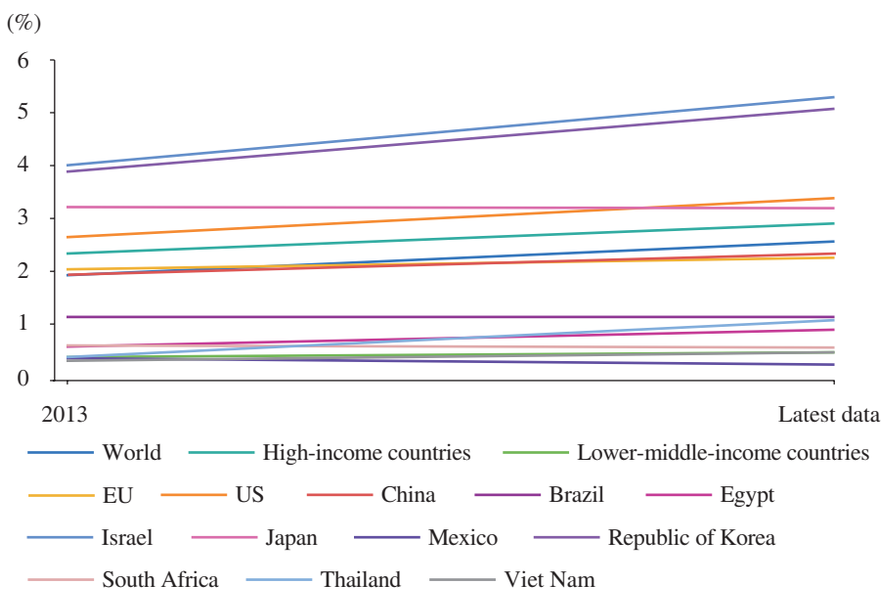

Figure 8-8 Share of technological R&D spending in GDP in some countries and regions

Note: The latest data of most countries were obtained in 2020. That of the lower-middle-income countries is from 2017. Those of Brazil, South Africa, and Viet Nam are from 2019, and Thailand from 2018.
Source: UN

financing cost will be cumulatively reduced by US$11 trillion by 2050, equivalent to 20% of the total clean energy investment needs (IEA, 2022f). Total investment in EMDEs is projected to grow at an average annual rate of about 3.5% from 2022 to 2024, less than half of the growth rate over the past two decades (World Bank, 2023). Global annual clean energy investment needs for carbon neutrality or net zero by 2050 are about US$4 trillion until 2030. However, under the stated policy scenario, the average could only reach US$2 trillion annually by 2040. If China is not taken into account, the annual clean energy investment received by EMDEs globally has remained at the level of 2015 when Paris Agreement was born, if not lower (UN, 2023b).

8.2.3 Developing countries are suffering from big deficits in low-carbon energy technologies and capacity building

With slow renewable energy development, most developing countries face pressing needs to raise the proportion of renewable energy in end-use and energy efficiency. There is a huge gap between developing and developed countries in renewable energy development. By the end of 2022, of the total installed solar and wind capacity, Africa accounted for only 1.2% and 0.86%, and Asia (excluding China, India, Japan and ROK) only 3.0% and 1.1% (IRENA, 2023a). Global low-carbon transition in the end-use sectors is significantly lagging behind. In developing countries, industrial processes and household heating still rely heavily on fossil energy, and oil continues to dominate transportation energy consumption. By the end of 2020, the share of renewable energy in global heating was 10.4%, only 1.2 percentage points higher than in 2015. In transportation, renewable energy accounted for 4%, up only 0.9 percentage point from 2015. Energy efficiency improvement in developing countries is also dampened, with only a 0.6% annual improvement rate in West Asia and North Africa and 1.0% in Latin America and the Caribbean and sub-Saharan Africa (IEA et al., 2023).

Most developing countries are lagging behind in low-carbon energy development capacity, with large gaps in new-type power system construction. The energy mix in most EMDEs is dominated by traditional fossil fuels, requiring a large amount of new infrastructure as well as large-scale retrofitting of existing facilities. Despite abundant renewable energy potential, the lack of effective technology, financing and policy mechanisms has severely limited low-carbon energy development in most developing countries. For example, sub-Saharan Africa is estimated to have a potential of about 10,000 GW of solar power, 350 GW of hydropower and 400 GW of natural gas, a total of about 11,000 GW. Nevertheless, due to an extremely low level of power utilization, local industrial, commercial and even residential consumers have to turn to inefficient and costly self-generation facilities. The lack of basic data on resources prevents governments, businesses and other stakeholders from fully grasping the renewable energy potential and is a major constraint on resource development in many developing countries. Some countries, such as Lesotho, Papua New Guinea, Viet Nam, Nigeria, Zambia and Madagascar, have developed resource mapping programs that are still in the early stages. Renewable energy is more demanding on power infrastructure than traditional fossil energy sources, and mismanagement of energy infrastructure exacerbates low-carbon power development troubles in developing countries. Transmission and distribution losses in developed countries are generally in the range of 5%-7%, whereas in developing countries, due to perennial

mismanagement and lack of grid maintenance, transmission and distribution losses vary widely, averaging about 11.7% in sub-Saharan Africa and 13.5% in the Middle East and North Africa (IEA, 2019).

The structural decline of the traditional energy industry is raising employment pressure, and the development of the renewable energy sector demands higher-quality human capital. Carbon-intensive industries are the engine of economic growth in many developing countries and have attracted a large amount of capital and provided massive employment. The rise and development of low-carbon industries and the dramatic shift in investment trends have impacted the fossil fuel-based energy industry, leading to significant job losses in sectors long dependent on fossil energy production and bringing enormous social pressure to the regions affected. In 2019, the workforce in the energy sector worldwide exceeded 65 million, and 32 million of them were taking fossil fuel-related jobs. The coal industry, mainly concentrated in the Asia-Pacific region, employed 6.3 million workers. The oil supply industry, mainly in the Middle East (nearly 20%), North America (about 15%), and Africa (about 15%), employed nearly 8 million workers. Refining jobs were concentrated in the Asia-Pacific region (IEA et al., 2022). While the renewable energy industry can create new job opportunities, workers in traditional industries are still required a certain level of education and training before being relocated to the clean energy sector because of its relatively higher knowledge intensity. The offshore wind industry, for example, requires not only a large number of technicians and engineers for construction, installation, operation and maintenance, but also practitioners with a wider range of skills, including asset management, project management, engineering, and scientific rescue as well as specific offshore skills (IEA, 2022h). Taking into account the entire production value chain including batteries and charging infrastructure, the workforce scale required for electric vehicle (EV) manufacturing may be similar to that of traditional automotive manufacturing. However, given that EV manufacturing is less labor-intensive and more technologically demanding, auto workers still need to be retrained to shift from combustion-engine automotive production to EV manufacturing. The IEA has projected that by 2030, about 16 million workers will need to shift to clean energy-related positions, about 60% of whom will need some level of higher education and training (IEA, 2022b).

8.3 Jointly promoting global green and low-carbon energy development

Achieving SDG 7 to "ensure access to affordable, reliable, sustainable and modern energy for all" requires improvements in energy accessibility and inclusiveness as well as the low-carbon level of the energy mix. It is therefore necessary to raise the accessibility and use range of clean energy, especially in developing countries. However, goal setting does not lead to the fulfillment of the Paris Agreement. The pace of action is key in our race against climate change. To this end, governments, international financial institutions, businesses and all parties should shoulder their responsibilities and do their best to jointly promote a global clean energy partnership that accelerates the green, low-carbon development of the global energy system.

8.3.1 Developed and developing countries both need to shoulder their responsibilities and do their utmost

All countries should uphold the goals and principles set by the UNFCCC and the Paris Agreement, abide by the principle of common but differentiated responsibilities, do their part to strengthen their NDCs and translate their goals into practical policies, measures and concrete actions. Developed countries need to take the lead in reducing emissions, honor their international commitments and implement energy transition strategies. Developing countries need to make their due contributions, set clear goals for green, low-carbon energy development and establish long-term, stable policy environments for renewable energy development.

Developed countries should fulfill their development assistance obligations in a timely manner and deliver on their commitment to provide developing countries with US$100 billion in climate finance annually. The distribution structure of international assistance needs to be improved to increase support for energy technology innovation and green technology development in developing countries. A transparent mechanism for fund tracking and reporting should be established to ensure that climate funds are equitably distributed to the countries and regions in need.

8.3.2 Diversifying fund sources and reducing financing costs for developing countries

Financing conditions for developing countries should be optimized in view of their national characteristics. The clean energy investment assessment frameworks of international financial institutions should be improved to provide more preferential financing tools and to reduce financing costs for developing countries. Multilateral financial institutions should be encouraged to set up specialized preparation funds for clean energy projects to reduce project startup costs.

Clean energy project bankability standards should be formulated, and the investment standards among international financial institutions should be aligned. Financing channels for clean energy projects should be unblocked, and funds and projects should be efficiently connected. Public-private partnerships should be enhanced, investment restrictions and obstacles removed, transparent competition opportunities provided, and more social capital mobilized. Low-cost funds including grants, long-term loans and blended finance should be enlarged to propel clean energy infrastructure construction in developing countries.

8.3.3 Promoting technology transfer, knowledge sharing and capacity building

North-South, South-South and triangular cooperation need to be strengthened to establish more effective international cooperation mechanisms. Transnational and cross-regional cooperation on clean and low-carbon technological innovation and standards should be stepped up. Transfer and popularization of clean energy technologies should be promoted, especially technologies for grid stability and flexibility, so that developing countries can have early access to affordable clean energy technology.

Final clean energy consumption technology cooperation should be strengthened, including energy efficiency improvement and end-use electrification, and infrastructure should be enhanced in parallel with developing clean energy technologies. Energy accessibility in underdeveloped regions should be improved with realistic technological solutions, taking their national conditions

into consideration.

A knowledge platform for green, low-carbon energy development should be built on the basis of existing inclusive networks of international organizations and forums such as the United Nations to facilitate dialogues on clean energy development among countries and to share good practices vis-a-vis policy options, regulatory mechanisms, financial support, technological innovation and talent training, supporting developing countries to strengthen their capacity for clean energy development.

The international community, especially international organizations, should increase their support for developing countries to raise the inclusiveness of energy policies. Regionally differentiated energy development strategies should be established and the mix of different energy types strengthened to solve the last-mile problem of energy supply. Industrial policy synergies between the transition of the fossil fuel sector and the development of renewables should be strengthened and employment opportunities in clean energy industrial chains increased. Investments should be expanded in workforce training and re-education to enhance the skills and adaptive capabilities of workers in traditional energy sectors and to prepare capable labor force for clean energy sectors.

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Chapter IX

Working Together to Promote Industrialization in Developing Countries

Throughout world history, industrialization has been an inevitable stage for most countries to achieve economic and social development and rise from a low-income economy to a high-income one.[1] From European countries and the United States to East Asian countries, industrialization in the developed economies is closely related to economic growth and national income increase. It is systematically important as it can impact the progress of at least 10 of the 17 SDGs by direct or indirect means (UNIDO, 2020). In recent years, though industrialization in developing countries has advanced, the problems of inadequacy and imbalance have become prominent. Many developing countries have not shared the development dividends of industrialization. Some find it difficult to industrialize due to medium- and long-term structural reasons as well as the current crises. Improving the industrialization level of developing countries is an important aspect of filling the global development deficit and sharing the fruits of global development. Developing countries should formulate industrialization strategies based on their national conditions and integrate into the global value chain. Developed countries and international institutions should do their best to increase financial, technological and knowledge support for developing countries. All parties should work together and accelerate action to jointly promote industrialization in developing countries.

9.1 Developing countries' industrialization is inadequate and imbalanced

Industrialization is generally defined as a process where the proportion of GDP derived from manufacturing activities goes up[2] and the proportion of the working population engaged in manufacturing shows a rising trend (Jones, 2018). This chapter analyzes the industrialization situation of 110 developing countries from 1990 to 2021, with reference to the country classification used by the UN in *World Economic Situation and Prospects 2023*.[3] Based on the pioneering work of Chenery et al., this chapter measures the level of industrialization in GDP per capita and the ratio of manufacturing to total economic activities, and classifies developing countries by the stages of industrialization they are in, namely pre-industrialization, early industrialization, mid-industrialization, late industrialization and

[1] Except for a few countries with outstanding resource endowments.

[2] Except for cyclical interruptions.

[3] According to *World Economic Situation and Prospects 2023* (UN, 2023a), there are 125 developing countries in the world. Among them, the Republic of Korea, Singapore, Israel, Brunei Darussalam, the Bahamas and Barbados were already at a high level of development in 1990; the development of seven oil-exporting countries in Asia, namely Bahrain, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates, was significantly different from other countries; data is not available for the Democratic People's Republic of Korea and Syria. Therefore, this chapter focuses on the remaining 110 developing countries, including 46 LDCs.

post-industrialization.[1] Currently, industrialization in developing countries has the following four characteristics:

9.1.1 The industrialization level of developing countries has improved, but the pace has slowed down in recent years

On the whole, since the 1990s, developing countries have significantly improved their level of industrialization. This is mainly due to factors such as their great attention to industrial development, and the rapid expansion of global value chains, which lowered the threshold for industrialization in developing countries. In 1990, 56 (50.9%) of the 110 developing countries were in the pre-industrialization stage, 31 (28.2%) in early industrialization, and 23 (20.9%) had entered or completed mid-industrialization. From 1990 to 2021, 62 developing countries moved up the industrialization ladder, with 37 crossing one stage and 22 two stages. Equatorial Guinea, China and Guyana advanced by three stages from pre-industrialization to late industrialization. The decade of 2000-2010 witnessed the fastest pace of improvement, when the number of countries in the pre-industrialization stage reduced sharply from 55 to 35, the number of countries in mid-industrialization increased from 14 to 21, and those in late industrialization increased from 12 to 20. The number of countries completing industrialization increased from 4 to 11. In contrast, industrialization was significantly slower in the decades of 1990-2000 and 2010-2021 (Figure 9-1).

About 40% of the developing countries struggled for a long time to improve their industrialization. While many well-developed latecomers advanced a stage within one decade during the period of rapid industrialization, in many developing countries, it was difficult to improve the level of industrialization. From 1990 to 2021, 44 countries did not improve their stage of industrialization. Specifically, in 2010-2021, among the 23 countries in early industrialization, only 5 moved up to mid-industrialization, 14 remained in early industrialization, and 4 downgraded to pre-industrialization. Among the 20 countries in mid-industrialization, 16 remained in mid-industrialization, only 2 advanced to late industrialization, and 2 downgraded to early industrialization. Among the 20 countries in late industrialization, only 2 finished the industrialization process and entered post-industrialization, 13 remained in late industrialization, and 5 downgraded to mid-industrialization. Among the 11 countries in post-industrialization, 5 fell back to late industrialization, and 1 country returned all the way back to early industrialization.

[1] Chenery et al. (1986) used GDP per capita as the main criterion for dividing the stages of industrialization. In later studies, especially those focusing on China's industrialization (Huang, Li et al., 2017), other measures were added, such as the proportions of primary, secondary and tertiary industries, employment structure and urbanization rate. This study finds that for many developing countries with small populations, indicators such as industrial structure, employment structure and urbanization rate do not follow specific rules and vary drastically. Therefore, this study still uses GDP per capita as the main criterion for dividing the stages of industrialization. Chenery et al. calculated the threshold for the division of industrialization stages in the 1970 US dollar, and the thresholds for early, mid-, late and post-industrialization were US$280, US$560, US$1,120 and US$2,100, respectively. Taking into account the price changes in the US dollar, this chapter uses the current US dollar to determine the thresholds. In this light, the thresholds for 1990 are US$810, US$1,620, US$3,241 and US$6,077; for 2000, US$922, US$1,844, US$3,688 and US$6,194; for 2010, US$1,154, US$2,308, US$4,617 and US$8,656; and for 2021, US$1,400, US$2,800, US$5,600 and US$10,501.

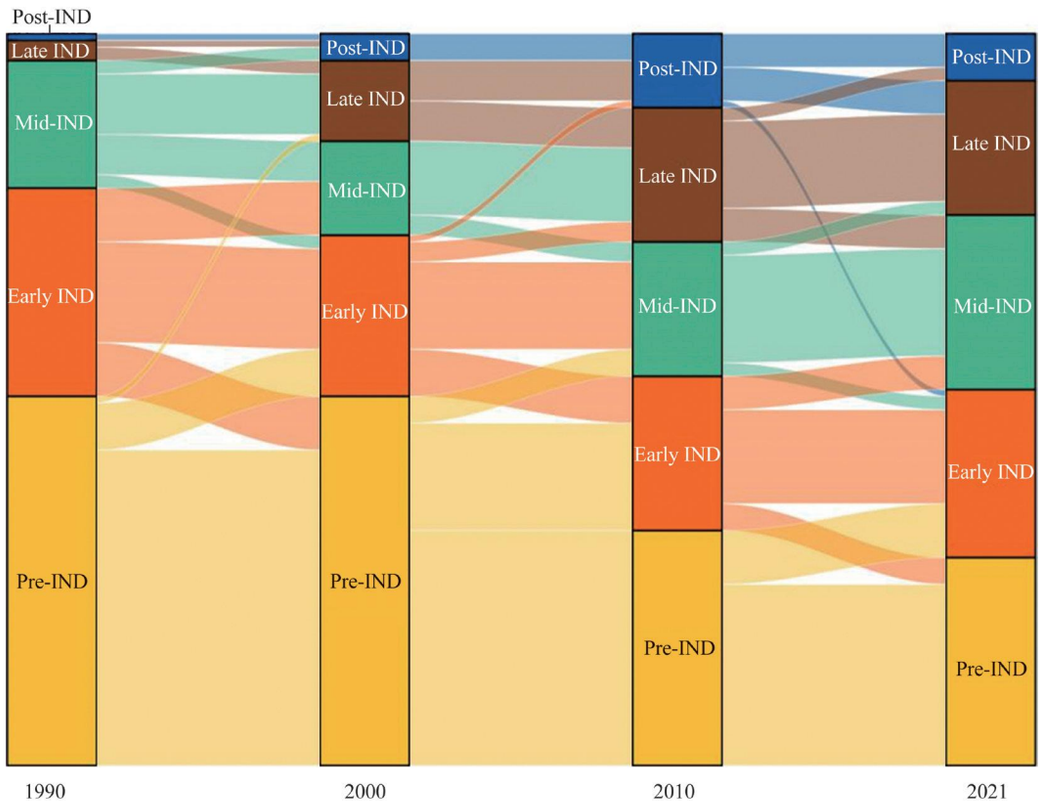

Figure 9-1 Shift in stages of industrialization in 110 developing countries, 1990-2021

Note: In this figure, the developing countries are defined according to the 2023 standard and 110 countries are selected. The same 110 countries are examined in 1990, 2000, 2010 and 2020.
Source: World Bank

9.1.2 The levels of industrialization in developing countries are uneven

Currently, more than 40% of developing countries have entered mid- or late industrialization, but around 30% are not on this track yet. In 2021, of the 110 developing countries, 31 were in the pre-industrialization stage, 25 in early industrialization, 26 in mid-industrialization, 21 in late industrialization, and only 7 finished the industrialization process and entered post-industrialization (Table 9-1). Region-wise, higher levels of industrialization were observed mainly in developing countries in Asia and Latin America; developing countries in Africa generally fell behind their peers elsewhere, as 27 of the 53 African developing countries were still in the pre-industrialization stage and 12 in early industrialization stage. From the perspective of endowment, labor-intensive countries in East Asia, South Asia and Latin America were integrated into the global industrial chains more deeply and achieved higher levels of industrialization.

Table 9-1 Stages of industrialization in 110 developing countries, 2021

	Pre-IND	Early IND	Mid-IND	Late IND	Post-IND	Total
Africa	27	12	8	6	0	53
North Africa	1	1	4	1	0	7
East Africa	10	2	1	0	0	13
Central Africa	2	3	0	2	0	7
West Africa	10	4	1	0	0	15
South Africa	4	2	2	3	0	11
Asia	4	9	13	5	1	32
East Asia	1	6	7	3	1	18
South Asia	2	3	3	1	0	9
West Asia	1	0	3	1	0	5
Latin America & the Caribbean	0	4	5	10	6	25
South America	0	1	1	5	3	10
Mexico & Central America	0	3	2	3	2	10
The Caribbean	0	0	2	2	1	5
Total	31	25	26	21	7	110

Source: World Bank

9.1.3 The development of manufacturing in many developing countries is seriously lagging behind

Mainstream theories regard industrialization normally as a period when the manufacturing sector grows rapidly and accounts for a large portion of GDP. In typical economies with smooth industrialization, manufacturing can take up a share as large as between 20% and 30%, and in some cases even more than 30% of the economy in the industrialization phase (Figure 9-2). A manufacturing sector with a significant proportion and size guarantees a higher degree of economy of scale, and maximizes the benefits of roundabout production[1] and accelerated development.

In many developing countries, manufacturing is generally underdeveloped and small in proportion. Figure 9-3 shows the share of manufacturing in the economies of 44 developing countries (which failed to advance industrialization between 1990 and 2021) in 2021, with 10.7% being the simple average. Among the 44, manufacturing accounted for more than 20% of the GDP in only four, and in most, manufacturing was a small proportion of the economy. Moreover, in 2021, most of these countries had a GDP per capita of less than US$2,000, indicating that they were stuck in a low-income trap from 1990 to 2021.

Many developing countries have weak global

[1] A large part of the activity of industrial production is the production of tools and materials, and is therefore indirect and circuitous in relation to the final process of direct consumption. The roundabout nature of industrial production constitutes an intricate input-output relationship, which is conducive to promoting a high degree of division of labor and improving labor productivity.

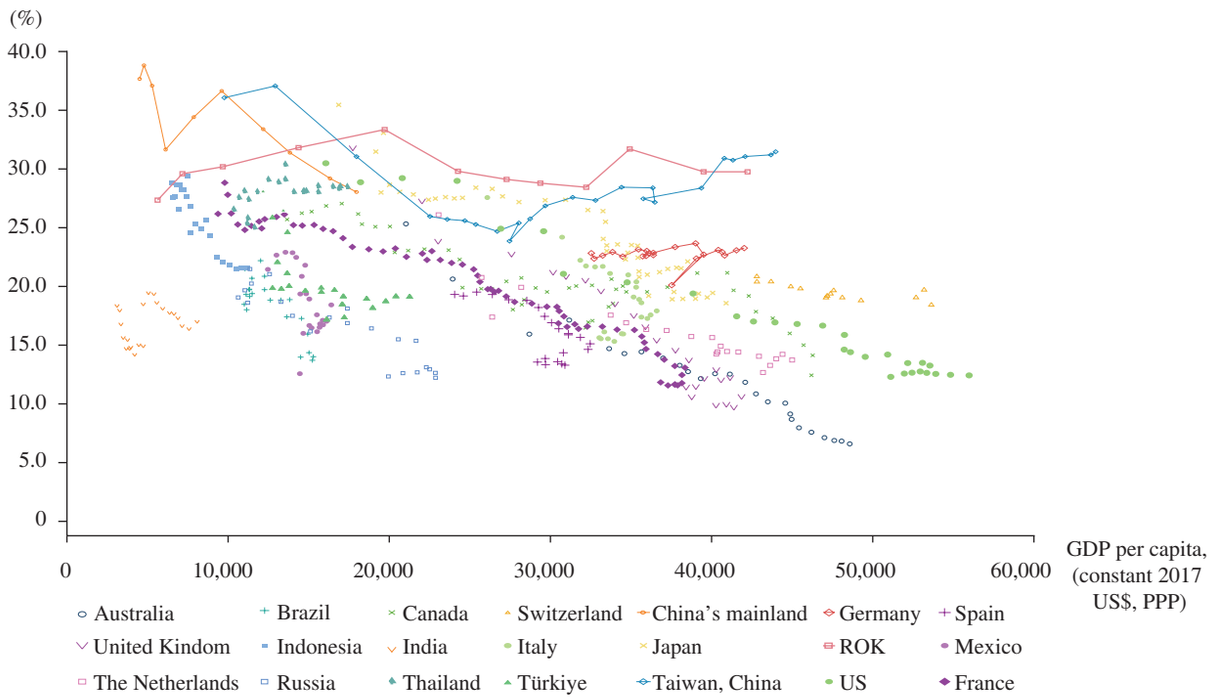

Figure 9-2 Share of manufacturing in GDP in 21 economies

Source: Xu & Li, 2021

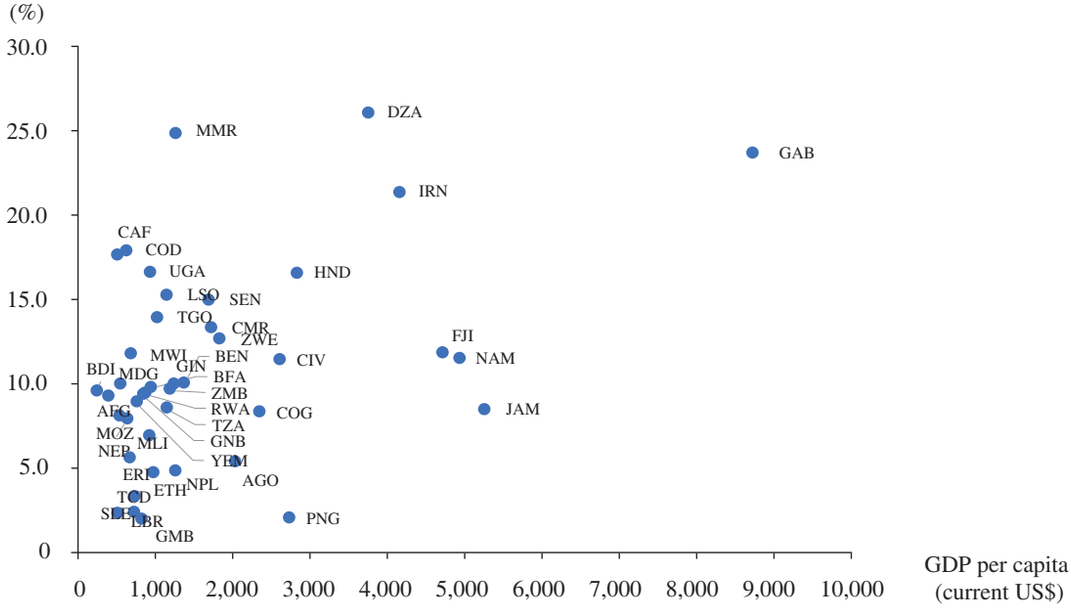

Figure 9-3 Share of manufacturing in the GDP in 44 developing countries, 2021

Note: The name of each country in the figure has been abbreviated according to the standard code used in international organizations.

Source: World Bank

competitiveness in the manufacturing sector. Figure 9-4 shows manufacturing exports' share in the GDP in 30 developing countries in 2019 (data for the other 14 countries is not available). Their simple average, 3.2%, is significantly lower than the global average of 15.1%. This demonstrates that most of the countries that are struggling to improve their industrialization lack an internationally competitive manufacturing sector, and are therefore unable to fully utilize the opportunities presented by global technological advancements and economic development or to achieve industry-led growth.

9.1.4 Developing countries find it difficult to fully share the dividends of global technological advancements

Many studies have shown that industrialization determines whether a country can develop successfully. Impediments to industrialization will directly restrict the ability of developing countries to absorb advanced global technologies, making it difficult for them to share the dividends of global economic and technological development.

Manufacturing is the core carrier of advanced knowledge and technology. The complex manufacturing process requires a variety of complementary tools and equipment, extensive use of professional skills and continuous R&D input. Therefore the manufacturing sector brings together cutting-edge technological advancements and serves as a major incubator of technology R&D and innovation. In the new round of technological revolution, manufacturing is still the core for translating basic and mid-tier technology into production capacity, and manufacturing businesses continue to be the main technological learning centers (UNIDO, 2019). Innovation brought about by industrialization can also provide technical

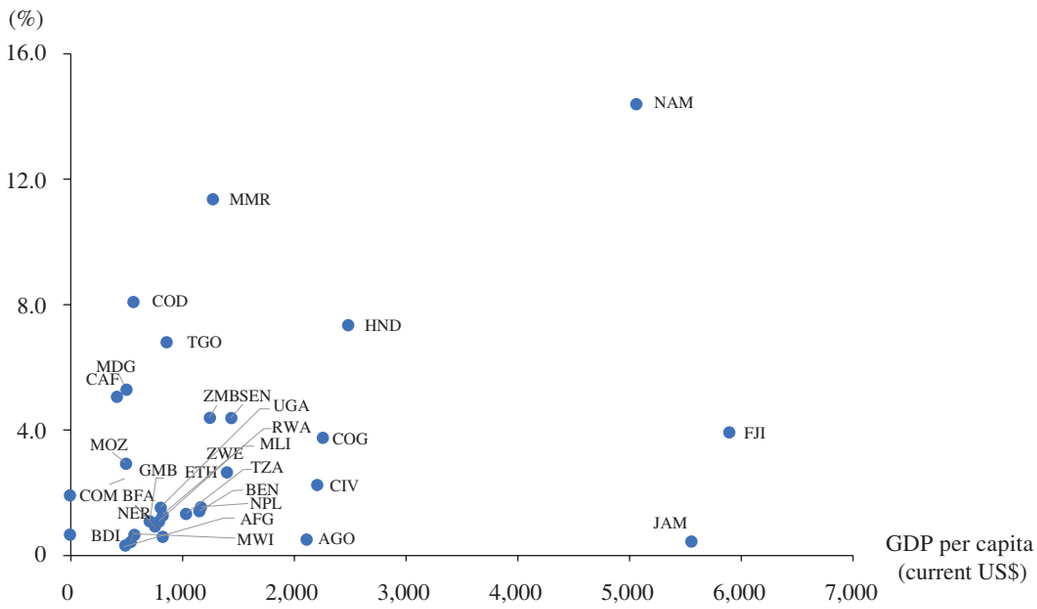

Figure 9-4 Share of manufacturing export in the GDP in 30 developing countries, 2019

Note: The abbreviated name of each country in the figure is the standard code used in international organizations.
Source: World Bank

solutions for green development, such as energy efficiency, low-carbon production and circular economy.

The low level of industrialization and the difficulty in sharing the dividends of global technological progress are often intertwined in developing countries. The low level of industrialization makes it difficult for them to learn, digest and absorb the implicit global knowledge through industrial production, and to enjoy the spillover effects of global technological progress, which further widens the technological gap between developing countries and the global pioneers. Due to fierce competition, if countries do not advance their industrial production capacity and competitiveness, they will fall behind. If developing countries cannot fully integrate and absorb global advanced technologies, their industrialization capabilities might be further weakened.

9.2 Multiple factors hinder industrialization in developing countries

The difficulties of industrialization in some developing countries are not only due to medium- and long-term structural factors, but are also caused by short-term factors. The former, which includes shortage of critical resources, poor business environment, and insufficient support from the international community, hinders industrialization in developing countries. The latter, including the COVID-19 pandemic, geopolitical tensions, sluggish global economic performance, debt distress, energy crisis and climate change, and digital divide, poses compounded challenges.

9.2.1 Shortage of critical resources

Industrialization cannot happen without the support of crucial factors, such as infrastructure, capital and talent. However, most developing countries have run into a shortage of these, which has limited their progress.

Many developing countries lack a reliable and affordable supply of infrastructure such as roads, communication, sanitation, electricity and water supply. Currently, around 1 billion people live more than 1.6 km away from all-weather roads, 1 to 1.15 billion people do not have access to reliable telephone services, 450 million people do not have broadband coverage, 2.5 billion lack basic sanitation, 760 million people do not have access to household electricity, and nearly 800 million people lack water. The vast majority of these groups of people live in developing countries in Asia, Africa and Latin America (UN, 2023b). In those countries, infrastructure, if any, is often unstable and unaffordable. Service disruptions caused by unreliability cost individuals and businesses hundreds of billions of dollars each year (Puliti, 2022). In Africa, lack of infrastructure has reduced the productivity of about 40% of local businesses (UN, 2023b).

A number of developing countries have difficulty in attracting FDI and providing adequate long-term financing and credit to enterprises. FDI is one of the main sources of financing for industrialization in developing countries, but many of them have difficulty in attracting sufficient and high-quality FDI. In 2021, global FDI amounted to US$1.58 trillion, of which about 40% went to developing Asia, 8.5% to Latin America and the Caribbean, and only 5.2% to Africa (UNCTAD, 2022). Long-term financing and credit are important underpinnings for industrial development, but industrial businesses in developing economies often find them difficult to obtain. Industry-level surveys between 2006 and 2020 show that nearly one-third of small industrial businesses globally benefited from loans or lines of credit, but access

to credit was uneven among countries. The lack of credit was the worst in sub-Saharan Africa and LDCs, with only about one-sixth of small industrial businesses receiving loans or lines of credit (UN, 2021).

Although many developing countries have a large labor force, the quality of manpower needs improvement. In 2021, approximately 82% of the global workforce was in non-high-income regions, of which 33.1% (1.15 billion) were in non-high-income regions in East Asia and the Pacific, 18.9% (660 million) in South Asia, 13.0% (450 million) in sub-Saharan Africa, and 8.0% (280 million) in the non-high-income regions of Latin America and the Caribbean (World Bank, 2023). Their labor reserves, despite being abundant, have poor physical fitness and educational background, and find it difficult to meet the requirements of industrialization and global industrial competition in the new era. In 2021, life expectancy at birth in developing countries was 69.9 years and average years of schooling reached 7.5 years, 9.1 and 4.8 years below the OECD average, and 1.5 and 1.1 years below the world average, respectively. For sub-Saharan African countries, they were even lower, 11.3 years and 2.6 years below the average of the developing world respectively (UNDP, 2023).

9.2.2 Underdeveloped business environment

Sound market and institutional mechanisms facilitate investment, innovation and business activities, creating favorable institutional conditions and business environment for industrialization. However, the less-than-satisfactory business environment in many developing countries is not conducive to business operations and industrial growth.

According to the World Bank's Doing Business 2020 report, an average developing country in Asia, Latin America, and Africa ranks 95th, 114th, and 137th respectively among 190 economies. Compared with an average developed country, which ranks 39th, the gap is still daunting[1]. In these developing countries, business activities tend to be costly and time-consuming, which negatively impacts industrial development.

For example, starting a business took only 11.7 days and cost 3.2% of income per capita in an average developed country. But in an average developing country in Latin America, it took an average of 28.1 days, more than double the time in developed countries. Starting a business in an average African developing country cost 34.2% of income per capita, 31 percentage points higher than in developed countries.

In terms of paying taxes, businesses in developed countries spent 174.4 hours each year, and the total tax and contribution rate was 37.8% of net business profits. Businesses in developing Latin America, however, spent 316.5 hours per year on the process, 1.8 times more than in developed countries. The total tax and contribution rate for businesses in developing countries in Africa was 47.3%, 9.5 percentage points higher than in developed countries.

In terms of enforcing contracts, businesses in developed countries spent an average of only 588.1 days and 23.2% of the claim. However, businesses in developing countries in Asia, Latin America and Africa spent 50.7, 178.4 and 70 days more and 12.9, 8.6 and 16.7 percentage points higher claims than in developed countries.

[1] According to the UN classification of developing and developed regions in M49 (as of December 2021), these 190 economies consist of 47 developed countries, 52 Asian developing countries, 33 Latin American developing countries, and 54 African developing countries.

In terms of trading across borders, the time spent by businesses in developing Latin America, despite being shorter than in Asia and Africa, was still about five to 10 times that in developed countries. Businesses in developing Asia had a lower cost of import and export border compliance compared with those in Latin America and Africa, but it was still around three to four times that of businesses in developed countries. African businesses spent 8.3 times more time and 4.5 times more money on export border compliance for businesses than businesses in developed countries (Table 9-2).

9.2.3 Insufficient support from the international community

Helping developing countries to smoothly carry out industrialization and achieve sustainable economic and social development is an important international obligation of the international community (especially developed countries and international institutions). A weak industrial foundation and limited domestic markets make it difficult for developing countries to achieve the economies of scale required for industrial development. As a result, they have to rely on regional and global industrial systems and markets to develop. Given the fierce international industrial competition, especially in manufacturing, developing countries need external support to kick off industrialization and integrate into the global economic system. Although global economic governance mechanisms facilitate free trade, cross-border investment, financial flows, technology diffusion and policy communication to a certain extent, developing countries are often treated unfairly, and the scope, intensity and implementation of global governance support for their industrialization still fall short of actual needs.

An example is trade, an effective way to promote industrialization. As one of the most important multilateral mechanisms in global economic governance, the WTO has formulated rules granting developing countries, LDCs in particular, special and differential treatments in the areas of tariffs, subsidies, market access and technology transfer. However, the agreements introduced in the Uruguay Round negotiations (concluded in 1994), including the General Agreement on Trade in Services, the Agreement on Trade-Related Aspects of Intellectual Property Rights and the Agreement on Trade-Related Investment Measures, significantly reduce the policy space available to developing countries and create an enormous gap between their rights and obligations (UNECA, 2016). In the Doha Round (started in 2001 and then running into an impasse), no progress was made during the negotiations on development as developed members refused substantive participation. The WTO does not have legally binding provisions with clear definitions of the type, duration and degree of assistance to be provided to developing countries; therefore, implementation of special and differential treatment provisions has been criticized as being imprecise, ineffective and inaccessible.

9.2.4 New challenges presented by new upheavals and changes

Recent crises, such as the COVID-19 pandemic, geopolitical tensions, sluggish global economic performance, debt distress, energy crisis and climate change, and digital divide, have compounded the challenges faced by developing countries in their pursuit of industrialization.

The COVID-19 pandemic and geopolitical tensions have impacted the traditional global industrial landscape, and put developing countries in a more complex situation featuring fierce competition as they seek to develop their industries.

Table 9-2 Business environment in different countries

Indicators			Developed countries	Asian developing countries	Latin American developing countries	African developing countries
Average ranking			39	95	114	137
Time	Starting a business (days)		11.7	19.7	28.1	20.9
	Paying taxes (hours per year)		174.4	192.0	316.5	284.6
	Enforcing contracts (days)		588.1	638.8	766.5	658.1
	Trading across borders	Time to export: Documentary compliance (hours)	5.2	61.6	35.3	71.2
		Time to import: Documentary compliance (hours)	4.5	63.8	43.0	95.7
		Time to export: Border compliance (hours)	11.1	54.1	55.4	91.6
		Time to import: Border compliance (hours)	7.8	71.6	55.5	126.7
Cost	Starting a business (% of income per capita)		3.2	14.0	30.6	34.2
	Total tax and contribution rate (% of profit)		37.8	33.5	46.6	47.3
	Enforcing contracts (% of claim)		23.2	36.1	31.8	39.9
	Trading across borders	Export cost: Documentary compliance (US$)	36.8	171.2	98.7	169.7
		Import cost: Documentary compliance (US$)	30.0	177.2	105.5	289.1
		Export cost: Border compliance (US$)	128.9	374.7	509.3	583.2
		Import cost: Border compliance (US$)	100.9	427.1	617.9	678.0

Source: Calculations based on World Bank data

Since the 1980s and 1990s, many developing countries have grown their own industries and enhanced their industrial competitiveness by embedding themselves in the global industrial chains to make use of their comparative advantages, specialization and division of labor. But in recent years, the pandemic has exposed the vulnerability of the global industrial chains, while with geopolitical tensions, reducing external reliance has become an important consideration for industrial layout, especially in strategic sectors such as semiconductors, high-tech and energy. Some developed countries have put forward industrial policies for reindustrialization and bringing manufacturing back home. Many countries have started to emphasize balance between the development, resilience and security of industrial and supply chains. Multinational corporations are paying more attention to diversifying their supply chains. As a result, manufacturing on a global scale may become decentralized and multi-centralized, leading to fierce and complex competition and cooperation scenarios for developing countries.

Weak global economic recovery and debt distress have protracted slack productive investment and dampened effective demand for industrial goods. Under the compounded impact of interconnected daunting factors such as the COVID-19 pandemic, Ukraine crisis, and high global inflation, the global economy is experiencing a major and sustained slowdown, and industrial investment in developing countries has been sluggish; FDI in LDCs contracted by 30% in 2022 (UN, 2023). The tightening global financial environment has significantly increased balance-of-payments pressures and debt vulnerabilities in developing countries. Many liquidity-strapped economies have to allocate their already limited fiscal funds to emergency price subsidies at the expense of public investment in infrastructure and welfare (UNCTAD, 2023). In a global economy struggling to recover, the lack of effective internal and external demand for industrial goods undermines the role of exports in boosting the industrial economy and diminishes incentives of industrial goods consumption for industrial investment.

The energy crisis and climate change have forced green transformation to speed up, and developing countries are facing more restrictions in promoting industrialization. The global energy crisis, exacerbated by the Ukraine crisis, nearly broke the traditional model of industrialization notorious for its high energy consumption and high pollution. The rapid green transformation of the energy mix, industrial structure and modes of production has not only profoundly impacted the competitive advantages of enterprises and cross-border investment and trade, but also posed considerable challenges to developing countries as they seek to balance economic development and environmental protection. Green transformation comes with stringent environmental standards and energy mix, which is more than what most developing countries can afford to meet at their current stages. Therefore it is imperative for developing and developed countries to work together to find a practical and feasible new path of low-cost development.

The digital divide has weakened the traditional comparative advantages of developing countries, which is not conducive to their industrialization progress. In-depth application of digital technology has generated a massive amount of data, which is surpassing traditional factors such as land, capital and labor as a new critical factor of production. New production factors and new combinations of use cases have triggered major shifts in modes of production and the emergence of digital, smart and customized manufacturing, as well

as industries based on platforms, networks and deep integration of services. In a digital economy, developed economies gain competitiveness in terms of capital, interdisciplinary talent, data infrastructure, knowledge and experience, core technology and business environment. However, developing countries face a digital divide, and their traditional advantages (such as cheap land and labor) are diminished, making their industrialization more difficult.

9.3 Developing countries' industrial growth needs a joint push

In order to advance industrialization in developing countries, besides the efforts of the developing countries themselves, the international community also needs to show solidarity, cooperation and support as a whole, especially developed countries and international organizations. Countries should strengthen international industrial cooperation for mutual benefit, while stepping up exchanges and mutual learning of various types of knowledge for development.

9.3.1 Industrialization in developing countries should be promoted based on local conditions

Developing countries should pay more attention to the leading role of industrial development in the economy and make industrialization strategies suitable to their national conditions. Based on their resource endowments and the laws of the market, they should assess the role of their industries in regional industrial networks and global industrial chains, analyze their strengths and weaknesses, identify the division of labor and direction of upgrading, and carefully focus on the industries with comparative competitiveness. They could draw on the industrialization experience of advanced countries, especially their experience in prioritizing the development of special economic zones or industrial parks, and strategically select conveniently located key cities with good industrial foundations and favorable cultural conditions as pilots for opening up and participating in the regional and global production networks. Given their limited resources, developing countries could concentrate on special economic zones or industrial parks, build moderately advanced regional infrastructure in traditional and digital formats, focus on pillar industries with the development of industrial agglomeration, and facilitate taxation, operation, finance and trade so as to maximize their appeal to investment with a better business environment and lower business costs. They should optimize their business environment, improve their policies to protect and support foreign investment to increase their attractiveness to foreign investment, and strengthen protection of corporate rights and interests to form an institutional environment conducive to industrial development. In addition, they need to seize the opportunity provided by the new round of industrial revolution, adopt advanced technologies, and encourage enterprises to transform and upgrade traditional industries with new technologies, processes and business models. They also need to accelerate the development of new industries such as the digital economy and new energy for leapfrog development.

9.3.2 Shaping a more reasonable structure of international industrial division

Enhancing regional and international industrial cooperation is a practical approach to advance industrialization in developing countries and a feasible way to share the fruits of global development. Developing countries may step up regional market integration and build a unified market with

their neighboring countries to expand the market space for their enterprises and give full play to the economies of scale in industrial production. The opportunities presented by the 2030 Agenda, the BRI and the GDI should be utilized to initiate and improve bilateral and multilateral cooperation in industrialization and to help developing countries improve their industrial production capacity and manufacturing level. Cooperation should be conducted to promote security and stability of the global industrial chains and supply chains. Digitalization and green transformation of the chains should be promoted to ensure that the global industrial system is growing in a stable, efficient and environmentally friendly manner.

9.3.3 Strengthening financial, technological and trade support to developing countries

The international community should promote cross-border communication on macroeconomic policies and international coordination of global development resources, and synergize global, regional and national development cooperation. The role of multilateral platforms (such as the UN, the G20, the IMF, the World Bank, the AIIB and the NDB) should be given better play to improve the global economic governance system, and help countries strengthen policy communication in fiscal, monetary and data policies. Systemic risks should be studied and resolved in a timely manner, and developing countries should be provided with the necessary financing support for infrastructure and industrial development. The international community needs to safeguard the WTO-centered multilateral trading system, make WTO reforms and trade rules negotiations fair and just, and maintain space for developing countries to use industrial policies. The international community should also advance global climate governance in accordance with the principle of common but differentiated responsibilities and respective capabilities under the framework of the UNFCCC, accommodate the special concerns of developing countries with regard to industrialization, and offer them the necessary technological and capacity support to accelerate green and low-carbon transformation. Developed countries need to fulfill their commitment to provide US$100 billion of climate funding annually to developing countries as soon as possible.

9.3.4 Enhancing knowledge exchanges and mutual learning

In addition to material support in the form of capital, equipment and infrastructure, the industrialization of developing countries also requires intellectual support in the form of knowledge for development. It is necessary to leverage international development agencies (such as the World Bank and the UNIDO), multilateral cooperation mechanisms (the BRICS Partnership on New Industrial Revolution for example), and non-governmental organizations (think tanks, enterprises and universities) to build dialogue mechanisms and knowledge-sharing networks related to industrialization, and promote North-South and South-South knowledge cooperation. Governments and industrial practitioners are encouraged to enhance communication and exchanges on development concepts, strengthen research and learning of best practices, and help developing countries identify development pathways and programs that suit their national conditions. There should be multiparty cooperation to implement pilot projects on technology transfer and new business models in developing countries, as well as human resource development programs for entrepreneurship, digital technology and vocational and technical education to upgrade

the capacity of enterprises and the workforce in developing countries so that they can adapt to new technologies and industrial transformation.

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Chapter X

Working Together to Shape an Inclusive Digital Era

Digitalization has become one of the main drivers of the world's development, making our lives much easier. However, at the same time, the digital economy is in a transition in which new growth drivers are taking the place of old ones, and the digital divide remains wide between countries, communities and urban and rural areas. The fragmentation of rules in digital governance is more salient than ever, calling for global cooperation to jointly shape a vibrant and inclusive new digital era that benefits all. This chapter outlines three aspects of the global digital transformation: digitalization driving growth and development, digital dividends benefiting more regions and communities, and global digital governance. It looks at the major difficulties and obstacles the world faces and proposes ways to address these issues.

10.1 Global digital transformation has made steady progress, but development remains imbalanced

10.1.1 Digital transformation is accelerating, with new growth momentum waiting to be released

Digitalization forged ahead during the pandemic. The protracted COVID-19 pandemic hindered normal economic and social functions but it facilitated the development and application of digital technology. In 2021, the added value of the digital economy of 47 countries around the globe reached US$38.1 trillion, up 15.6 percent year on year in nominal terms, accounting for 45.0% of the GDP. Industrial digitalization, accounting for 85% of the digital economy, was still its main engine. Digitalization also led the transformation of the tertiary industry. The digital economy accounted for 8.6%, 24.3% and 45.3% of the added value of the primary, secondary and tertiary industries, respectively (CAICT, 2022). The number of internet users worldwide reached a record high. An estimated 5.3 billion people used the internet in 2022, about 66% of the world's population, with a growth rate of 6.1% in 2021-2022, higher than the 5.1% in 2020-2021 (ITU, 2022). Mobile internet has become the main way to access the internet. Mobile technologies and services generated 5% of the global GDP in 2022, amounting to US$5.2 trillion of economic value added, and supported 28 million jobs across the wider mobile ecosystem (GSMA, 2023). Especially in developing countries, mobile devices are increasingly being used for economic purposes, including supporting entrepreneurship, empowerment and financial inclusion (UNCTAD, 2023a).

Digitalization and the digital economy are driving a new round of economic globalization. Digital trade[1] continues to grow rapidly and has shown resilience during the economic downturn. Trade in digitally-deliverable services is becoming part and parcel of trade in services, adding impetus to the global economic recovery. In 2021, the value of international trade in digitally-deliverable services exceeded US$3.8 trillion, of which developed countries accounted for 78%, with a growth of 14% year on year (Figure 10-1), and accounting for about 63% of global trade in services (Figure 10-2). Digital multinational enterprises' (MNEs) sales grew five times as fast as those of the traditional top 100 over the past five years, with the pandemic providing a huge boost. Investments by digital MNEs have significant potential to develop the global digital economy. Over one-third of the projects by digital MNEs are in developing countries (UNCTAD, 2022).

Many countries are giving greater importance

[1] This refers to trade in goods and services that are digitally ordered and/or digitally delivered.

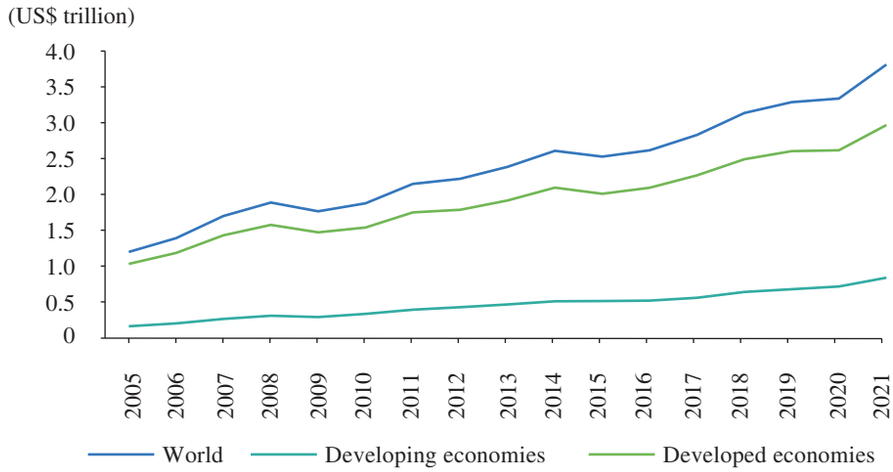

Figure 10-1 Trade in digitally-delivered services, 2005-2021

Source: UNCTAD

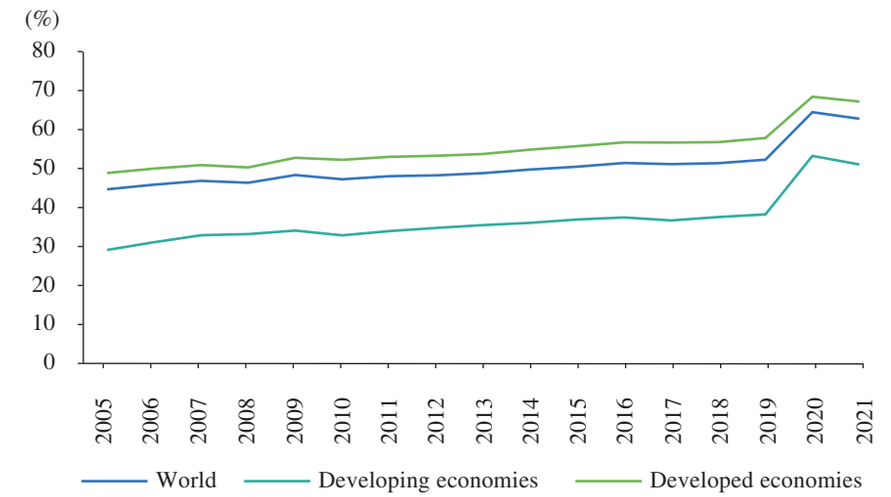

Figure 10-2 Trade in digitally-delivered services as a share of trade in services, 2005-2021

Source: UNCTAD

to digitalization. Many countries and regions have strengthened their digitalization strategies and policies and prioritized the digital economy in their development cooperation. For example, China has formulated the Plan for the Overall Layout of Building a Digital China, which underlines in-depth integration of the digital economy and the real economy and regards a digital China as an important engine for Chinese modernization in the digital era. Germany has updated its Digital Strategy 2025, prioritizing advancing its digitalization process. In the G20 Bali Leaders' Declaration in 2022, the members recognized the importance of digital connectivity

and efforts to create an enabling, inclusive, open, fair and nondiscriminatory digital economy, and China proposed the G20 Action Plan on Digital Innovation and Cooperation. The Plan of Action to Implement the China-ASEAN Comprehensive Strategic Partnership (2022-2025) also notes the need for strengthening exchanges and cooperation in the digital economy and digital governance.

Digital enterprises are in a transition in which new growth drivers are taking the place of old ones, with marked fluctuations in leading enterprises. Digital MNEs have been growing rapidly, which impacted international trade and investment. The top 100 digital MNEs' total sales were 158% higher in 2021 (US$1.744 trillion) than in 2016 (US$675 billion). Their net income increased by 23% per year with a growth rate of 60% between 2020 and 2021. The ranking of the digital top 100, however, shows a significant dynamic. Over five years, as many as 39 new companies joined the ranking, replacing others that were ranked in top 100. The top 100 remains highly concentrated geographically, with 81% of them coming from developed countries (UNCTAD, 2022). Many of the top-ranking digital enterprises in the world have downsized their workforce significantly. According to a layoff tracker (Layoffs.fyi), 1,054 tech companies laid off over 160,000 employees globally in 2022.

New technologies, concepts and models are emerging in succession, but new drivers of growth are yet to be seen. After a round of boom, new models such as the metaverse, non-fungible tokens and Web 3.0 are yet to show momentum for sustained development, and the industry and investors' enthusiasm is waning. ChatGPT, though full of promise for facilitating the development and application of artificial general intelligence, is still in the early stage of industrial application. Once the new momentum is unleashed, economies and businesses with weaker digital foundations face the risk of falling further behind. Few developing countries are equipped to take advantage of cutting-edge technologies that rely on digitalization and connectivity, including blockchains, drones, gene editing and nanotechnology. Countries in Latin America, the Caribbean, and sub-Saharan Africa are less prepared to use or adapt to frontier technologies and at risk of missing the current technical opportunity (UNCTAD, 2023). Digital technologies are diffused slowly in most developing economies. Manufacturing companies in the more developed economies are more likely to use Industry 4.0 technologies, whereas countries with lower-skilled labor are less likely to benefit. There are also differences between the companies in developing countries, where only a minority of larger companies tend to adopt advanced digital technologies (UNCTAD, 2023a).

10.1.2 The digital divide remains wide among regions and groups

While digitalization in developing countries is speeding up, the gap with developed countries is still to be met. Developing countries are moving faster to integrate into the global digital economy and are facing great opportunities to boost growth and become the new forces driving economic globalization. With improving manufacturing, scientific and technological capacity, developing countries' bilateral trade in information and communication technology (ICT) goods has grown steadily after surpassing that of developed countries in 2007 (Figure 10-3). Developing countries' trade in ICT goods accounted for 20% of their total trade in 2021, higher than the global average (13%). In 2021, the digital economy of developing countries grew by 22.3% year on year in nominal terms, which was 9.1 percentage points higher than that of developed countries

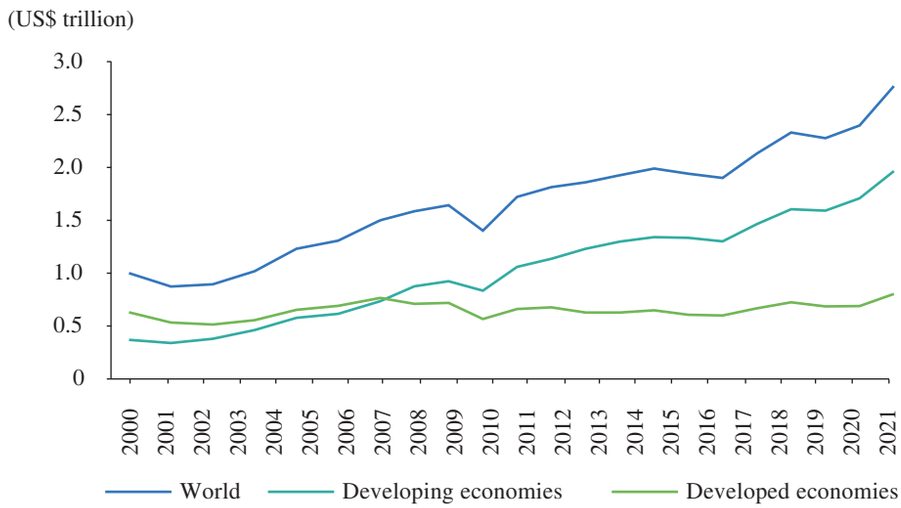

Figure 10-3 Bilateral trade in ICT goods, 2000-2021

Source: UNCTAD

during the same period. However, the size of the digital economy of developed countries reached US$27.6 trillion, accounting for about 72.5% of the global total. It accounted for 55.7% of their GDP, much higher than the 29.8% in developing countries (CAICT, 2022).

The digital divide exists and is influenced by the differences in digitalization processes, economic development levels and the degree of opening up. In terms of cross-border digital service exports, although developed and developing economies (excluding LDCs) registered an increase of 13.5% and 17.1% year on year respectively in 2021, LDCs saw a year-on-year decline of 4.5% and experienced negative growth for two consecutive years (DRC and CAICT, 2022). In addition to digital trade, international data flows, a hallmark of the global digital economy, are also expanding rapidly, with most cross-border flows occurring between North America and Europe, and between North America and China. The limited capacity to utilize digital technology restricts developing countries from participating in the data-driven digital economy and benefiting from it. There are indications that a data-related divide has compounded the digital divide, as most developing countries' data outflows are in the form of raw data, and most of the raw data flows into countries that enjoy the main data advantages and have better capacities to process raw data (UNCTAD, 2023a).

Countries and regions vary in their digital foundations. Around the world, significant inequalities still exist in internet access, the foundation for digitalization (Figure 10-4). About 2.7 billion people worldwide remain completely offline. The proportion of people using the internet in developing countries increased markedly during the pandemic, exceeding half (57%) for the first time in 2021, but is still below the 90% rate in developed countries (UNCTAD, 2023a). In 2022, about two-thirds of the population in Arab and Asia-Pacific countries used the internet, but only 40% in Africa. In LDCs and landlocked developing countries (LLDCs), only 36% of the population used the internet (ITU, 2022).

Disparities also exist in terms of the ability of the groups and regions within a country to

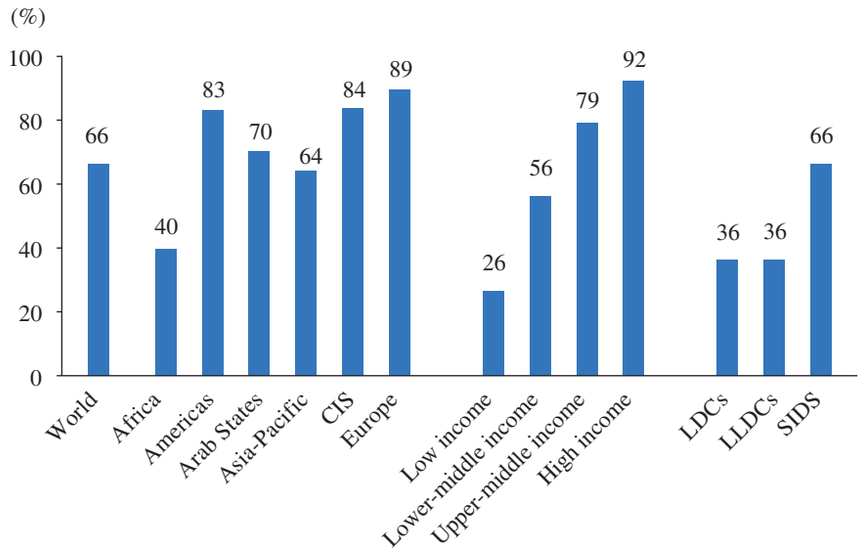

Figure 10-4 Percentage of individuals using the internet by region, 2022

Source: ITU

reap digital dividends. Disadvantaged groups in developing and developed countries that are unable to use digital technologies may lag behind in post-pandemic recovery, leading to severe knock-on effects (GSMA, 2023). At the regional level, there is still a huge gap in internet access between urban and rural areas. In 2022, 82% of urban dwellers worldwide used the internet, 1.77 times as high as the percentage of internet users in rural areas; in Africa, 64% of urban dwellers used the internet in 2022 compared with 23% of people in rural areas, a ratio of 2.8; in the Asia-Pacific region, the ratio was 1.76, close to the global average (Figure 10-5). In terms of gender parity in internet access, the world has been moving forward over the past three years. On a global scale, 69% of all men used the internet in 2022, compared with 63% of all women. The gender parity score[1] increased from 0.9 in 2019 to 0.92 in 2022, while the gender gap in internet access remains, particularly in LDCs and Africa (Figure 10-6) (ITU, 2022).

10.1.3 The global digital governance deficit is becoming increasingly prominent

Many countries have formulated their rules and systems for digital governance from different perspectives. By 2021, of the 194 members of UNCTAD, 158 countries (81%) had laws related to electronic transactions, among which almost all European countries had in place e-transaction laws, and 89% in the Americas, while only 61% countries in Africa had them; 115 countries (59%) had adopted legislation on consumer protection related to e-commerce but continent-wise, that varied from 78% in Europe to 52% in Africa; 137 countries (71%) had legislation to protect data privacy, while Africa and Asia showed different levels of adoption with 61% and 57% of their

[1] The gender parity score is defined as the percentage of women who use the internet divided by the male percentage. (Gender parity is deemed achieved when the score stands between 0.98 and 1.02.)

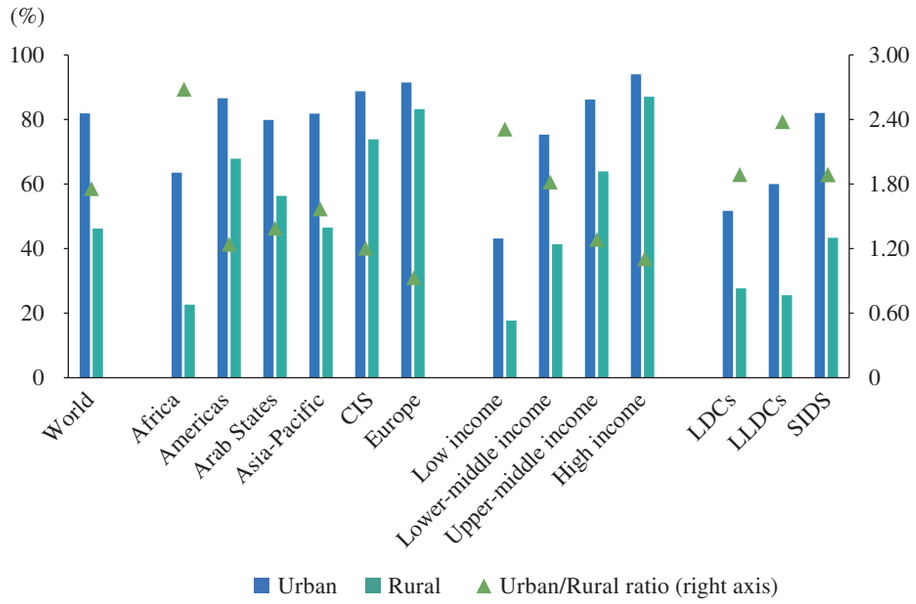

Figure 10-5 Percentage of individuals using the internet in urban and rural areas by region, 2022

Source: ITU

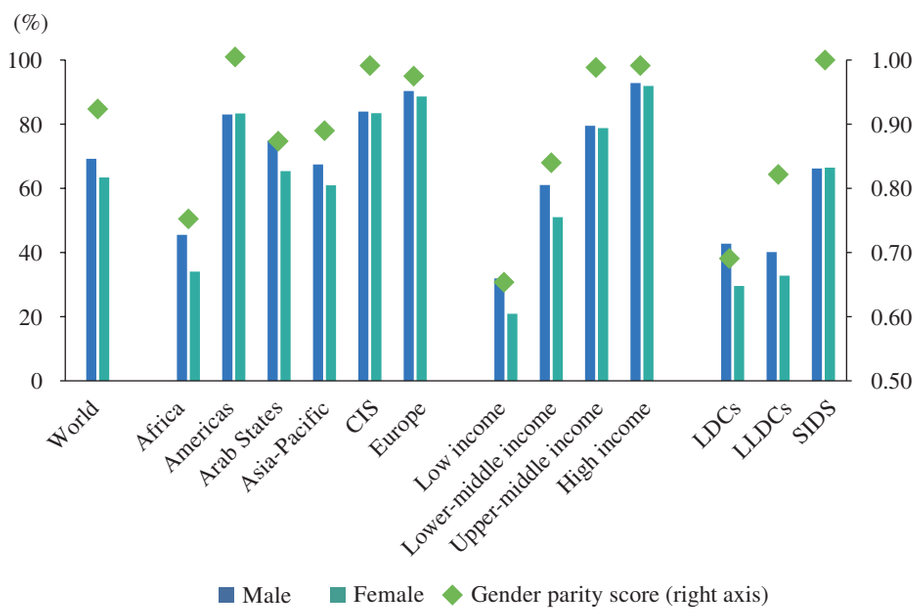

Figure 10-6 Internet use gender parity score by region, 2022

Source: ITU

countries having adopted such legislation; 156 countries (80%) had enacted cybercrime legislation, while the pattern varied by region: Europe had the highest adoption rate and Africa the lowest (Table 10-1) (UNCTAD, 2023b).

The attitudes and approaches to data governance and the capacities are different among countries and regions, and developing countries find themselves in a passive position in digital cooperation. Different countries have different philosophies of data governance. The European Union, which gives great emphasis to privacy protection, has formulated the General Data Protection Regulation, which allows personal data to flow only to countries or regions with a level of privacy protection comparable to its own, while promoting the free flow of data among EU member states. The US is promoting and setting new bilateral or multilateral rules as well as advancing its proposals on data flow with trading partners through such agreements as the United States-Mexico-Canada Agreement, the US-Japan Trade Agreement and the US-Korea Free Trade Agreement. Countries such as Singapore, the United Kingdom and Japan are trying to strike a balance between high-level data protection and free data flows. Developing countries are lagging behind in setting governance rules. Most developing countries are not implementing policies on open data flow by design, but rather due to the lack of data governance policies. In developing countries with insufficient regulatory capacity, the interests of internet users can be easily jeopardized due to inadequate domestic regulations on privacy and security.

International organizations are promoting digital governance, but large limitations still exist. International organizations, including the WTO, G20 and APEC, have introduced some governance rules and agendas on trade in data, but these frameworks are inconsistent with one another and have yet to bring about harmonized global rules. For example, the WTO has no specific rules on cross-border data flow. In its discussions about data trade, the WTO generally refers to existing rules such as the General Agreement on Trade in Services (GATS) and the Joint Statement on Electronic Commerce adopted in 2019, which have their limits as data trade goes far beyond such service subsectors as e-commerce and involves numerous industries in the real economy. The lack of global consensus on digital governance has caused governance failure, which seems particularly detrimental to developing countries, including LDCs. Fragmented digital governance also reduces access to the global market for domestic micro, small and medium-sized enterprises (MSMEs), which may become confined to local or regional markets. Lack of data sharing and international cooperation reduces opportunities for digital innovation, including missing opportunities for

Table 10-1 Coverage of digital governance legislation by region

Continent	E-transaction	Consumer protection	Data privacy protection	Cybercrime
Africa (54)	33 (61%)	28 (52%)	33 (61%)	39 (72%)
Americas (35)	31 (89%)	25 (71%)	26 (74%)	30 (86%)
Asia (60)	50 (83%)	27 (45%)	34 (57%)	46 (77%)
Europe (45)	44 (98%)	35 (78%)	44 (98%)	41 (91%)
LDCs (46)	29 (63%)	19 (41%)	22 (48%)	32 (70%)

Source: UNCTAD, as of December 2021

inclusive development. Certain established digital economies may emerge as winners with their advantageous market size and technological prowess, but most small, developing economies will lose opportunities to increase their digital competitiveness (UNCTAD, 2023a).

10.2 Global digitalization is affected by multiple factors

10.2.1 The innovation environment for digital transformation needs to be improved

Digital transformation is the key feature of the new revolution in science, technology and industry. However, the innovation foundation that accelerates this revolution still faces some limitations.

Major technological breakthroughs are increasingly difficult than before with higher cost and limited marginal contribution. Over the past decade or so, a slowdown in productivity growth has been visible across almost all the major economies. For example, in the three decades from the late 1970s to the beginning of the 21st century, the average annual growth rate of GDP per capita of OECD countries as a whole was about 2.1%, and the indicator fell to 1.2% from 2010 to 2021, a decline of more than 40% (WIPO, 2022). However, global innovation investment continued to expand over the past decade. Total global R&D investment grew from US$1.2 trillion in 2009 to US$2.1 trillion in 2018, up about 75%. The productivity growth slump has coincided with soaring innovation investment, which means a marked decline in R&D productivity, especially when much of the low-hanging fruit has been picked (Bloom et al., 2020). Technological progress in many major basic areas is slowing down markedly, as is growth in educational attainment. For over half a century since the 1970s, despite a fundamental change in scientific research paradigms, most research has been aiming at expanding existing streams of knowledge while making fewer breakthroughs to push forward technological innovation (Park M. et al., 2023). Typical indicators of technological progress show a slowdown from long-term trends, including the semiconductor industry, electric battery prices, the cost of renewable energy and drug approvals (WIPO, 2022). In the field of integrated circuits, for example, the maturity curve of semiconductor and electronic technology worldwide shows that Moore's Law may gradually fail, and the upgrading of chip technology may become significantly slower. At present, many are pinning their hopes on the artificial intelligence ushered in by ChatGPT, which however still remains greatly uncertain.

The innovation environment is not adapted to digital transformation and is affected by various negative factors. The mobility and availability of innovation resources in many countries is relatively low, which is not good for enterprises to meet the demands of multi-stakeholder, open-source and bottom-up innovation in the digital age. Especially for small and medium-sized enterprises and startups, obtaining high-quality elements of innovation is difficult, and digital connectivity is far from deepening across departments, industries and borders. In recent years, about 80% of enterprises have suffered setbacks to their digital transformation (McKinsey Global Institute, 2019). At the same time, the capital supply to support high-risk innovation activities is also slowing down. The declining market value of digital economy concept stocks in the secondary market has shrunk global startup investment and initial public offerings in the digital economy. In

2022, global venture capital financing decreased by 35% compared with 2021, and financing in digital health and financial technology decreased by 57% and 18% respectively. In addition, the course of globalization in science and technology is facing major challenges such as geopolitical tensions, which has seriously hindered international cooperation and limited the impact of innovative digital technologies. Some countries have adopted technology export controls and exclusionism on the grounds of national security, tending to expand and abuse technical barriers to trade. This has a great impact on international scientific and technological cooperation, reducing trust among scientific researchers from various countries, and aggravating the "chilling effect". This will not only severely limit the expansion of global innovation networks, but will also slow down the progress and diffusion of emerging digital technologies.

10.2.2 The foundation for digitalization in developing countries remains weak

Digital infrastructure in developing countries is generally underdeveloped. Limited investment capacity and the small number of effective users in developing countries make it difficult for the network effect and economies of scale to work. Specifically, weak digital infrastructure and expensive internet access are the most critical factors that prevent people in developing countries from enjoying the digital dividends. Developing countries not only have a limited number of internet users, but also usually face problems such as slow internet connection and high internet access costs. Data show that mobile broadband speed in developed countries is about three times as fast as in LDCs. For low-income economies, the cheapest mobile broadband basket costs more than 9% of people's income, over six times the global average; and the cost of fixed broadband services accounts for over 30% of their income, more than 15 times that in high-income countries. For many people in developing countries, mobile devices are often the only option for phone and internet connection (UNCTAD, 2022). Data-only mobile broadband basket prices as a percentage of the monthly GNI per capita in low-income economies remained above the 2% affordability target[1] in 2022 (Figure 10-7) (ITU, 2022). At the same time, extreme poverty persists globally, and large income gaps combined with inequalities in education, transportation and gender have led to more uncertainties in the adoption of digital technologies in developing countries.

Shortage of digital talent, low digital literacy and limited digital intangibles are common shortcomings of developing countries. Research shows that the low level of digital skills among people is a key barrier to achieving universal and meaningful digital connectivity in most developing countries. Digital skills include the ability to use mobile phones, the internet and social media, advanced skills in data analysis, applications development and network management, and comprehensive ability related to communication and collaboration, security, content generation and data literacy. The low overall education level in many low-income countries hinders the development of digital skills and further limits the possibilities for people to access digital services and find jobs related to digital technology. For example, only 2% of Kenyans use the internet to look for and apply for jobs,

[1] The United Nations Broadband Commission for Sustainable Development aims to make broadband in developing countries affordable by 2025, with affordability defined as the availability of broadband access at a price that is less than 2% of the monthly GNI per capita.

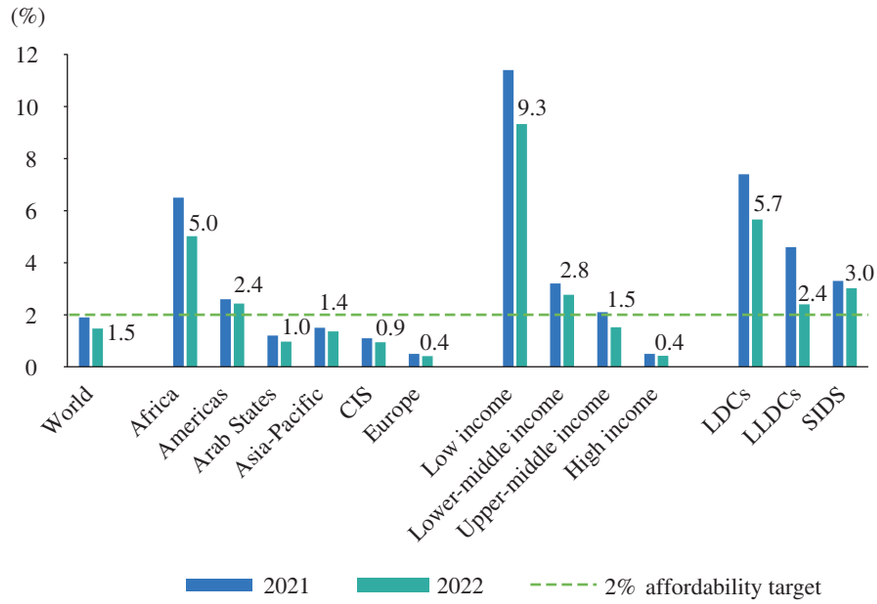

Figure 10-7 Data-only mobile broadband (2GB) prices as a percentage of the monthly GNI per capita, 2021-2022

Source: ITU

compared to the global average of 17%; in Sudan and Zimbabwe, only 4% of adults are able to copy and paste documents. At the same time, many developing countries also lack necessary digital skill training systems, especially for vulnerable groups such as women, low-income groups and ethnic minorities. The digital talent gap further exacerbates the imbalance in digital development between countries, widening the digital divide and hampering the production and spread of emerging digital technologies. Research suggests that by 2020, 10 developed economies alone held 90% of the world's patents related to advanced digital technologies and accounted for 70% of exports associated with these technologies, while developing economies' participation in creating and applying these technologies was limited (UNIDO, 2021). Digital manufacturing technologies such as artificial intelligence, big data, the internet of things, advanced robotics and additive manufacturing are just beginning to spread among industrial firms in developing countries.

The global digitalization ecosystem is highly concentrated and developing countries have been lagging behind for years. At present, the global ecological network of digital development is concentrated in the developed world with international digital platforms such as the US and Europe, while developing countries mainly provide application scenarios and basic data and have to pay high prices for digital services. Developed countries have almost monopolized major digital platforms, industrial clusters and talent resources. Large technology companies represented by GAFA – the four US tech giants Google, Amazon, Facebook (now Meta) and Apple – have infiltrated all the links of global data value chains: collecting data through user-oriented platform services, transmitting data using submarine cables and satellites, as well as storing, analyzing, processing and using data in

data centers. These companies already have global advantages in data resources, enormous capital, technological and market power, and even a certain degree of "digital geopolitical power". The digital divide between small and medium-sized enterprises and large corporations is also widening. At the same time, there is a prominent issue of imbalance despite increasing global data flows. From 2004 to 2020 global data flows were mainly concentrated in routes between North America, Europe and Asia, with a very limited share flowing to or from other regions (UNCTAD, 2021). Since the pandemic, cross-border data flows have also been geographically concentrated in two main routes: between North America and Europe, and between North America and Asia.

10.2.3 Countries have large differences regarding global digital governance rules

The divergence of interests and needs among countries has intensified. At present, countries have vastly different resource endowments and comparative advantages in the digital field, as well as deeply divided interests and needs in participating in global digitalization. Such divergence continues to intensify as technology progresses and international competition accelerates. Countries and regions at the forefront of innovation in digital technology tend to choose more flexible governance models that feature more freedom and less regulation in order to consolidate their technological and market dominance. In contrast, countries and regions that are catching up or lagging behind are more focused on ensuring development security and cultivating the competitiveness of their local industries, fearing that huge potential uncertainties may impact or jeopardize their own economic and social order. As the data-driven digital economy evolves, developing countries find themselves in subordinate positions, with data and their associated value capture concentrated in a few global digital corporations and other MNEs that control the data. They risk becoming mere providers of raw data to global digital platforms, while having to pay for the digital intelligence obtained from their data (UNCTAD, 2021). At the same time, since the digital economy is closely intertwined with international politics, ideologies, and scientific and technological competition, the game of rules in the digital field has gone far beyond the economic sphere, exacerbated by the potential conflict of national security interests. Many countries have escalated their restrictions on foreign digital enterprises, and even the latter's suppression, citing security screening as the ground, making it much more difficult to reconcile the interests and needs of different countries.

Differences in digital governance, in existence for a long time, are difficult to coordinate effectively. For example, in terms of cross-border data flows, some countries emphasize the control of data by the private sector, some prioritize individuals' direct control of data based on their fundamental rights, and others attach importance to data security management by the public sector. Differences in governance philosophies that have been amplified in international rules negotiations, combined with geopolitical issues, result in further rules fragmentation, even divergences among regions with similar values. For example, Europe and the US both set great store by protecting citizens' right to privacy, but Europe emphasizes the protection of the right to privacy based on "dignity" and the absolute precedence of this right, while the US pays more attention to the right of free expression and tends to balance the freedom of the market and privacy protection.

The boundaries of digital governance are

expanding and are hard to prioritize. Global digital governance involves numerous stakeholders. It is no less complicated than global governance in such traditional areas as poverty reduction, nuclear non-proliferation and public health, if not more. In addition to governments and international organizations, more and more digital multinationals, small and medium-sized enterprises or organizations, digital consumers, research institutes, trade associations and non-governmental interest groups have begun to participate in global digital governance. Such a high level of player diversification makes international rules more difficult to coordinate. For example, digital consumers who are nominally in a disadvantaged position have a relatively stronger bargaining power in the global digital economy, considering the high homogeneity of digital products and the low cost of switching to other service providers. At the same time, with digital technology permeating more and more areas, priorities in global digital governance have multiplied and stretched far beyond traditional internet governance. Technological development is giving rise to complex governance challenges at a faster pace and exposing blind spots and gaps in the governance agenda, many of which are beyond the ambit of the existing international laws and rules. The problem areas are diverse, ranging from internet infrastructure to e-commerce and digital trade, from artificial intelligence governance to ethics and norms related to emerging technologies, and from cross-border data flows to data sovereignty and security. They also include protection of vulnerable groups and workers in flexible employment, digital inclusion on a larger scale, cyber hacking and cybersecurity threats and the prevention and control of digital terrorism. Liberalization and facilitation of digital business environment, digital services taxes and digital currency systems are further problematic areas.

The existing global governance systems have difficulties in making timely and effective responses to new challenges in digital globalization. In recent years, many international debates, such as those on regulating cross-border data flows, have reached a stalemate, which has heightened concerns in many countries about whether universal digital rules that go beyond national or regional borders can be formulated in a timely manner (UNCTAD, 2021). The lack of consensus and the erosion of trust in global digital governance have been exacerbated by multiple factors. Many countries and regions propose rules that maximize their own interests based on their preferences, which exacerbates inconsistencies in rules, regulations and standards. Some ongoing subregional or regional rules negotiations also face obstacles in applying to a wider range. The existing institutional frameworks at the international level are not fit for the specific needs of global data governance, and a new global institutional framework is urgently needed, with the joint efforts of multilateral, multi-stakeholder and multidisciplinary engagement (UNCTAD, 2021). In addition, as most of the key basic digital technologies are in the hands of developed countries, an important objective of global digital governance has long been neglected, that is, to enhance the digitalization capacity of developing countries, especially LDCs. The protectionist policies to exclude others and overstretch the concept of security proposed by a few developed countries have significantly slowed down the free flow of technologies, services, talent, knowledge and other factors in the digital field. These countries aim to establish small bilateral and plurilateral “circles”, making it more difficult for the existing international organizations and multilateral institutions to play their role in global digital governance.

10.3 Jointly advancing an inclusive digitalization that benefits all

10.3.1 Balancing development and supervision to boost digitalization

At a time when the global economy is at risk of recession, digital technology and the digital economy should play a positive role in leading innovation and boosting growth. The key to overcoming the so-called "growth dilemma" is to promote digital technology in more industries and raise the productivity of entire society. It is necessary to revitalize digital innovation in various sectors and appropriately reduce market regulation.

Facilitating the digital transformation of more industries and expanding the space and scope of digital technology application. Global spending on digital transformation is forecast to reach US$3.4 trillion in 2026 with a CAGR of 16.3% over the next few years (IDC, 2022). Digital transformation is advancing rapidly in the financial sector with growing investment in information technology. Data-enabled credit scoring, mobile payment and digital currencies have been applied all over the world, which have brought efficiency gains but also impacted the traditional financial systems in some countries. Policymakers should provide more experimental opportunities for digital innovation. The digital transformation of health care and education offers promising prospects. The rapid development of AI is bringing more opportunities in medical diagnosis and education while requiring countries to adopt policies that lower the threshold of technological access and open up application scenarios. In addition, new models such as the industrial internet, which focuses on improving manufacturing productivity, have become a policy priority for many manufacturing countries.

Activating disruptive technologies and new business models, and encouraging startup investment in the digital economy. Many of the innovations in the digital economy are driven by venture capital provided by professional investment institutions or tech giants. The bankruptcy of Silicon Valley Bank and other banks in some developed countries cast a shadow over the development of venture capital around the world, hence policy measures are needed to restore confidence. The practice of supporting venture capital through government-guided funds, which originated in Israel, has now become a policy practice in many countries, helping to promote venture capital. It is crucial to have institutional designs that respect the laws of the market. Otherwise top-down programs to promote entrepreneurship are likely to be unsuccessful because of poor design and poor implementation.

Developing new rules to foster an optimal regulatory system that balances development and regulation. The regulatory objectives and priorities of countries with strong digital capacity are not exactly the same, but they all pay considerable attention to issues such as monopoly by platform companies, user privacy protection and risks in cross-border data flows, placing equal importance on economic and social regulations. Data has become an important innovation resource in the digital age, and large digital firms are increasingly important in the innovation chain. In order to tap the potential of digitalization, more attention should be paid to resilient regulation that embraces innovation and encourages exploration, which is likely to become a policy trend in more economies against the backdrop of the sluggish global economy.

10.3.2 Promoting digital dividends to benefit more countries and groups

The wave of digitalization is spreading to countries around the world, especially developing countries. Digitalization is a great leveler of opportunities. Investments in digital education, digital infrastructure and digital services can improve gender equality, build resilience to climate change and help achieve many of the SDGs set in the 2030 Agenda. While, as the figures presented in this report show, digitalization will not automatically benefit every corner of the globe; even in a country that does benefit from such progress, it is likely that some people will be left behind in digitalization. Resolving the "inclusion dilemma" requires the joint efforts of both countries that are leading digitalization and those that are lagging behind.

Making digital services more affordable for low-income and lower-middle-income countries, regions and disadvantaged groups. Countries with leading digital technologies and a highly internationalized digital economy provide many digital products and services for countries lagging behind, accelerating the digitalization of the latter. However, for many low-income and lower-middle-income countries, digitalization in this way tends to be more costly and burdensome. Low-income groups within a country may face the same issue. Leading companies in global digitalization should tap more innovative opportunities for low-cost digitalization, and leading countries should facilitate such efforts with incentives. Low-income groups have a high aggregate purchasing power, which offers vast growth potential and a broad space for innovation. As we can see from China and other countries' practices, innovative business models can help to achieve lower-cost digitalization. This experience will prove to be valuable if replicated in more developing countries.

Improving digital infrastructure in low-income and lower-middle-income countries. Infrastructure such as communication networks and data centers can be used for both public services and business purposes. The most important thing in building digital infrastructure in developing countries is balanced distribution of long-term and short-term benefits in public-private cooperation, as well as friendly and cooperative relationship among local governments, enterprises and international organizations. There are many successful cases in this regard. For example, Huawei and ZTE, two Chinese firms, have played an important role in facilitating the development of digital infrastructure in African countries, providing internet access for hundreds of millions of local people. Despite great difficulties during the pandemic, ZTE upgraded more than 1,500 sites free of charge for African customers to guarantee the security and quality of network communications.

Providing low-income and lower-middle-income countries with digital skills training through multiple ways. International organizations, local governments, as well as enterprises should join hands to bridge the gaps in talent and skills for digitalization. In 2021, the Nigerian government, in partnership with Microsoft, planned to provide digital skills training for 5 million people and create more than 27,000 new digital jobs in the following three years. The government of Djibouti and China Merchants Group worked together to establish a center to promote African youth innovation and entrepreneurship and organized a training camp themed on digital innovation and cross-border e-commerce. Young African entrepreneurs from Djibouti, Ethiopia, Kenya and Uganda attended the camp to learn about digital technology and startup operation. These cases offer valuable practices that are worth replicating.

10.3.3 Improving global digital governance

As an emerging trend, digitalization inevitably requires suitable new rules to achieve digital governance. Each country has its own digitalization model; hence digital governance cannot be exactly the same everywhere. However, from the perspective of global data governance, common rules based on cooperation are crucial for promoting digitalization all around the world.

Opposing protectionism on technology and rules-making in the digital era. Open cooperation and healthy competition on a global scale is necessary for the advancement of digital technology, which is crucial for sustaining digital innovation. Open-source software has become one of the cornerstones of global digital technology innovation. A survey shows that 77% of respondents increased the use of open-source software in their organizations over the last 12 months (Open Logic and Open Source Initiative, 2022). Technological protectionism runs counter to the laws of innovation in digital technology and is ultimately detrimental to technological development. Also, the digital economy is characterized by increasing returns from economies of scale and economies of scope, and the benefits of digitalization are closely related to the interconnectivity of digital networks among countries. Setting up "small circles" of data governance rules will hinder the advancement of global digitalization. It is not in the interests of all countries, including developing countries.

Promoting fair and reasonable digital rules or initiatives that benefit all. For example, China proposed the G20 Action Plan on Digital Innovation and Cooperation in November 2022 to promote innovative application of digital technology and ensure that innovation outcomes benefit all and are shared by all. China proposed the Global Initiative on Data Security in 2020, which was widely noted by the international community. The initiative, comprising eight key points, proposes that global digital governance should follow the three principles of adhering to multilateralism, undertaking both security and development, and being equitable and just. The Digital Economy Partnership Agreement (DEPA), jointly put forward by Singapore, Chile and New Zealand in June 2020, aims to establish a common framework and rules for global digital trade and promote international cooperation in the digital economy, and many countries have applied for accession to DEPA or intend to do so.

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Acronyms and Abbreviations

2030 Agenda	United Nations 2030 Agenda for Sustainable Development
AI	artificial intelligence
AIIB	Asian Infrastructure Investment Bank
BIR	Bureau of International Recycling
BEV	battery electric vehicle
BNEF	Bloomberg New Energy Finance
BRI	Belt and Road Initiative
BRICS	Brazil, Russia, India, China and South Africa
CAGR	compound annual growth rate
CAICT	China Academy of Information and Communications Technology
CBAM	Carbon Border Adjustment Mechanism
CBAS	International Research Center of Big Data for Sustainable Development Goals
CBD	Convention on Biological Diversity
CIKD	Center for International Knowledge on Development
CPI	Consumer Price Index
DAC	Development Assistance Committee
DEPA	Digital Economy Partnership Agreement
DRC	Development Research Center of the State Council
DSA	debt sustainability analysis
DSSI	Debt Service Suspension Initiative
EMDEs	emerging market and developing economies
ESG	environmental, social and corporate governance
ETC	Energy Transition Commission

EV	electric vehicle
FAO	Food and Agriculture Organization
FDI	foreign direct investment
FSIN	Food Security Information Network
GAFA	Google, Amazon, Facebook and Apple
GATS	General Agreement on Trade in Services
GCF	Global Climate Fund
GCRG	Global Crisis Response Group on Food, Energy and Finance
GDI	Global Development Initiative
GDP	gross domestic product
GEF	Global Environment Facility
GFC	global financial crisis
GHG	greenhouse gas
GII	Global Innovation Index
GNI	gross national income
GSMA	Global System for Mobile Communications Association
HICP	Harmonized Index of Consumer Prices
HIPC	heavily indebted poor countries
ICTs	information and communication technologies
IDA	International Development Association
IDC	International Data Corporation
IEA	International Energy Agency
IFIs	international financial institutions
IFPRI	International Food Policy Research Institute
ILO	International Labour Organization
IMF	International Monetary Fund
IoT	internet of things
IPCC	Intergovernmental Panel on Climate Change

IRENA	International Renewable Energy Agency
ITFFD	Inter-agency Task Force on Financing for Development
ITU	International Telecommunication Union
IUCN	International Union for Conservation of Nature
LAC	Latin America and the Caribbean
LDCs	least developed countries
LLDCs	landlocked developing countries
MCDF	Multilateral Cooperation Center for Development Finance
MDBs	multilateral development banks
MENA	Middle East and North Africa region
MNEs	multinational enterprises
MPI	Multidimensional Poverty Index
MSMEs	micro, small and medium-sized enterprises
NBS	National Bureau of Statistics
NCDs	noncommunicable diseases
NDB	New Development Bank
NDCs	nationally determined contributions
NEVs	new energy vehicles
ODA	official development assistance
OECD	Organization for Economic Cooperation and Development
PHEV	plug-in hybrid electric vehicle
PPP	Purchasing Power Parity
R&D	research and development
SDGs	Sustainable Development Goals
SIDS	small island developing states
SMEs	small and medium-sized enterprises
TOSSD	Total Official Support for Sustainable Development
UHC	universal health coverage

UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNCCD	United Nations Convention to Combat Desertification
UNCTAD	United Nations Conference on Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNECA	United Nations Economic Commission for Africa
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organization
UNICEF	United Nations International Children's Emergency Fund
USDA	United States Department of Agriculture
WEF	World Economic Forum
WFP	World Food Program
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
WTO	World Trade Organization

Afterword

In June 2022, President Xi Jinping chaired the High-level Dialogue on Global Development. Issuing a Global Development Report was included in the Chair's Statement and the list of major deliverables. The Center for International Knowledge on Development (CIKD) undertook the task under the guidance of the Development Research Center of the State Council (DRC). The *Global Development Report 2023*, themed "Global Development at a Crossroads", looks at the basic features, the main trends, as well as opportunities and challenges for global development and presents forward thinking on global development. It analyzes the challenges in seven areas – poverty reduction, food security, public health, financing for development, energy transition, industrialization, and digitalization – and offers policy recommendations.

The Report was compiled under the leadership and guidance of Lu Hao, President of DRC and CIKD, and Zhang Laiming, Vice President of DRC and Chief Vice President of CIKD. DRC Vice Presidents Long Guoqiang, Yu Bin and Chen Changsheng contributed important suggestions. The editorial team was led by Zhao Changwen, former Executive Vice President of CIKD, and coordinated by Zhou Taidong, Vice President of CIKD.

The following authors contributed to the Report: Zhao Changwen and Zhu Hongming (Foreword); Zhou Yu and Hua Ruoyun (Chapter I); Zhuo Xian, Zhang Youyi and Wu Yue (Chapter II); Zhou Taidong and Luo Yuze (Chapter III); Zhang Jin and Liang Xiaomin (Chapter IV); Han Yang and Yu Lu (Chapter V); Dong Dandan and Ma Tianyue (Chapter VI); Wang Yan, Qian Ying and Li Cangshu (Chapter VII); Jiang Xiheng, Zhu Qingyi and Ma Lulu (Chapter VIII); Xu Zhaoyuan and Chen Xiao (Chapter IX); and Tian Jietang, Xiong Hongru and Liu Changyu (Chapter X). The Report was edited by Zhou Taidong, Zhou Yu and Zhang Youyi, and revised and finalized by Zhao Changwen and Wang Jinzhao, Executive Vice President of CIKD.

An advisory panel of international scholars and experts was set up for incorporating international academic thinking on global development. They are (in alphabetical order by last name):

Bert Hofman, Director of the East Asian Institute at the National University of Singapore and former World Bank Country Director for China, Mongolia and Korea in the East Asia and Pacific Region;

Peter Nolan, Founding Director of the Centre of Development Studies and Emeritus Chong Hua Professor in Chinese Development, University of Cambridge;

Arkebe Oqubay, former Senior Minister and Special Adviser to the former Prime Minister of Ethiopia;

Jorgen Randers, Professor Emeritus at the BI Norwegian Business School and senior member of the Club of Rome;

Jeremy Rifkin, founder of the Foundation on Economic Trends;

Jeffrey Sachs, President of the UN Sustainable Development Solutions Network, Director of the Center for Sustainable Development at Columbia University, and former Special Adviser to the United Nations Secretary-General;

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We are grateful to our distinguished panelists for their invaluable comments and suggestions.

CIKD will keep focusing on the Global Development Initiative and other major strategic global development issues, and issue the Global Development Report annually, making contributions to the world's common and sustainable development and a global community of shared development.

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