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GLOBAL DEVELOPMENT REPORT 2025

Jointly Bringing Stability and Certainty to Global Development

CENTER FOR INTERNATIONAL KNOWLEDGE ON DEVELOPMENT

FOREIGN LANGUAGES PRESS CHINA DEVELOPMENT PRESS

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Foreword

Jointly Bringing Stability and Certainty to Global Development

In a keynote speech at the opening ceremony of the Fourth Ministerial Meeting of the China-CELAC Forum in May 2025, Chinese President Xi Jinping observed, “The century-defining transformation is accelerating across the globe, with multiple risks compounding one another. Such developments make unity and cooperation among nations indispensable for safeguarding global peace and stability and for promoting global development and prosperity.” Global economic and trade frictions have been escalating, the forces driving economic globalization are locked in a stalemate with the forces resisting it, and the contest between multilateralism and unilateralism has grown more intense. These have profoundly impacted global development. Despite the tremendous efforts made by countries to implement the United Nations (UN) 2030 Agenda for Sustainable Development, overall progress has fallen short of expectations, with the least developed countries facing particularly daunting challenges in achieving the Sustainable Development Goals (SDGs).

The international landscape is undergoing complex and profound changes, with significantly increased instability and uncertainty and a marked resurgence of unilateralism and protectionism. In 2024, the world saw the introduction of more than 1,200 discriminatory trade barriers, far surpassing the pre-pandemic annual average of just over 200. This surge put global economic growth and the stability of trade and economic order in peril. As the international order and rules face severe challenges and the authority and effectiveness of multilateral mechanisms weaken, the world risks returning to the law of the jungle era. Regional conflicts have proliferated and have been prolonged, and international hotspot issues keep flaring up. Climate change has accelerated, with 2024 becoming the hottest year on record in 175 years. The global average temperature breached the 1.5°C pre-industrial baseline set by the Paris Agreement for the first time. While artificial intelligence technology empowers development, it is profoundly transforming the global economy, society and environment, triggering a series of potential security risks and governance challenges.

Humanity has come to a new crossroads. How do we address the series of destabilizing factors and uncertainties? How do we promote sustained and stable global growth and achieve common development and prosperity? These are critical questions that countries must face upfront. The more turbulent the international situation becomes, and the greater the instability and uncertainties, the more imperative it is for all actors to reaffirm their commitment, uphold solidarity, and work together to overcome the risks and challenges. President Xi's vision of building a community with a shared future for humanity transcends the outdated zero-sum mentality and aligns with the common interests of all. It is of great significance for promoting solidarity and cooperation among countries, increasing stability and certainty in the world, and jointly creating a brighter future for humanity. Xi has further proposed the Global Development Initiative (GDI), the Global Security Initiative (GSI), the Global Civilization Initiative (GCI), and the Global Governance Initiative (GGI), highlighting China's sense of responsibility and active role in international affairs and providing solid support for building a community with a shared future for humanity.

The release of the "Global Development Report" was included in the Chair's Statement and the list of major deliverables of the High-level Dialogue on Global Development chaired by Xi in June 2022. It is an important knowledge product under the GDI framework. The *Global Development Report 2025*, themed "Jointly Bringing Stability and Certainty to Global Development", responds to the major concerns of the international community. The general report analyzes the main destabilizing factors and uncertainties facing the world today and their impact on global development. It systematically expounds the persisting certainties and favorable conditions and explores the overarching principles and specific pathways to promote global stability and sustainable development. The thematic reports examine the development and challenges across global trade, climate change, health, food security and poverty reduction, industrialization in developing countries, and digital and intelligent transformation with targeted recommendations, and discuss topics like development cooperation among the Global South and upholding the UN-centered international system.

We believe that despite various destabilizing factors and uncertainties in global development, there are many positive elements and favorable conditions. Peace and development have always been the direction of human progress. The post-WWII world has enjoyed overall peace and stability and seen remarkable development. Economic globalization, an unstoppable historical trend, reflects the objective requirement of productivity advancements, is a natural outcome of scientific and technological progress, and maximizes resource allocation efficiency on a global scale. The principles underpinning globalization and global economic development, such as comparative advantage, economies of scale, and the theory of general equilibrium, will not change. Despite the impact of moves to withdraw from international treaties and organizations, the current international system remains resilient, with the vast majority of countries unwilling to revert to the law of the jungle or engage in beggar-thy-neighbor policies.

The new round of scientific and technological revolution and industrial transformation is underway, with the emergence of a series of cutting-edge technologies. New technologies such as renewable energy, artificial intelligence, and biotechnology are becoming less costly and disseminating at a faster pace, fostering conditions for green development and digital transformation in developing countries and offering new solutions to global development challenges.

The influence of the Global South continues to expand. Their share in the global economy rose from around 25% in the 1980s to over 40 percent in 2024. Since 2000, developing countries' merchandise trade has grown by nearly 5 times, and their share in global trade risen from 30% to 45%. They are increasingly becoming the main drivers of global trade and economic growth, playing an ever more important role in the cause of human progress.

Both the opportunities and challenges facing human development are unprecedented. Against this backdrop, countries need to stand on the right side of history, follow the fundamental laws of human progress, respond to the aspirations they all share, especially developing countries, and uphold the vision of a community with a shared future for humanity. They need to build an open, inclusive, clean and beautiful world of lasting peace, universal security, and shared prosperity, and jointly promote global stability and sustainable development.

To jointly promote global stability and sustainable development, it is imperative to advocate an equal and orderly multipolar world and uphold and improve the international system. The year 2025 marks the 80th anniversary of the UN. The international community needs to continue to uphold the UN-centered international system and the international order based on international law, support the UN in better playing its central role in international affairs, and work together to restore development to the center of the international agenda. Countries should actively assume their international responsibilities, strengthen dialogue and communication, and resolve differences properly. Major countries, in particular, need to demonstrate their responsibility by not only managing their domestic affairs well but also playing a leading role in proactively providing international public goods. All parties need to jointly enhance the representation and voice of the Global South in international affairs and make the global governance system more just and equitable.

To jointly promote global stability and sustainable development, it is imperative to advocate a universally beneficial and inclusive economic globalization and foster an open world economy. With the World Trade Organization (WTO) celebrating its 30th anniversary in 2025, countries should uphold true multilateralism, jointly safeguard and revitalize the multilateral trading system. They should encourage more WTO members to join the Multi-Party Interim Appeal Arbitration Arrangement, restore the operation of the WTO's dispute settlement system, support necessary reforms of the WTO, and facilitate the evolution of multilateral trade rules while ensuring their binding nature and flexibility. They need to strengthen regional and cross-regional cooperation, enhance regional economic integration through open regionalism, expand trade and investment cooperation, and ensure stable and unblocked supply chains. Furthermore, they need to deepen cooperation in science and technology, create an open, fair, just, and non-discriminatory international environment for technological development, increase investment in scientific and technological innovation to address global challenges, and jointly prevent the risks associated with digital and intelligent technologies.

To jointly promote global stability and sustainable development, it is imperative to focus on cooperation in key areas and jointly address pressing challenges. Countries need to accelerate global climate action, uphold the central role of the UN Framework Convention on Climate Change and the Paris Agreement in global climate cooperation, and fully and faithfully implement their goals and principles. They need to step up innovation and commercialization of green technology and make key technologies more accessible and applicable in developing countries. They need to channel various public and private funds into green and low-carbon sectors and coordinate efforts to advance economic growth and energy transition in developing countries. They need to jointly safeguard global food security, help one another improve their food supply capacities, and establish effective contingent reserve mechanisms. They need to jointly facilitate global food security policymaking and prioritize vulnerable countries in food security development assistance. They need to collaboratively guard against global health hazards, strengthen support for the World Health Organization, enhance the resilience of global supply chains for essential medical products and health service systems, and help improve local production capacities in countries where conditions allow. Besides, they need to establish and improve a global early warning platform for diseases based on digital and intelligent technologies, and provide humanitarian assistance to conflict- and disaster-affected regions.

To jointly promote global stability and sustainable development, it is imperative to strive for mutually-beneficial cooperation and sustain the progress of the Global South countries. Developed countries should fulfill their obligations, developing countries should deepen cooperation, and the Global North and the Global South should move towards each other to build united, equal, balanced, and inclusive global development partnerships. Countries in the Global South should expand trade and investment cooperation based on the principles of mutual support and complementarity, strengthen technology transfer and knowledge sharing, and embrace the concept of productive finance. They should increase investment in key areas such as manufacturing, green and low-carbon development, and digital infrastructure, with a focus on enhancing their self-development capacity.

We should let no fleeting phenomena cloud our vision. As the world enters a new stage of turbulence and transformation, it is necessary to not only accurately understand the laws underpinning the progression of history and the trends of global development, but also foster open and equal communication among all parties to seek and build consensus to the greatest degree possible. We remain committed to drawing on the wisdom of all parties, and working with them to study and exchange ideas on global development theories and practices to enrich the development knowledge base, and contributing to global stability and sustainable development.

Acronyms and Abbreviations

2030 Agenda	United Nations 2030 Agenda for Sustainable Development
ADB	Asian Development Bank
AfCFTA	African Continental Free Trade Area
AfDB	African Development Bank
AGI	artificial general intelligence
AI	artificial intelligence
AIIB	Asian Infrastructure Investment Bank
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AU	African Union
BCG	Boston Consulting Group
BRI	Belt and Road Initiative
BRICS	Brazil, Russia, India, China, South Africa
CAFTA	China-ASEAN Free Trade Area
CBDR	common but differentiated responsibilities
CELAC	Community of Latin American and Caribbean States
CFS	Committee on World Food Security
CIKD	Center for International Knowledge on Development
CPI	Climate Policy Initiative
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
DAC	Development Assistance Committee
DRC	Development Research Centre of the State Council
EMDEs	Emerging market and developing economies
EVs	electric vehicles
FAO	Food and Agriculture Organization of the United Nations
FDI	foreign direct investment
FRLD	Fund for Responding to Loss and Damage
FSIN	Food Security Information Network
FTAAP	Free Trade Area of the Asia-Pacific
G7	Group of Seven
G20	Group of Twenty
G77	Group of 77
GCI	Global Civilization Initiative
GDI	Global Development Initiative
GDP	gross domestic product
GDSSCF	Global Development and South-South Cooperation Fund
GGI	Global Governance Initiative
GHEC	Global Health Emergency Corps
GHG	greenhouse gas
GIDH	Global Initiative on Digital Health
GNAFC	Global Network Against Food Crises
GNI	gross national income
GPAI	Global Partnership on Artificial Intelligence
GRFC	Global Report on Food Crises

GSI	Global Security Initiative
GSMA	Global System for Mobile Communications Association
GTA	Global Trade Alert
HICs	high-income countries
ICANN	Internet Corporation for Assigned Names and Numbers
ICRC	International Committee of the Red Cross
IDA	International Development Association
IEA	International Energy Agency
IETF	Internet Engineering Task Force
IFAD	International Fund for Agricultural Development
IGN	Intergovernmental Negotiations
IHLEG	Independent High-Level Expert Group
IHME	Institute for Health Metrics and Evaluation
IIF	Institute of International Finance
IISS	International Institute for Strategic Studies
ILO	International Labour Organization
IMF	International Monetary Fund
INDCs	Intended Nationally Determined Contributions
IPBES	Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
ITC	International Trade Centre
ITU	International Telecommunication Union
IUCN	International Union for Conservation of Nature
JETP	Just Energy Transition Partnership
LAC	Latin America and the Caribbean
LCOE	levelized cost of electricity
LDCs	least developed countries
LICs	low-income countries
LMC	Lancang-Mekong Cooperation
LMICs	lower-middle-income countries
MDBs	multilateral development banks
MNCs	multinational corporations
MPI	Multidimensional Poverty Index
MPIA	Multi-Party Interim Appeal Arbitration Arrangement
NAM	Non-Aligned Movement
NCDs	noncommunicable diseases
NCQG	New Collective Quantified Goal on climate finance
NDB	New Development Bank
NDCs	Nationally Determined Contributions
NEVs	new energy vehicles
ODA	official development assistance
ODI	outward direct investment
OECD	Organization for Economic Cooperation and Development
OFDI	outward foreign direct investment
PHEIC	public health emergency of international concern
PRGT	Poverty Reduction and Growth Trust
PRIO	Peace Research Institute Oslo
RCEP	Regional Comprehensive Economic Partnership
RST	Resilience and Sustainability Trust

RTAs	regional trade agreements
SCO	Shanghai Cooperation Organization
SDGs	Sustainable Development Goals
SDRs	special drawing rights
SIDS	small island developing states
SMEs	small and medium-sized enterprises
SSA	Sub-Saharan Africa
STEM	science, technology, engineering and mathematics
TFP	total factor productivity
UHC	universal health coverage
UMICs	upper-middle-income countries
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNCTAD	United Nations Conference on Trade and Development United Nations Trade and Development
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
UNOCHA	United Nations Office for the Coordination of Humanitarian Affairs
UN TFM	UN Technology Facilitation Mechanism
USAID	US Agency for International Development
WEF	World Economic Forum
WFP	World Food Programme
WHA	World Health Assembly
WHO	World Health Organization
WIL	World Inequality Lab
WIPO	World Intellectual Property Organization
WMO	World Meteorological Organization
WRI	World Resources Institute
WTO	World Trade Organization

Part I
General Report

Chapter I

Overall Progress on the 2030 Agenda for Sustainable Development

Since the 2030 Agenda for Sustainable Development was adopted in 2015, many countries have made huge efforts to implement it, and some progress has been made. However, due to protracted and escalating geopolitical conflicts, rising unilateralism and protectionism, and factors of instability and uncertainty that have accumulated and intertwined in recent years, the overall progress of the 2030 Agenda has fallen short of expectations, particularly in the least developed countries (LDCs) and low-income countries.

The latest United Nations assessment[1] indicates that of the 139 assessable targets, only 18% have been achieved or are on track to be achieved; 48% are making moderate or marginal progress; 17% are stagnant; and 18% have regressed below the 2015 baseline (UN, 2025a). Although some progress has been made in economic development, health and education goals, other goals such as those related to inequality, food security and ecological environment have either stagnated or regressed. With the 2030 Agenda entering its final five years, the international community must step up commitments and investments and strengthen cooperation to realize this global development blueprint to the maximum extent.

1.1 Economic development

1.1.1 The global economy grew at a low-to-moderate pace, with inflation generally declining but still at a high level

The global economy maintained low to moderate growth. The International Monetary Fund (IMF) estimated that the global economy grew by 3.3% in 2024, down 0.2 percentage point from 2023 (Figure 1-1) and below the average of 3.7% between 2000 and 2019 (IMF, 2025). Specifically,

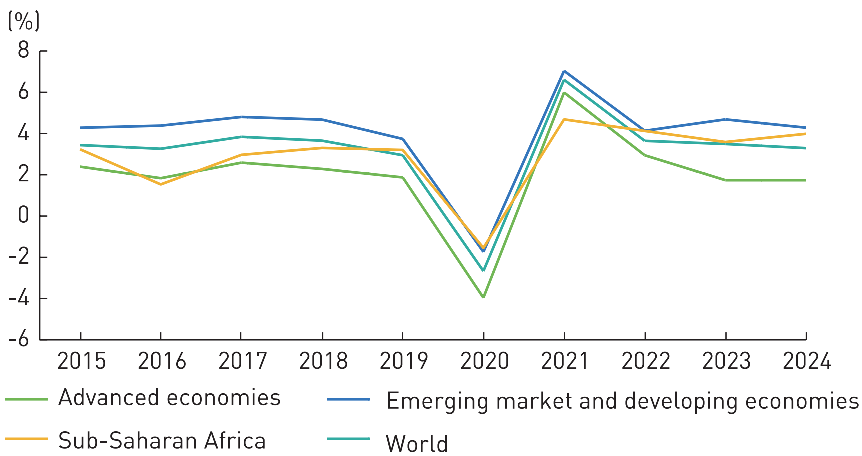

Figure 1-1 Change in economic growth rates, 2015-2024

Source: IMF

[1] Some numbers in this book may not add up to the total due to rounding.

growth in advanced economies edged up from 1.7% in 2023 to 1.8% in 2024, whereas in emerging market and developing economies (EMDEs) it slowed down from 4.7% to 4.3%. Growth in Sub-Saharan Africa (SSA) rose from 3.6% in 2023 to 4.0% in 2024, but it was still well below the 7% target set in SDG 8.1.

Global inflation trended downward, yet remained elevated. The IMF estimated that global headline inflation fell to 5.7% in 2024, down 0.9 percentage point from 2023. In 2024, the commodity price index declined slightly from 2023 levels, while remaining at a high level (Figure 1-2). Besides, service inflation stayed high, approximately twice the level observed before the COVID-19 pandemic (IMF, 2024). There was pronounced divergence among countries, with some continuing to face inflationary pressures.

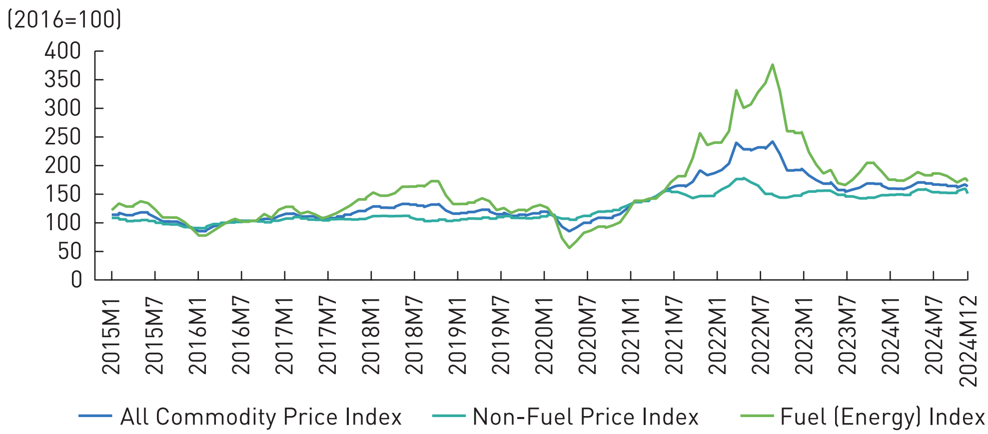

Figure 1-2 Commodity Price Index, January 2015 to December 2024

Source: IMF

1.1.2 Global trade recovered modestly, with developing economies as the main driving force

Global trade hit a record high, but the growth momentum slowed. In 2024, global trade increased by 3.7% to US$33 trillion, an increase of US$1.2 trillion from 2023 (UNCTAD[1], 2025a). Trade in goods grew by 2%, marking a rebound from past decline, yet still lower than global economic growth. Thanks to rapid advances in digital technology, trade in services expanded by 9% in 2024, becoming the primary contributor to growth in global trade. However, in the second half of the year, the momentum weakened amid growing expectations of uncertainties. Trade in goods increased by less than 0.5% quarter on quarter in the fourth quarter, while trade in services grew by just

[1] The former United Nations Conference on Trade and Development (UNCTAD) was rebranded as United Nations Trade and Development in April 2024, while retaining the acronym UNCTAD. For the sake of coherence and consistency, this book continues to use the name "UNCTAD".

1% (UNCTAD, 2025a). The global Container Throughput Index declined sharply in late 2024 (Figure 1-3).

Developing economies were the primary engine of global merchandise trade growth. The export and import values of developed economies in 2024 were basically the same compared to 2023, while those of developing economies increased by 4% from the previous year (UNCTAD, 2025a), contributing more than 60% to global trade growth. The share of developing countries in global trade kept increasing. From 2015 to 2024, their proportion in global trade in goods rose from 32.6% to 45.8%, while in global trade in services it increased from 28.0% to 29.8% (Figure 1-4). Among them, South-South exports in goods grew from 23.0% to 25.5% of the global total (Figure 1-5). It is noteworthy, however, that the growth of goods trade remained limited in the LDCs, which saw US$349.3 billion in imports and US$274.5 billion in exports in 2024, rising slightly to 1.41% and 1.12% respectively (Figure 1-6).

1.1.3 Cross-border investment continued to drop, with weak performance in SDG-related sectors

Global cross-border investment remained sluggish. In 2024, global foreign direct investment (FDI) as a whole grew by 4% to US$1.51 trillion. However, after excluding flows routed

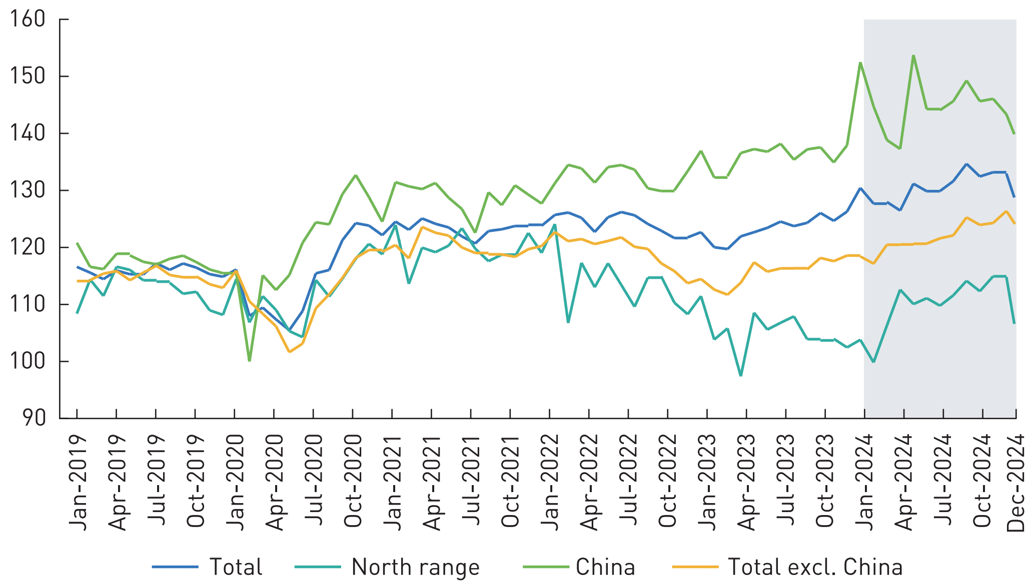

Figure 1-3 Container Throughput Index, January 2019 to December 2024

Note: Data for the global total is based on throughput data from 92 ports accounting for approximately 64% of global container traffic. Data for the North range summarizes the throughputs of the ports of Le Havre, Zeebrugge, Antwerp, Rotterdam, Bremen/Bremerhaven, and Hamburg. 2015=100.
Source: *Global Trade Outlook and Statistics*, April 2025

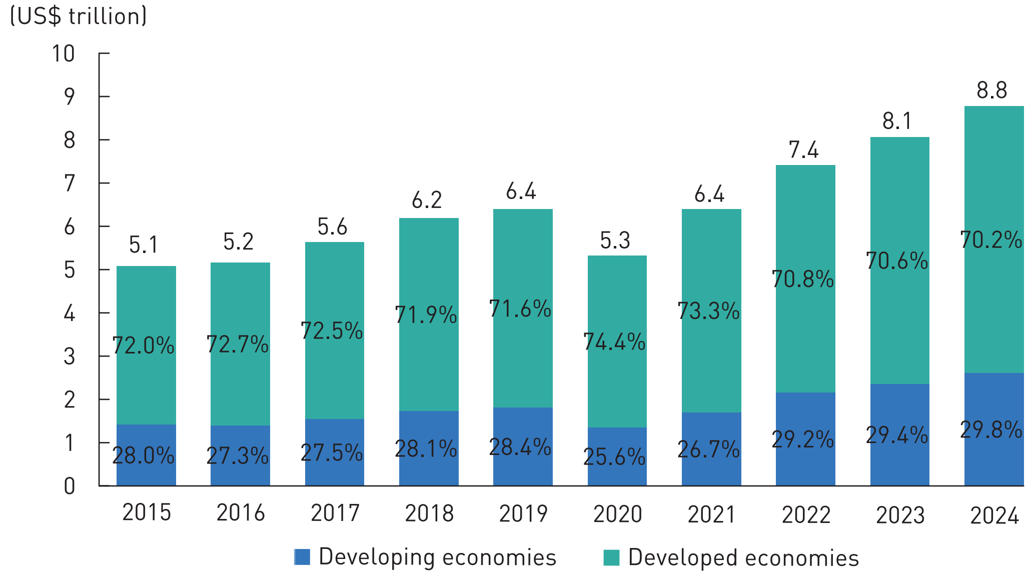

Figure 1-4 Share of developing and developed economies in global trade in services, 2015-2024

Note: The vertical axis represents the global trade value of services.
Source: Compiled by the authors based on data from the UNCTAD database

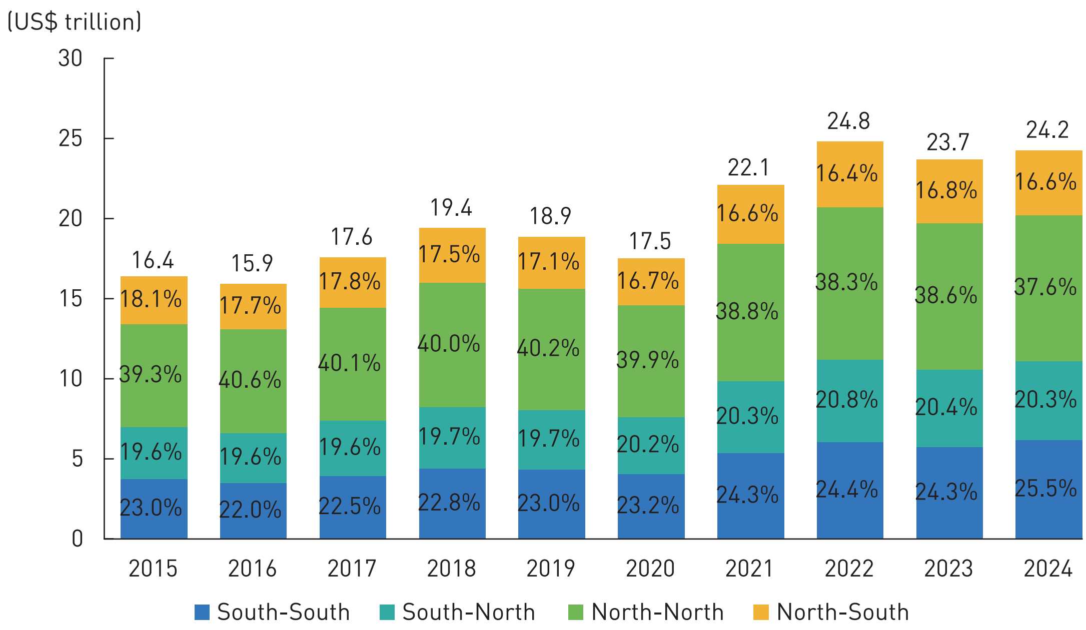

Figure 1-5 Distribution of global goods exports, 2015-2024

Note: Due to rounding, the percentages in some columns do not add up to 100%. The vertical axis represents the global export value of goods.
Source: Compiled by the authors based on data from the UNCTAD database

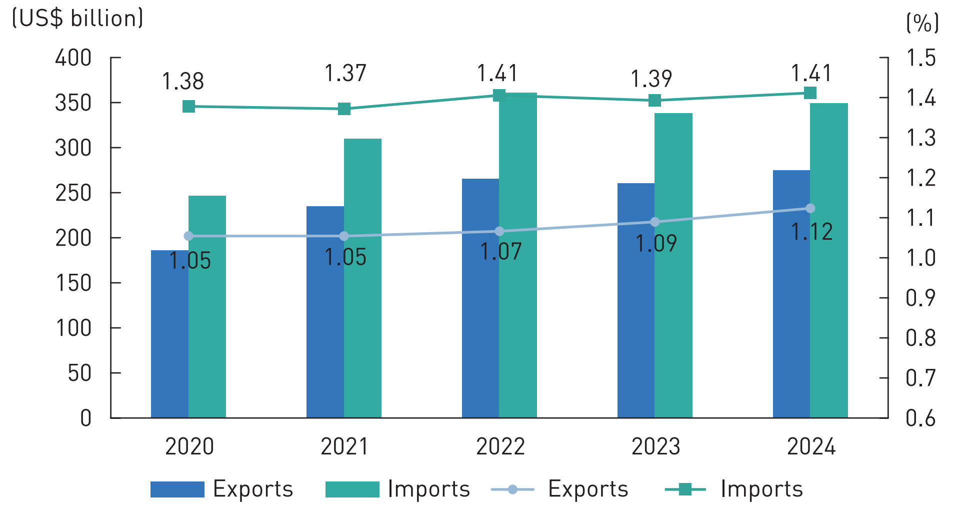

Figure 1-6 LDCs' value and share of merchandise trade, 2020-2024

Source: *Global Trade Outlook and Statistics*, April 2025

through European conduit economies[1], it actually fell by 11% compared to 2023, reaching US$1.49 trillion. International project finance[2] saw the sharpest decline – down 26% – primarily due to tighter financing conditions and increased uncertainties related to exchange rates and interest rates (UNCTAD, 2025b). This substantial drop disproportionately affected LDCs, where international project finance constitutes a significant share of inbound FDI. Greenfield investment, which focuses on industrial sectors, also decreased, with the total value of announced greenfield projects falling by 5% to US$1.3 trillion in 2024. Nevertheless, it remained at a historically high level, making regions with concentrated manufacturing supply chains like Southeast Asia, Eastern Europe, and Central America the primary beneficiaries. Cross-border mergers and acquisitions (M&As) increased by 14% to US$443 billion but remained well below the average of the past decade. These shifts across all three FDI categories reflect corporate efforts to reconfigure production networks to mitigate investment risks amid an uncertain global trade environment, escalating geopolitical risks, and evolving industrial policies.

[1] Conduit economies refer to transit hubs for cross-border investment where little or no tax is levied on capital transfers. For tax, financial, political and other reasons, investors often channel funds into special purpose entities (SPEs) located in such economies, and then transfer the investment onward to another economy. These activities can artificially inflate or deflate total cross-border investment (Casella et al., 2023). As a result, the FDI statistics for several European economies, such as Ireland, Luxembourg, the Netherlands and Switzerland, are heavily affected by these conduit flows, leading to sharp fluctuations and negative growth in their trade data in 2023 and 2024. Excluding the distortions caused by these flows, global FDI inflows in 2024 would have increased by about US$230 billion (UNCTAD, 2025b).

[2] International project finance refers to financing for large-scale projects that involve multiple investors and contain a significant debt component, and are mostly concentrated in the infrastructure sector.

Investment in SDG-related sectors was weak. FDI flows to SDG-related sectors in developing countries fell by 26% in 2024 compared to 2023, with flows to LDCs plummeting by 86% (UNCTAD, 2025b). Significant declines were observed in investment for infrastructure (-35%) and renewable energy (-31%) compared to 2023. Infrastructure investment declined by 5%, to a level even lower than in 2015. Only the health and education sectors saw increased investment compared to 2023 (Table 1-1).

1.1.4 Income and wealth inequalities among groups exacerbated, and development gaps among countries widened

Income and wealth inequalities among different groups exacerbated. Over the past 20 years, the income gap between the top 10% and the bottom 50% of individuals has almost doubled, from 8.5 times to 15 times (WIL, 2021). The richest 10% of the global population hold 76% of all wealth, with 2,750 billionaires controlling 3.5% of all wealth, while the poorest 50% own just 2% (WIL, 2021). Global labor share of GDP declined. In 2024, the global share of labor income in GDP was only 52.4%, a decrease of 0.6 percentage point from 2014, which contributed to increased inequality (ILO, 2025a).

Development gaps among countries widened. Between 2020 and 2024, more than half of the 75 most vulnerable countries[1] in the world saw GDP per capita grow at a slower rate than that of developed countries, the largest number since 2000. This implies a widening income gap between these vulnerable countries and the developed world (Figure 1-7).

1.1.5 Artificial intelligence (AI) emerged as a new driver of economic growth, but vigilance is needed against potential risks

AI gave renewed impetus to economic growth. It has become a global investment priority. Global corporate investment in AI doubled in

Table 1-1 FDI in SDG-related sectors in developing countries

	Investment Volume (US$ billion)		
	2015	2023	2024
Infrastructure	150	219	142
Renewable Energy	106	372	256
Water, Sanitation & Hygiene	8	12	9
Agrifood System	19	24	19
Health & Education	11	12	15

Source: UNCTAD, 2025b

[1] The most vulnerable countries refer to those eligible for concessional lending from the International Development Association.

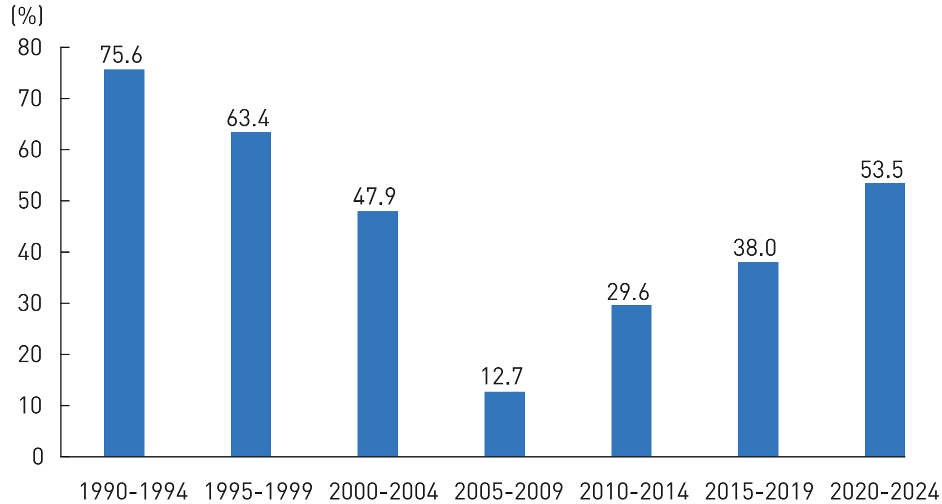

Figure 1-7 Proportion of the most vulnerable countries with GDP per capita growth below that of developed countries

Source: UN, 2024a

2020 compared to 2019 and remained high thereafter, reaching US$252.33 billion in 2024, an increase of 26% from the previous year (Figure 1-6). Newly founded AI companies worldwide numbered 2,049 in 2024, an increase of 8.4% year on year (Stanford HAI, 2025). The application of AI enhances labor productivity and capital returns (Georgieva, 2024), accelerates innovation (UNDP, 2025), optimizes energy networks, improves public health, and facilitates the prediction and response to natural disasters (UN, 2024b). Studies indicate that AI significantly boosts labor productivity across industries such as services, research and software development. For example, AI-assisted software developers improved their productivity by 12% to 26% (Cui et al., 2024; Hoffmann et al., 2024).

AI may bring risks, including inequality, structural unemployment, and governance disorder. Developed economies and some emerging market economies tend to be better equipped for AI adoption than low-income economies (Georgieva, 2024), potentially widening the inequality among countries. The substitution effect of AI also raises the risk of structural unemployment. About one-quarter of global jobs could be impacted by generative AI (ILO, 2025b). In addition, major incidents related to AI misuse have surged. In 2024, such cases, including wrongful arrests caused by facial recognition systems and teen suicides following interactions with chatbots, increased by 56.4% compared to 2023 (Stanford HAI, 2025).

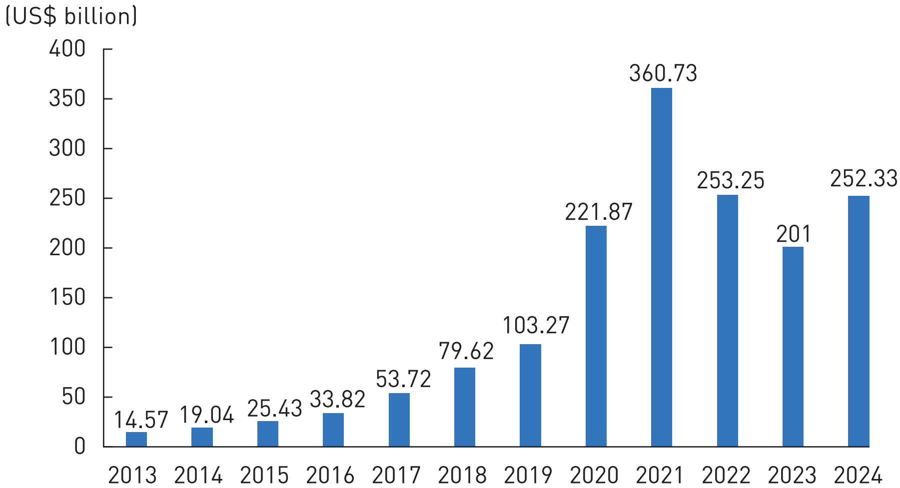

Figure 1-8 Global corporate investment in AI, 2013-2024

Source: Stanford HAI, 2025

1.2 Human wellbeing

1.2.1 Extreme poverty rate declined modestly with the continued expansion of social security coverage

The extreme poverty rate decreased, but the pace of poverty reduction slowed down and became more uneven. In 2024, the global extreme poverty rate was 8.5% (692 million people), a marginal decline from 2023 and below the pre-COVID level (Figure 1-9). However, the progress of global poverty reduction has decelerated, with the number of people in extreme poverty declining by only 1.9% in 2024, far below the average annual decrease of over 5% during 2010-2014. Poverty reduction efforts face mounting challenges due to intensifying regional conflicts, growing trade uncertainties, and worsening climate crisis. If poverty reduction efforts are not scaled up, an estimated 8.9% of the global population will still be living in extreme poverty by 2030 (UN, 2025a). Advancements in poverty reduction have become increasingly uneven. Poverty rates have dropped below the pre-COVID level in middle-income countries, but remain above the pre-COVID level in low-income countries (UN, 2025b). There is a growing concentration of extreme poverty, with about three-quarters of the extremely poor population living in SSA and fragile and conflict-affected countries (World Bank, 2024).

Social protection coverage rose while the working poverty rate[1] continued to decline. The share of the population receiving at least one social protection benefit increased from 42.8%

[1] Working poverty rate refers to the share of persons in employment living below US$2.15 per day as a percent of total employment.

in 2015 to 52.4% in 2023 (UN, 2025a). Nevertheless, 3.8 billion people worldwide remained uncovered by social security networks in 2023, concentrating in low- and middle-income countries. Among these, nearly 70% of the population in lower-middle-income countries and over 90% in low-income countries lacked social protection (Figure 1-10). Globally, the working poverty rate fell from 8.4% in 2015 to 6.9% in 2024. However, nearly one-third of the

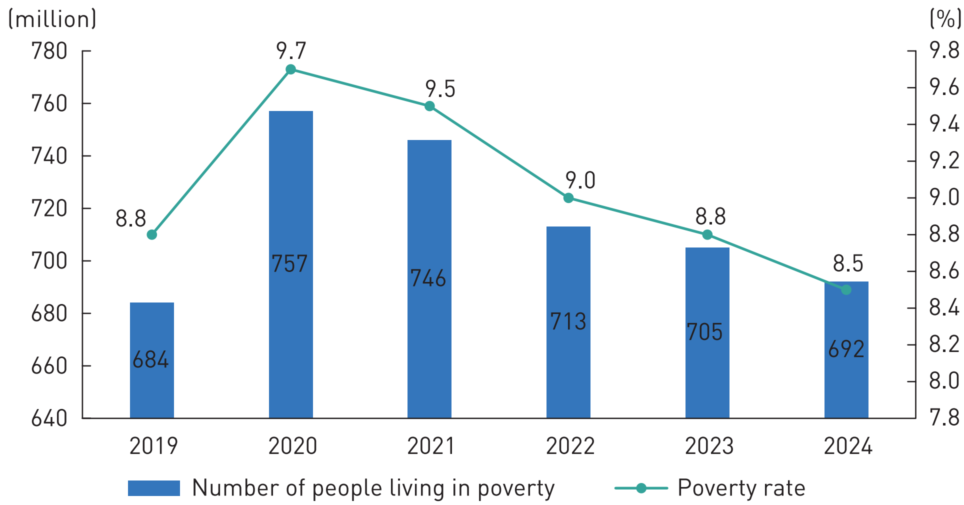

Figure 1-9 Global extreme poverty rate and extremely poor population, 2019-2024

Note: The global extreme poverty rate refers to the proportion of the world's population living below the international poverty line of US$2.15 per day (2017 purchasing power parity). Data for 2023 and 2024 is from World Bank estimates.
Source: World Bank

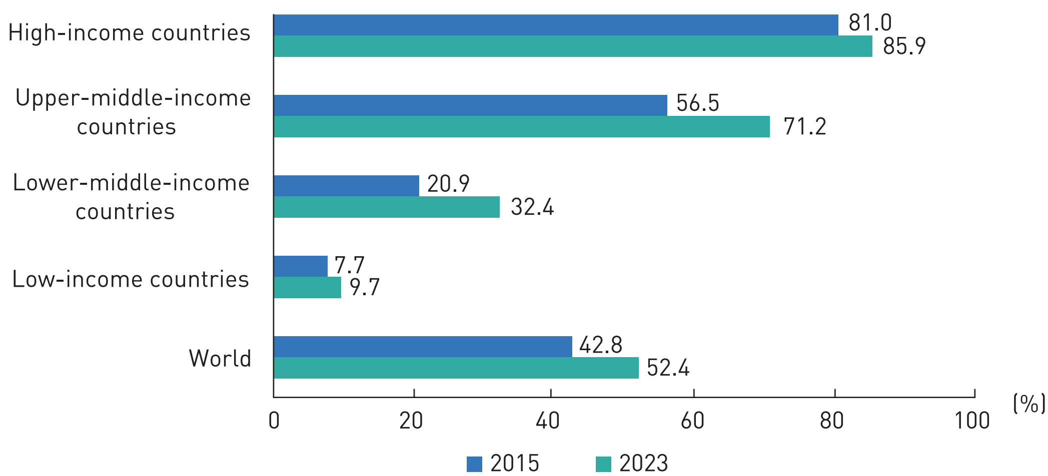

Figure 1-10 Proportion of population receiving at least one social protection benefit, 2015 and 2023

Source: UN, 2025a

employed population in LDCs still live in extreme poverty (UN, 2025a).

1.2.2 Global food insecurity declined gradually while hunger worsened in some regions

Global hunger showed an overall trend of improvement. In 2024, approximately 673 million people worldwide suffered from hunger, declining to 8.2% of the world population, in a steady downward trend observed in 2023 (8.5%) and 2022 (8.7%) (FAO et al., 2025). Asia's prevalence of undernourishment (PoU) decreased from 7.9% in 2022 to 6.7% in 2024. Additionally, Latin America and the Caribbean saw their PoU down from 6.1% in 2020 to 5.1% in 2024 (FAO et al., 2025).

But hunger continued to worsen in Africa and Western Asia. Rising food prices, combined with regional conflicts, climate change and economic turmoil, intensified food insecurity in some countries. In 2024, the Food Price Index released by the UN's Food and Agriculture Organization (FAO) declined by 2.0% compared to 2023, but remained above the pre-COVID level (Figure 1-11). In 2024, Africa's PoU exceeded 20%, affecting 307 million people, while PoU in Western Asia rose to 12.7%, with over 39 million experiencing hunger. Projections indicate that 512 million people globally will suffer chronic hunger by 2030, and nearly 60% of them will be in Africa (FAO et al., 2025). Achieving SDG 2 – "Zero Hunger" – remains a formidable challenge.

1.2.3 The health sector showed modest improvement, with progress in healthcare services and multilateral health governance

Progress in certain health indicators was

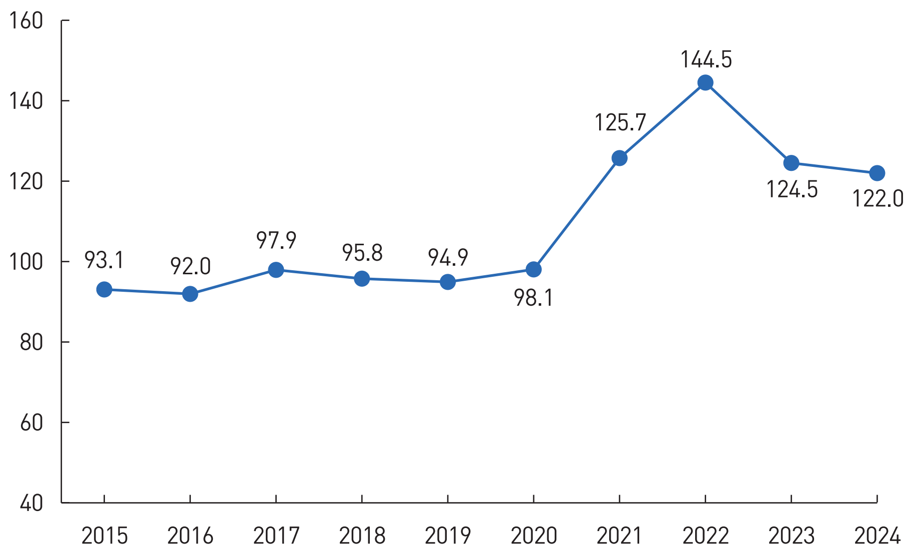

Figure 1-11 Food Price Index, 2015-2024

Note: 2014-2016=100.
Source: FAO

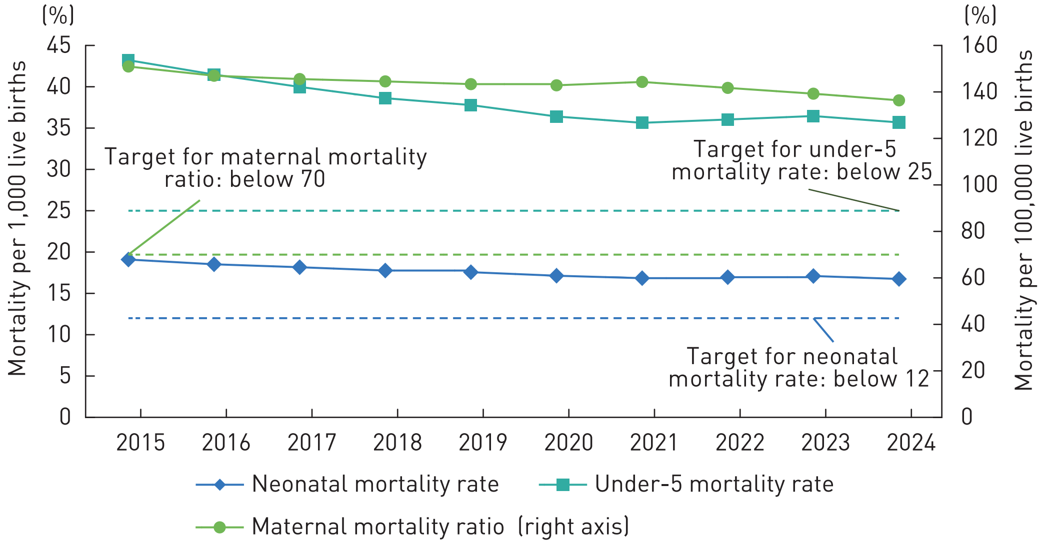

Figure 1-12 Progress in maternal and child health-related indicators for SDG 3, 2015-2024

Note: Data for 2024 are estimates.
Source: IHME

moderate. Global average life expectancy recovered from the shock of the COVID-19 pandemic, reaching a record high of 73.3 years in 2024 (UNDESA, 2024). According to estimates from the Institute for Health Metrics and Evaluation (IHME) at the University of Washington, the maternal mortality ratio, neonatal mortality rate, and under-five mortality rate saw a moderate decline compared to 2023 and a considerable decline compared to 2015 (Figure 1-12). Progress has also been made in the prevention and control of communicable diseases. Except for malaria, indicators such as HIV incidence rate, tuberculosis incidence rate, and prevalence of 15 neglected tropical diseases were at historic lows in 2024 (Figure 1-13). Nevertheless, at the current pace, the goal of ending these diseases by 2030 is unlikely to be met. Due to reduced tobacco use, improved air quality, and increased access to clean household fuels, water, and sanitation, an estimated 1.35 billion people enjoyed better health by the end of 2024 compared to 2018, which surpassed the WHO target of “1 billion more people enjoying better health and wellbeing by 2025” (WHO, 2025).

Healthcare services have improved. The universal health coverage (UHC) service coverage index[1] increased from 65 in 2015 to 68 in 2021, indicating slow improvement in essential health services. In 2023, the global health workforce reached 70 million workers, with

[1] The index consists of 14 indicators covering reproductive, maternal, newborn and child health, infectious diseases, noncommunicable diseases, and service capacity and access.

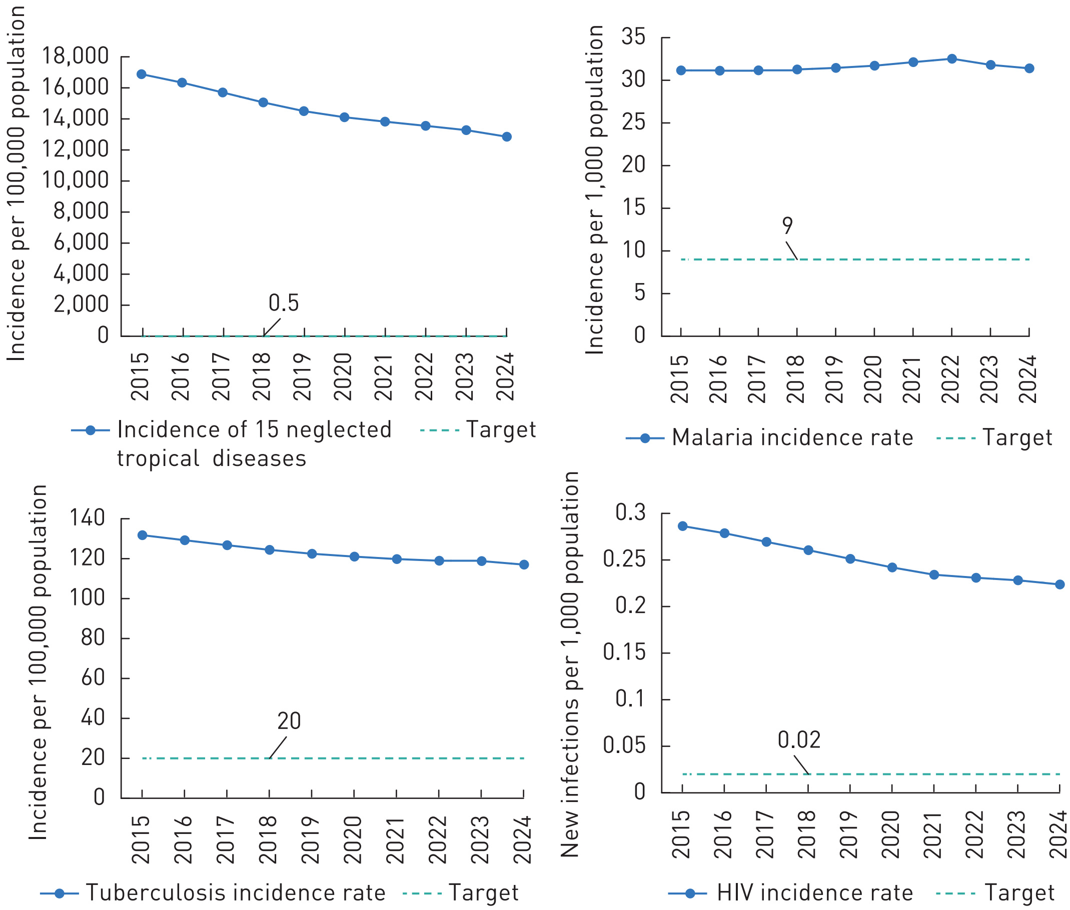

Figure 1-13 Progress in indicators of communicable diseases for SDG 3, 2015-2024

Note: Data for 2023 and 2024 are estimates.
Source: IHME

health worker density[1] rising by 26% compared to 2013 (WHO, 2025). The proportion of births attended by skilled health personnel increased from 79.5% in 2015 to 86.6% in 2024. Global vaccine coverage rebounded from COVID-19 disruptions. In 2023, coverage rates among target populations reached 84% for the third dose of the diphtheria-tetanus-pertussis vaccine (DTP3), 20% for the human papillomavirus (HPV) vaccine, 74% for the second dose of measles-containing vaccine (MCV2), and 65% for the third dose of the pneumococcal conjugate vaccine (PCV3) (Figure 1-14).

Multilateral health governance has progressed. In 2024, the World Health Assembly adopted the amended International Health Regulations (2005), which would bolster the capacity of

[1] This refers to the number of health workers per 10,000 population.

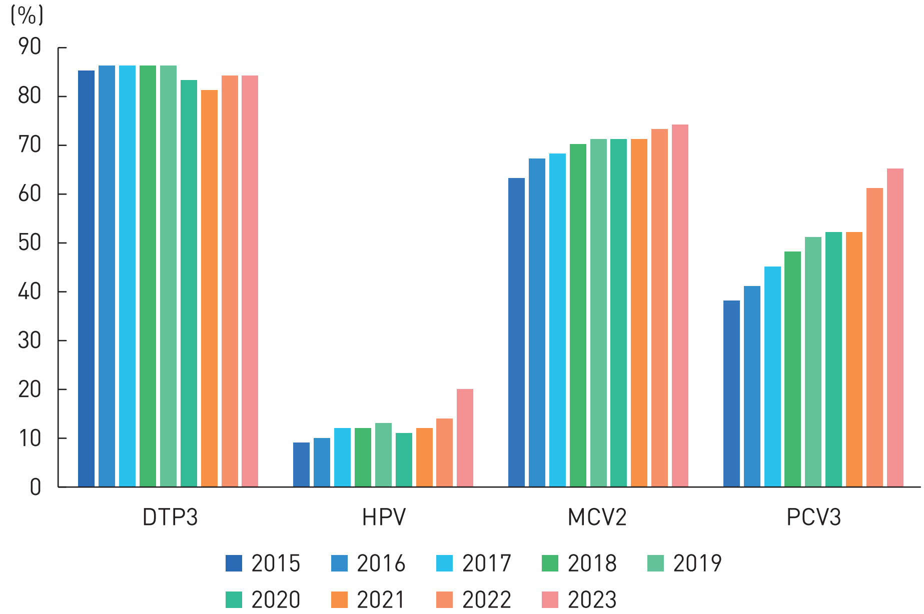

Figure 1-14 Global vaccine coverage, 2015-2023

Source: UN Sustainable Development Goals Indicators Database

countries to detect and respond to future pandemics by strengthening disease surveillance, information sharing, and international cooperation. WHO member states have carried out intensive negotiations on the WHO Pandemic Agreement, laying an important foundation for a coordinated global response to future public health emergencies.

1.2.4 Education development made progress, yet big challenges remained in bridging the educational gap

Universal access to education has increased worldwide. In 2024, the global completion rates in primary, lower secondary, and upper secondary education were 88.1%, 78.1% and 59.6% respectively, all up from the previous year (Figure 1-15). Pre-primary participation increased modestly from 73.6% in 2015 to 74.7% in 2023. Participation in vocational training and tertiary education edged up from 14.4% in 2015 to 14.7% in 2024. Global literacy rates improved, with youth literacy rising from 91% in 2014 to 93% in 2024 and adult literacy from 85% to 88%, led by rapid gains in Central and Southern Asia and SSA (UN, 2025a).

Closing the education divide remained challenging. The progress towards gender equality across all levels of education has obviously slowed since 2015. Gender disparities in education remain prominent in SSA and Central and Southern Asia. The urban-rural and rich-poor gaps in education are substantial. In most low- and middle-income countries, the poorest groups have near-zero access to tertiary education (UNESCO, 2024). Education spending is extremely unbalanced. In 2022, of the US$5.8

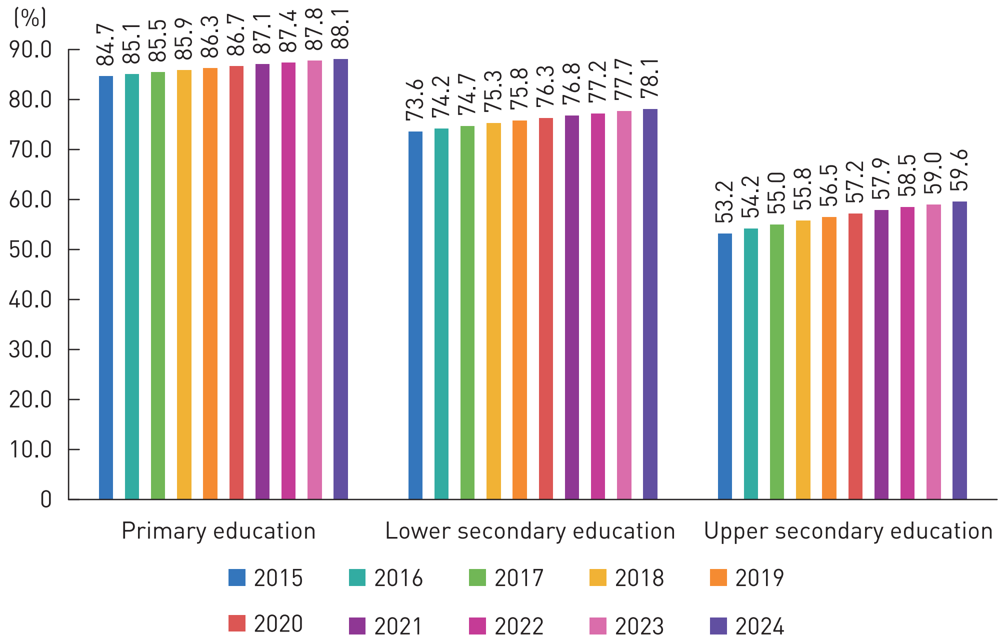

Figure 1-15 Global completion rates by stage of education, 2015-2024

Source: UN Sustainable Development Goals Indicators Database

trillion spent on education worldwide, 64% was directed to high-income countries, while only 0.45% was used in low-income countries, even though the two groups have an equal number of school-age children (UNESCO, 2024).

1.3 Environmental protection

1.3.1 Rapid progress in clean energy contrasted with a slow pace in green transition, making it insufficient to tackle the climate crisis

Clean energy grew rapidly. In 2024, clean energy[1] accounted for 80% of the growth in global power generation, and for the first time, its share in global power generation exceeded 40%. In particular, renewable energy power generation constituted 32% (IEA, 2025). In 2024, the global installed capacity of renewable energy increased by 25% year on year to reach around 700 GW, setting a record high for the 22nd consecutive year (IEA, 2025). Solar photovoltaic (PV) power contributed to more than three-quarters of the added installed capacity of renewable energy, followed by wind power (17%) and hydropower (4%). Other renewable sources included biomass, geothermal energy,

[1] This refers to renewable energy and nuclear energy.

concentrated solar power (CSP)[1] and ocean energy (IEA, 2025).

The Paris Agreement's 1.5°C temperature limit was breached for the first time. In 2024, the global average surface temperature was 1.55°C (±0.13°C) above the pre-industrial level, which temporarily crossed the 1.5°C limit, making 2024 the warmest year on record (WMO, 2025). Global cooling degree days[2] were 6% more than in 2023 (IEA, 2025). In 2024, weather-related factors drove 15% of the growth in global energy demand (IEA, 2025). Global oceans also become warmer and more acidic, with significantly higher levels. In 2024, both global average sea surface temperature and upper 2000m ocean heat content reached record highs (Cheng et al., 2025). The global average ocean surface pH value has been declining since 1985. The mean sea level hit its highest satellite-recorded peak since 1993 (WMO, 2025).

The green transition at its current pace falls short of effectively addressing the climate crisis. The improvement in energy use efficiency has slowed down. In 2024, global energy intensity declined by only 1%, much lower than the annual average decrease of 2% between 2010 and 2019 (IEA, 2025). Global fossil fuel subsidies declined from US$1.68 trillion in 2022 to US$1.10 trillion in 2023, but still far exceeded historical averages, nearly triple of the 2020 level (UN, 2025a). The rise of unilateralism and protectionism has restricted trade in clean energy-related products, impeding the global green transition. Moreover, the United States has regressed in its climate and energy policies and withdrawn from the Paris Agreement. This has aggravated the technological and financial inadequacies of developing countries in addressing climate change, posing great challenges to global climate governance.

1.3.2 Escalating severity of environmental pollution imposed substantial burdens globally, particularly on developing countries

Environmental pollution has become increasingly grave. In terms of air pollution, more than 6.8 billion people are currently living in environments where the ambient air quality fails to meet the WTO recommended standards for annual average PM2.5 concentrations[3] (UNEP, 2025a). In terms of water pollution, over 80% of the world's wastewater is discharged without any treatment into the natural environment, and 300 to 400 million tonnes of heavy metals, solvents, toxic sludge, and other wastes

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[1] Solar photovoltaic (PV) power and concentrated solar power (CSP) follow two different technological approaches. The former uses PV panels made of semiconductors, which can be installed on rooftops to directly convert sunlight into electricity for building use. The latter employs a concentration system to concentrate sun rays in a certain area to one central receiver, where the energy is captured and utilized.

[2] Cooling Degree Days (CDD) is an index used to measure the energy required to cool buildings. It is calculated as: CDD=∑(Daily Average Temperature – Base Temperature) where the daily average temperature is the mean of the day's maximum and minimum temperatures, and the base temperature is typically set at 65°F (18.3°C) or 70°F (21.1°C). https://www.eia.gov/energyexplained/units-and-calculators/degree-days.php.

[3] The WHO recommends an annual average target value for PM2.5 of less than 5 micrograms per cubic meter (<5μg/m³).

are dumped annually into the world's waters (IPBES, 2019). In terms of plastic pollution, humanity produces more than 400 million tonnes of plastics each year, much of which ends up in the natural environment (UNEP, 2024a). Around 8 million tonnes of plastic waste enter the oceans each year, which is equivalent to dumping 2,000 garbage trucks full of plastic waste into the waters every day (Mishra, 2024). Microplastics have penetrated the food chain, water sources, soils, oceans, and even human organs. In terms of solid waste pollution, there is a global generation of 2.3 billion tonnes of municipal solid waste annually, including food scraps, electronics, textiles, and other items (UNEP, 2025b). Globally, 92 million tonnes of textile waste is generated every year, which equates to a garbage truck full of clothing being incinerated or sent to a landfill every second.

Environmental pollution has seriously impaired human health. Pollution-related deaths have increased by 66% in the last two decades (UNEP, 2024b). Globally, pollution kills about 9 million people every year, equivalent to one-sixth of all deaths (UNEP, 2024b). Air pollution alone is responsible for nearly 7 million deaths (UNEP, 2025c), with PM2.5 implicated in more than 90% of premature deaths related to air pollution (World Bank, 2025). The burden of environmental pollution is heavier in developing countries. Globally, about 95% of air pollution-related deaths occur in developing countries (World Bank, 2025). In South Asia, health damage from ambient air pollution in 2020 was equivalent to 8.9% of the region's GDP for that year (World Bank, 2025).

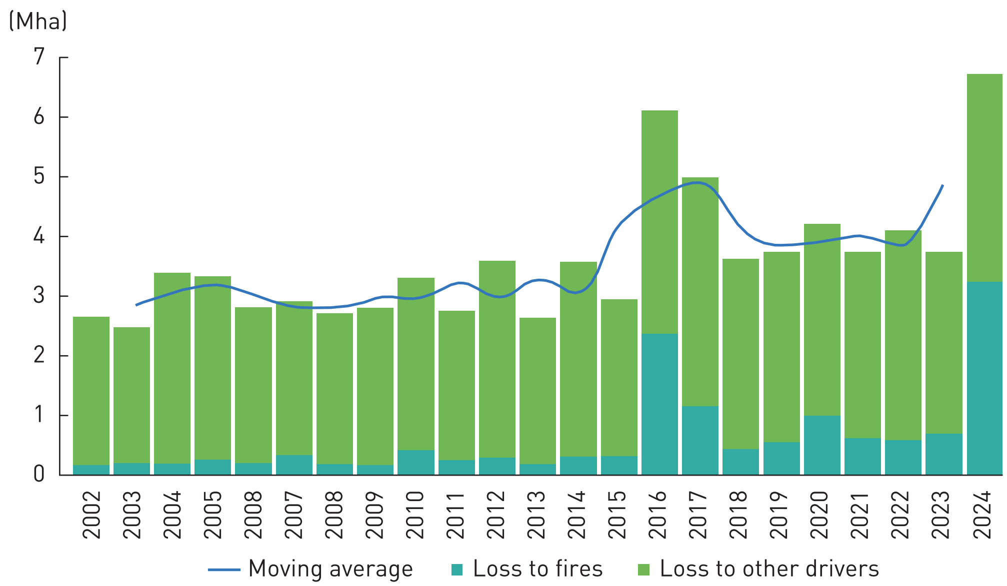

Figure 1-16 Global tropical primary rainforest loss and its causes, 2002-2024

Source: WRI, 2025

1.3.3 Sluggish progress in ecosystem conservation, with biodiversity loss accelerating

Ecosystem damage has increased, yet conservation actions remain sluggish. In 2024, 6.7 million hectares of tropical primary rainforests were lost, nearly twice as much as in 2023, at a rate of 18 soccer fields disappearing every minute (WRI, 2025). For the first time, fire surpassed agricultural land expansion as the leading cause of tropical primary rainforest loss, contributing to nearly 50% of forest loss (Figure 1-16). Currently, only one-fifth of the areas identified as most important for biodiversity are fully protected (IUCN, 2024). While about 18% of terrestrial and inland waters and about 8% of marine and coastal areas are designated as protected, a land area roughly the combined size of Brazil and Australia and a marine area larger than the Indian Ocean must be designated to achieve the 2030 targets (UNEP, 2024a).

Biodiversity loss accelerated. In 2024, over 46,000 of the more than 160,000 species on the IUCN Red List of Threatened Species faced extinction risk (Figure 1-17). Among them, 98% are threatened exclusively by human behavior, including changes in land and ocean use, overexploitation of natural resources, climate change, pollution, and introduction of invasive species (Veríssimo et al., 2024). Due to ocean warming and acidification, 44% of coral species are currently threatened with extinction (UN, 2025a).

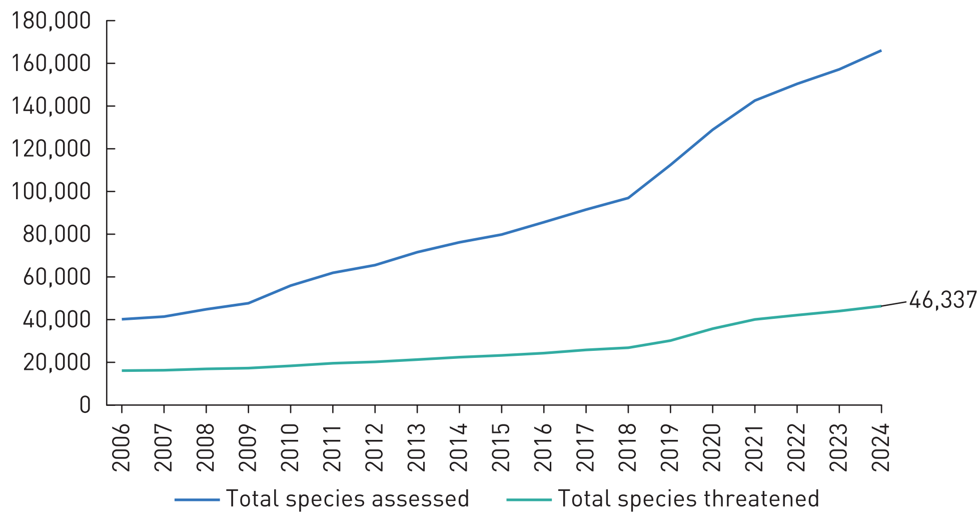

Figure 1-17 Total species assessed and threatened on the Red List of Threatened Species, 2006-2024

Source: IUCN, 2025

1.4 Partnerships

1.4.1 Diminution in development resources and further contraction of financing space

Official development assistance (ODA) has decreased. In 2024, ODA from members of the Development Assistance Committee (DAC) of the Organization for Economic Cooperation and Development (OECD) amounted to US$212.1 billion [0.33% of gross national income (GNI)]. It fell by 7.1% in real terms compared to 2023, marking the first drop in five years (OECD, 2025). Only four countries, namely Denmark (0.71%), Luxembourg (1.00%), Norway (1.02%) and Sweden (0.79%), achieved the goal of allocating 0.7% of their GNI to ODA. Net bilateral ODA flows from OECD DAC member countries to Africa stood at US$42 billion in 2024, a decline of 1% in real terms relative to 2023. Within the total, net ODA flow to SSA was US$36 billion, a decrease of 2% in real terms. Net bilateral aid flows to LDCs reached US$35 billion, a decrease of 3% in real terms compared to 2023 (OECD, 2025).

Financing prospects for development appear bleak. Global development financing faces multiple challenges. First, public debt has risen in most countries, including developed economies, with about one-third of nations (representing 80% of global GDP) showing higher public debt levels and faster growth rates compared to the pre-pandemic level (Dabla-Norris et al., 2025). Second, defense expenditures continue to climb. Global military spending reached US$2.46 trillion in 2024, a real-term increase of 7.4% from 2023, exceeding the growth rates of 3.5% in 2022 and 6.5% in 2023 (IISS, 2025). Third, heightened uncertainties in global economic policies may fuel inflationary pressures through distortionary tariffs, thereby keeping interest rates elevated and creating new challenges for development financing worldwide.

1.4.2 Deepening practical cooperation within the Global South contributes to the 2030 Agenda

Cooperation among the Global South countries has grown in both depth and breadth. The BRICS Cooperation Mechanism and the Shanghai Cooperation Organization (SCO) have continued to grow, facilitating the extension of cooperation among the Global South countries beyond the traditional areas of agriculture, industrialization and infrastructure to the spheres of advanced technology and cultural exchange. Notably, China's cooperation in space technology with other Global South countries, including Brazil, Egypt, Ethiopia, Pakistan and Laos, has catalyzed development in agriculture, meteorology and communications. The Global South countries have deepened cooperation in the domains of renewable energy technology and new energy vehicle manufacturing, jointly exploring new pathways towards energy security, sustainable industrialization, and green and low-carbon transition.

Development initiatives and frameworks launched by the Global South countries have contributed to the global implementation of the 2030 Agenda. Over 3,000 cooperation projects have been launched under the Belt and Road

Initiative (BRI), channeling nearly US$1 trillion investment to enhance high-quality global connectivity. More than 100 countries and 20 international organizations have actively supported and engaged in the Global Development Initiative (GDI), and over 80 countries have joined the GDI Group of Friends, giving impetus to the global partnership for development. The Asian Infrastructure Investment Bank (AIIB) has approved 323 projects worth US$61.64 billion, mobilizing more than US$200 billion in capital for infrastructure development, benefiting 38 member economies in Asia and beyond (AIIB, 2025). The New Development Bank (NDB) has approved 120 projects with loans amounting to US$39 billion for member countries, supporting road transportation, new energy, digital infrastructure, and public health (NDB, 2025).

Global South countries are jointly advancing a more just and equitable global governance system. Through multilateral platforms like the United Nations and the G20, these nations have maintained a lead in shaping development agendas, are advocating for enhanced international macroeconomic policy coordination, and are endeavoring to foster an open, inclusive, and non-discriminatory environment for global economic cooperation. They firmly uphold a free and open international trading system, actively promote reform of the WTO dispute settlement mechanism, and jointly oppose trade protectionism and unilateralism. Leveraging mechanisms such as the Group of 77, the Global South emphasizes the principle of common but differentiated responsibilities (CBDR) at key forums like the Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC). They call for the full and effective implementation of the Paris Agreement, urging developed countries to provide essential financial, technological, and capacity-building support to developing countries.

Overall, the 2030 Agenda has witnessed some progress over the past year amid challenges. Certain indicators of economic development show signs of recovery. Emerging industries, in particular new energy and AI, are driving economic growth. Some key human development indicators related to health and education have improved. The Global South is growing into a pivotal force in advancing the implementation of the 2030 Agenda. Nevertheless, it is all the more important to recognize that the challenges to global development remain grave. Uncertainties have increased greatly; so have imbalanced development and food insecurity. There is a heightened urgency to address climate change as environmental pollution and ecosystem damage intensify. Multilateralism is also facing challenges on an unprecedented scale. Given the growing instability and uncertainties, it is necessary to make concerted efforts to accomplish the established targets, so as to jointly advance the 2030 Agenda and build a better world with greater stability and certainty. This demands resolution through collaborative actions.

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Chapter II

Joining Hands to Enhance Stability and Certainty in Global Development

The world today is undergoing accelerating transformations unseen in a century, and the international landscape is volatile and turbulent. Global development is witnessing increasing instability and uncertainties, marked by the notable rise of unilateralism and protectionism, severe challenges to the international order and rules, prolonged regional conflicts, and intensified global warming. AI, while driving progress, has a dual-edged impact, introducing new risks and challenges as well. However, there are still some certainties and favorable conditions for global development. Economic globalization remains an irreversible trend, and the international system continues to demonstrate resilience. All parties should embrace the vision of building a community with a shared future for humanity, advocate for an equal and orderly multipolar world and a universally beneficial and inclusive economic globalization, and work together to bring global development stability and certainty.

2.1 Increasing factors of instability and uncertainty in global development

With the international landscape undergoing complex and profound changes, factors of instability and uncertainty are becoming increasingly prominent in global affairs.

2.1.1 Rising unilateralism and protectionism

The rise of unilateralism and protectionism has increased uncertainty in global economic and trade policies. The US has unilaterally imposed steep tariffs on imports, going against the fundamental economic principles and market rules, and aggressively pushing to reshore manufacturing. It is also considering a series of unilateral measures vis-à-vis currency, financing, and exchange rates. These maneuvers have hindered the optimal allocation of global resources and undermined the resilience and stability of global industrial and supply chains, triggering widespread concerns in markets and the international community. Multiple indices measuring global trade policy uncertainty have surged rapidly, reaching their highest levels in decades (Figure 2-1), and are projected to remain elevated. Major international economic institutions, including the IMF (2025) and the World Bank (2025a), identify rising policy uncertainty and adverse shifts in trade policies as the primary downside risks to the global economy.

Global economic growth expectations and the stability of the international economic and trade order have been impacted. Growth expectations are declining. International institutions have successively downgraded their forecasts for global economic growth in the coming period. The World Bank (2025a) projects that the average growth rate of the 2020s may be the slowest of any decade since the 1960s, with developing economies facing their weakest growth prospects since 2000. Trade and investment face significant disruptions. The global production, transportation, and consumption chains are undergoing a "non-economic reconfiguration", increasing time and production costs while undermining trade efficiency (UNCTAD, 2025a), contributing to a broader slowdown in global trade. Compared to unimpeded trade flows,

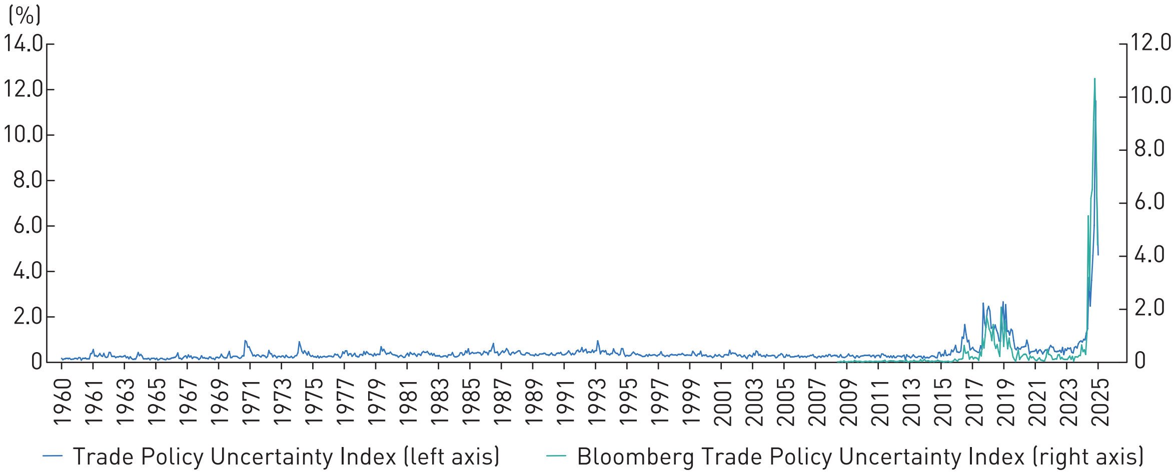

Figure 2-1 Trends in the Trade Policy Uncertainty Index and Bloomberg Trade Policy Uncertainty Index

Note: The Trade Policy Uncertainty (TPU) Index, developed by Federal Reserve experts including Dario Caldara, quantifies TPU by measuring the proportion of articles related to global TPU in major US newspapers relative to total articles published each month. After standardization, an index value of 1% indicates that 1% of the month's total articles were related to TPU, with other values interpreted proportionally. The Bloomberg Trade Policy Uncertainty Index employs a similar methodology but covers a broader range of news sources. It should be noted that its numerical values are non-quantitative and solely intended for comparative analysis.
Source: Trade Policy Uncertainty Index database; Bloomberg

reshoring could reduce global trade volumes by 18% without enhancing supply chain resilience (OECD, 2025). Amid heightened uncertainty, investors are growing increasingly cautious, decision-making is being delayed, and performance and profit expectations are generally being revised downward (UNCTAD, 2025b), which may lead to weakening cross-border investment. The international financial system is experiencing heightened volatility. Significant volatility in US stocks, Treasury bonds, and the US dollar has disrupted the stability of global financial markets and the order of international capital flows.

2.1.2 The international order and rules face severe challenges

The international system and rules have been severely impacted. The post-WWII international system centered around the UN, the international order based on international law, and the foundational norms of international relations rooted in the UN Charter's purposes and principles are facing severe challenges. In the political and security sphere: A resurgence of actions that contravene the purposes and principles of the UN Charter has undermined the stability of the international system. International humanitarian law has been violated, with civilians and infrastructure coming under attack, and even food and water being weaponized (UN, 2025). In global governance: The US has announced its withdrawal from key international agreements and institutions such as the Paris Agreement, the World Health Organization (WHO), the UN Human Rights Council, and the United

Nations Educational, Scientific and Cultural Organization (UNESCO). It has also taken a passive or even dismissive stance towards the 2030 Agenda and has been absent from major multilateral forums, including G20 meetings and the UN's Fourth International Conference on Financing for Development. These actions have severely disrupted the global governance system and the principles of multilateralism. In development resources: Most developed countries have failed to fulfill their commitment to allocate 0.7% of their gross national income (GNI) to ODA. Some countries have even significantly slashed their foreign aid budgets, and ODA levels are projected to continue declining in the coming years (Figure 2-2). Foreign direct investment (FDI) flows to developing countries have dropped to their lowest level since 2005 (World Bank, 2025b).

If challenges to the international order persist, the world risks reverting to the "might is right" law of the jungle. The post-WWII international system centered on the UN serves as a "safety net" for global peace and development, with no alternative mechanism capable of matching its universality, legitimacy, and influence. Should the authority and efficacy of multilateral institutions further weaken, and the existing international system and rules continue to erode, it would severely disrupt global security and stability, impair the normal functioning of the world economy, and undermine the global governance framework established since WWII, along with human development achievements.

2.1.3 Regional conflicts become increasingly protracted

The world is experiencing frequent outbreaks of regional conflicts and disturbances. The year 2024 witnessed the highest number of armed

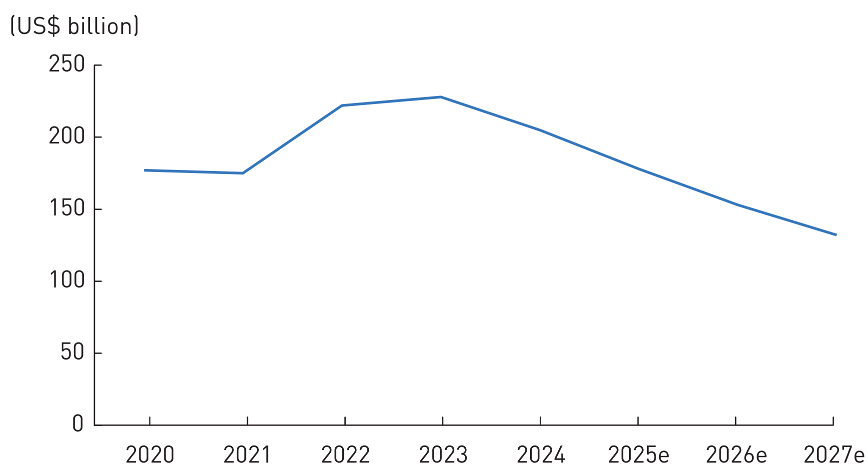

Figure 2-2 ODA commitments by OECD DAC members since the pandemic, 2020-2027

Source: Data for 2020-2023 is from the OECD Development Assistance Committee (DAC) database. Data for 2024-2027 is from the OECD policy brief "Cuts in Official Development Assistance: OECD Projections for 2025 and the Near Term" (June 2025), where the 2024 figure represents actual data, and the 2025-2027 figures are projected mid-range values from the forecast interval.

conflicts globally in nearly 80 years, with 61 conflicts occurring across 36 countries (PRIO, 2024). Several international conflicts continued to drag on, while new flashpoints kept emerging. Some conflicts have even involved nuclear threats. The future trajectories of these conflicts remain highly unpredictable, with risks of further spillover and escalation.

Frequent outbreaks of regional conflicts exacerbate multiple risks and challenges. They disrupt global trade, investment, and industrial and supply chains, increase operational costs, and dampen corporate investment sentiment and global economic prospects. They also exacerbate security risks along critical transit routes and heighten instability in global food and energy supply chains. In 2024 alone, conflicts pushed the number of forcibly displaced persons worldwide to over 120 million, marking the 12th consecutive year of such increase (UNHCR, 2024).

2.1.4 Accelerated climate change

Climate change has accelerated. Carbon dioxide, methane, and nitrous oxide concentrations in the global atmosphere have reached the highest levels since the past 800,000 years (WMO, 2025), signaling a significant acceleration in global warming and the onset of a more severe phase of climate change. Global climate action faces mounting challenges – including backtracking energy policies in some developed countries and rising barriers to green trade – which are collectively aggravating the existing climate risks. If this trend persists, global temperatures could rise by 2.6°C to 3.1°C above pre-industrial levels by the end of this century (UNEP, 2024).

Accelerated climate change may lead to unpredictable consequences. Compared to 2010-2014, the annual economic losses from extreme weather events during 2019-2023 increased by 23%, reaching US$227 billion (Romanello et al., 2024). In 2024, extreme weather events left more than 96 million people across 18 countries facing acute food insecurity (FAO, 2025). Projections indicate that by 2050, annual global economic losses due to climate change will surge to between US$1.7 trillion and US$3.1 trillion[1] (WEF, 2023).

2.1.5 AI brings certain risks and challenges while empowering development

While empowering development and profoundly transforming the global economy, society and environment, AI technology may also introduce a series of security risks and governance dilemmas. There are potential public safety risks. AI technologies carry the risk of misuse. Malicious applications such as deepfakes, privacy violations, and opinion manipulation could trigger public safety crises and erode trust. Military security risks exist. AI may drastically alter the nature of warfare, undermine nuclear deterrence capabilities, and disrupt the balance of strategic power among nuclear states. Additionally, the loss of control over AI-powered weapons could

[1] This figure does not yet account for the impact on the poorest countries.

lead to severe consequences. There are uncontrollable technology risks. During the Second AI Safety Summit in Seoul in May 2024, leading AI experts issued a warning: Within the next decade, powerful artificial general intelligence (AGI) systems capable of outperforming humans in many critical fields could be developed. This possibility must be taken seriously. The experts emphasized that humanity had not yet taken sufficient measures to protect itself from AI-related threats. AI has impacts on employment and skills. Although AI's long-term effects on the job market remain uncertain, its short-term disruptions have already become evident.

The increasing instability and uncertainty in global development stem from deep-rooted causes. Due to disparities in their resource endowments, development stages, and models, countries benefit unevenly across different domains of international economics. Some developed countries, however, are unilaterally attributing their domestic challenges to economic globalization, adopting a zero-sum or even negative-sum mindset in international relations and resorting to unilateralism and trade protectionism. Such actions not only risk suppressing trade and investment growth while slowing productivity gains (World Bank, 2025c) but also undermine global confidence and cooperation in addressing shared challenges and providing global public goods, thereby exacerbating instability and uncertainty in global development.

2.2 Certainties and favorable conditions for global development still exist

Despite numerous factors of instability and uncertainty, the fundamental economic laws, core principles, and overarching trends that have long sustained society are unlikely to undergo a fundamental change. The vast majority of countries will continue to refrain from adopting beggar-thy-neighbor policies, even in response to extreme unilateral actions. Moreover, while some major powers may choose to withdraw from international treaties and organizations, the overwhelming majority of countries still hope that the existing international system will continue to function effectively.

2.2.1 The pursuit of a better life remains a shared aspiration

Humanity's pursuit of peace and development remains an irreversible trend. Tempered in the crucible of war and conflict, particularly the devastation of two world wars, nations have grown more determined to uphold peace, deepen cooperation, and pursue shared development. In recent years, through the collective efforts of all actors, the world has maintained overall peace and stability, and remarkable progress has been achieved in human development. From 1950 to 2024, global trade value expanded approximately 380-fold[1]. The global extreme poverty rate dropped from around 38% in 1990 to 8.5% in 2024 (World Bank, 2024), while average life expectancy worldwide rose from 46

[1] Source: https://www.wto.org/english/res_e/statis_e/trade_evolution_e/evolution_trade_wto_e.htm

years in 1950 to 73.3 years in 2024 (UN, 2024). Though progress on the 2030 Agenda has been uneven, it remains a vital blueprint for building a better world. In September 2024, about 130 heads of state and government adopted the Pact for the Future at the United Nations Summit of the Future in New York, demonstrating their firm determination to enhance global stability and certainty and create a better future for succeeding generations.

2.2.2 Economic globalization is an irreversible trend

Economic globalization is an effective means of maximizing resource allocation efficiency on a global scale. It is an objective requirement of the development of productive forces and an inevitable outcome of technological progress, reflecting the forward trajectory of global economic development. International trade promotes the specialized division of labor, enabling more efficient and effective allocation of resources. It acts as an important engine for global growth, a key contributor to rising welfare levels across nations, and a key enabler of global prosperity and progress. The current trade landscape is rooted in the comparative advantages of countries at different stages of development and economies of scale and represents consumer choices based on cost-performance considerations. No country can achieve sustained development in isolation from the rest of the world (UNDP, 2024). For instance, if countries rely solely on domestic production for solar modules, the price of these products by 2030 would be 20%-25% higher than the price if global supply chains are utilized (Helveston et al., 2022). Should major economies establish exclusive semiconductor supply chains, global chip prices would rise 35%-65% overall (BCG et al., 2021).

2.2.3 Multilateralism serves the interests of all

The international community upholds the UN-centered international system. Established after WWII, this international system was built upon the painful lessons learned from two world wars in the 20th century and has, overall, helped maintain world peace and development. Although the current international system is not perfect, the overwhelming majority of countries recognize its important role in providing security guarantees and development opportunities, and support the UN-centered international system, the international order based on international law, and the fundamental norms of international relations rooted in the UN Charter's purposes and principles. They reject any regression to the "law of the jungle". Though some major powers have withdrawn from international organizations or treaties, the existing international system has continued to operate.

The multilateral trading system, robust and resilient, is a historical achievement reflecting the collective will of the international community. The majority of countries continue to uphold the WTO-centered, rules-based multilateral trading system, recognizing its pivotal role in advancing global trade, fostering economic growth, and promoting sustainable development. In 2024, the WTO welcomed two new members – Comoros and Timor-Leste

– expanding its membership to 166 economies that collectively account for over 98% of global trade. The United Kingdom, Malaysia, and others have joined the Multi-Party Interim Appeal Arbitration Arrangement (MPIA), bringing its membership to 57. Additionally, 123 WTO members concluded the Investment Facilitation for Development Agreement, marking the first multilateral investment pact. Complementing the global trading system, the number of regional trade agreements has surged from fewer than 100 in the early 2000s to over 600 today (Box 2-1).

Box 2-1 International system remains operational, delivering tangible outcomes

Trade: The WTO now comprises 166 members, with Comoros and Timor-Leste formally joining in August 2024. Countries such as Ethiopia, Azerbaijan, Uzbekistan, and Turkmenistan are accelerating their accession processes. In March 2020, China, the EU, and 17 other WTO members established the MPIA to sustain the WTO dispute settlement mechanism during the Appellate Body's paralysis. Japan joined the MPIA in March 2023, followed by Paraguay, Malaysia, the UK, and others in 2025.

Climate: The 29th Conference of the Parties (COP29) to the United Nations Framework Convention on Climate Change (UNFCCC) was held in Baku, Azerbaijan in November 2024, with the participation of more than 190 countries, including China, the US, Brazil, and India. The conference adopted the Baku Climate Solidarity Pact, setting a climate finance target of US$300 billion annually from developed countries for 2025-2035 and pledging to scale up total climate finance to US$1.3 trillion annually for developing countries by 2035. COP30 will convene in Belém, Brazil in November 2025 to operationalize the Baku-to-Belém US$1.3 trillion roadmap.

High-tech: In February 2025, the Statement on Inclusive and Sustainable Artificial Intelligence for People and the Planet (also called Paris AI Declaration), jointly promoted by China, France, and India, was signed by 61 countries and international organizations, emphasizing open, inclusive, and ethical AI development. It calls for developed countries to allocate at least 0.2% of their AI R&D budgets annually to support capacity-building in developing countries. On July 26, 2025, the Chinese government also proposed the creation of a World AI Cooperation Organization at the World Artificial Intelligence Conference and High-Level Meeting on Global AI Governance held in Shanghai.

Development financing: From June 30 to July 3, 2025, the UN hosted its Fourth International Conference on Financing for Development after a decade-long gap, attended by approximately 50 heads of state and government and over 15,000 global representatives. The conference adopted the Seville Commitment, which emphasizes enhancing domestic resource mobilization, strengthening the financial capacity of multilateral development banks (MDBs), and boosting financing support for Global South countries, with a roadmap encompassing seven key action areas and over 130 concrete initiatives.

Source: Compiled by the authors based on publicly available information

The vast majority of countries disapprove of unilateral measures and reject beggar-thy-neighbor policies. Most believe that issues in the multilateral trading system should be addressed through constructive dialogue based on the principles of equality and mutual respect, with full consultation and resolution within a multilateral framework. Extreme unilateral measures have met with worldwide opposition. In October 2024, the 78th UN General Assembly adopted a resolution by an overwhelming majority of 187 votes, urging the termination of economic blockades and unilateral measures. The G20 and BRICS have convened multiple meetings on trade and economic issues, with the majority of members expressing strong concern over unilateral tariffs exacerbating trade tensions and economic instability. Despite facing extreme unilateral measures, the vast majority of countries have refrained from adopting beggar-thy-neighbor policies reminiscent of the 1930s.

2.2.4 The new round of technological revolution and industrial transformation is advancing

Technological innovation and diffusion are accelerating. Evident acceleration of technological innovation: Low-carbon energy technologies such as hydrogen and energy storage, life and health technologies like synthetic biology, and cutting-edge advancements including autonomous driving, generative AI, and embodied intelligence, are emerging in clusters. Future-oriented technologies such as smart systems, quantum information, next-generation networks, advanced materials, and future space are also approaching critical breakthroughs. Rapid diffusion of technologies: Photovoltaic (PV) and wind power technologies have spread widely, and their costs have declined swiftly, significantly improving their economic viability. The levelized cost of electricity (LCOE) for solar PV power dropped from 0.445 per kilowatt-hour in 2010 to 0.049 in 2022, a reduction of 89%, while onshore wind power fell from 0.107 to 0.033 per kilowatt-hour, a decline of 69%. Both are now lower than the current LCOE of thermal power (IRENA, 2023). By 2024, the global newly installed wind power capacity had doubled from 2019[1]. It is projected that by the end of 2025, the cumulative installed capacity of global PV power generation will surpass that of coal-fired power, becoming the world's

[1] Source: https://about.bnef.com/insights/clean-energy/chinese-manufacturers-lead-global-wind-turbine-installations-bloombergnef-report-shows/

largest power source by installed capacity[1]. The cost of AI development and application continues to decline. The inference cost for AI models achieving GPT-3.5-level performance dropped from US$20 per million tokens in November 2022 to US$0.07 per million tokens by October 2024, marking a 99.65% reduction. Enterprises' AI adoption rate surged from 55% in 2023 to 78% in 2024, while generative AI usage rose from 33% to 71% (Stanford HAI, 2025). This cost reduction has accelerated AI adoption across multiple fields, establishing it as a critical breakthrough in R&D for biopharmaceuticals, chemical materials, simulation modeling, and weather forecasts. Practical and industrial applications of biotechnology are rapidly advancing, with synthetic biology expected to contribute to over one-third of global manufacturing output by 2035.

Emerging technologies offer new solutions to major development challenges. The sharp decline in renewable energy costs has made it possible for developing countries to pursue green industrialization, offers a viable technical roadmap for the global low-carbon transition, and mitigates the impact of fossil fuel price volatility. AI technology presents novel solutions to major challenges in healthcare, population aging, climate change, and food security. Biotechnology creates opportunities for drug discovery and novel therapies and increases our preparedness against future pandemics. Genetic engineering enables gene therapy and precision medicine to help tackle global health challenges.

2.2.5 Rising influence of the Global South

With its collective rise, the Global South has become an indispensable force in the world economy. Measured in nominal dollar terms, the share of EMDEs in the global economy surged from approximately 25% in the 1980s to 41% in 2024[2], cementing their role as a pivotal engine for global economic growth. With rising income levels in these economies, their consumer markets are poised for expansion, which will give fresh momentum to the economic growth of the Global South and create new opportunities for stable global economic development.

Global South countries have brought new vitality to globalization. Since the beginning of this century, the value of merchandise trade in developing countries has surged by around five times, now accounting for over 45% of the global total, while developed countries' trade growth has been less than twofold[3]. Developing countries have become a key driver of global trade growth. They also attract approximately 60% of global FDI, significantly bolstering international investment collaboration.

Trade and investment cooperation among Global

[1] Source: https://www.pv-magazine.com/2025/01/02/curtailing-solar-photovoltaics-is-here-to-stay-overbuilding-pv-will-become-normal/?utm_source=dlvr.it&utm_medium=twitter
[2] Source: https://www.imf.org/en/Publications/SPROLLS/world-economic-outlook-databases
[3] Source: https://unctadstat.unctad.org/datacentre/dataviewer/US.TradeMerchTotal

South countries holds tremendous potential. In recent years, the comprehensive development and progress achieved by Global South countries have laid a solid foundation for strengthening such cooperation. While North-South trade and investment collaboration continues to advance, future trade and investment partnerships within the Global South have even greater potential. Notably, the emerging economies represented by BRICS countries are supplying more intermediate goods, elevating the collective position of the Global South in global value chains and creating new avenues for trade and investment collaboration among these countries.

2.3 Jointly promoting more inclusive, equitable and resilient global development

The world has entered a new period of turbulence and transformation, where countries urgently desire stronger stabilizing forces to steer the global community towards a brighter future. China has proposed the pivotal vision of a community with a shared future for humanity, alongside the Global Development Initiative, Global Security Initiative, Global Civilization Initiative, and Global Governance Initiative, offering Chinese solutions to global development and governance (Box 2-2). The international community should uphold and improve the international system by advocating for an equal and orderly multipolar world, foster an open world economy through universally beneficial and inclusive economic globalization, address pressing challenges through cooperation in key areas, and promote the revitalization of the Global South through mutually beneficial collaboration.

Box 2-2 "Four global initiatives" that facilitate a community with a shared future for humanity

The Global Development Initiative (GDI), Global Security Initiative (GSI), Global Civilization Initiative (GCI), and the Global Governance Initiative (GGI) proposed by China provide actionable pathways and robust support for building a community with a shared future for humanity.

On September 21, 2021, Chinese President Xi Jinping formally put forward the GDI at the general debate of the 76th Session of the UN General Assembly, aiming to foster global development partnerships that are more equal and balanced, forge greater synergy among multilateral development cooperation processes, and speed up the implementation of the UN 2030 Agenda for Sustainable Development. Since then, the GDI has received support and participation from over 100 countries and over 20 international organizations including the UN. The China International Development Cooperation Agency has signed nearly 80 cooperation agreements with other developing countries, international organizations, and financial institutions to implement the initiative. As of October 2024, China has mobilized close to US$20 billion in development funding, established over 30 cooperation platforms across eight priority areas, and launched over 1,100 projects.

On April 21, 2022, Xi proposed the GSI during the Boao Forum for Asia, advocating a new path to security characterized by dialogue over confrontation, partnership over alliance, and win-win cooperation over zero-sum games. The GSI has garnered support from over 120 countries, regions, and international organizations, and has been incorporated into more than 120 bilateral and multilateral documents in China's engagements with other nations and international bodies. Under the GSI framework, China has mediated historic reconciliations such as the Saudi Arabia-Iran détente, and consistently advocated for peace talks to resolve hotspot issues including the Ukraine crisis and the Palestinian-Israeli conflict. On February 21, 2023, China released the GSI Concept Paper, outlining 20 priority cooperation areas and five categories of platforms/mechanisms to strengthen collaboration with all parties on both traditional and non-traditional security challenges, ranging from counterterrorism, climate change, and transnational crime to AI governance.

On March 15, 2023, Xi proposed the GCI at the CPC in Dialogue with World Political Parties High-level Meeting, calling for joint efforts to respect the diversity of world civilizations, promote the common values of humanity, value the inheritance and innovation of civilizations, and strengthen international people-to-people exchanges and cooperation. The GCI has been incorporated into bilateral documents between China and over a dozen countries, including Pakistan, the UAE, Bahrain, Tunisia, Egypt, Equatorial Guinea, Serbia, and Hungary, reflecting its growing global recognition and support. On June 7, 2024, the 78th Session of the UN General Assembly unanimously adopted a resolution proposed by China, declaring June 10 as the International Day for Dialogue among Civilizations.

On September 1, 2025, Xi proposed the GGI at the Shanghai Cooperation Organization Plus meeting. The core principles of the GGI are upholding sovereign equality, adhering to the rule of international law, practicing multilateralism, prioritizing people-centered approaches, and emphasizing action-oriented outcomes. These principles articulate the guidelines, methods, and pathways for reforming and improving global governance. They are consistent with the purposes and principles of the UN Charter and embody the essence of the vision for global governance based on consultation, joint contribution, and shared benefits. The GGI was welcomed and supported by leaders of participating countries and heads of international organizations at the meeting. Under this framework, China will strengthen policy communication and coordination with all parties, build a broad consensus, and enrich the approaches to reforming and improving global governance.

Source: Compiled by the authors based on publicly available information

2.3.1 Advocating for an equal and orderly multipolar world to safeguard and improve the international system

To uphold the overall stability of the current international system and prevent the world from regressing to the "law of the jungle", it is imperative to advocate for an equal and orderly multipolar world, jointly safeguard the UN-centered international system and the international order underpinned by international law, and work to make the global governance system more just and equitable.

Jointly supporting the UN in better playing the central role in international affairs. Taking the UN's 80th anniversary as an opportunity, all countries should reaffirm their commitment to the UN-centered multilateral system, adhere to the purposes and principles of the UN Charter, and uphold the universally recognized norms of international relations. They should support the UN system in enhancing its flexibility, coordination, and adaptability through measures such as streamlined processes, structural reforms, and program realignment. Multilateral mechanisms such as the G20 and BRICS, along with regional organizations including the African Union (AU), the Association of Southeast Asian Nations (ASEAN), and the Community of Latin American and Caribbean States (CELAC), should strengthen communication and coordination with the UN in areas including economic governance, climate change, global health, and food security. Finally, countries should jointly support the UN in playing a central role as the primary platform and channel for global governance in emerging fields such as AI, to avoid fragmentation in global governance.

Working together to bring development back to the center of the international agenda. All countries and UN agencies must give priority to development, jointly reaffirming the 2030 Agenda as the guiding vision for shared progress, while accelerating the implementation of the UN's Pact for the Future. All parties should be urged to fully implement the Funding Compact for the UN's Support to the Sustainable Development Goals[1], striving to address the insufficiency in total development resources and structural imbalances. International financial institutions, the private sector, and other stakeholders must enhance cooperation to progressively achieve diversified, flexible and stable funding sources for development. Countries must promote in-depth alignment between their national development initiatives/strategies and the 2030 Agenda.

Countries should actively shoulder their international responsibilities, with major countries demonstrating greater commitments. Countries should strengthen communication and coordination on promoting world economic development, maintaining global and regional peace

[1] It is a multilateral cooperation framework established by the international community to bridge global development financing gaps and optimize the efficiency of fund utilization. Its core lies in accelerating the achievement of the 2030 Agenda for Sustainable Development by reforming financing mechanisms, strengthening accountability, and innovating ways to mobilize resources.

and stability, and addressing emerging issues in global governance. They should engage in cooperation based on shared interests. Major countries, in particular, should play a leading role while managing their domestic affairs effectively. Developed countries should provide international public goods and maintain continuity and stability in their policies. Countries should resolve disputes and frictions through equal-footed dialogue based on the principles of mutual respect, peaceful coexistence, and win-win cooperation, and avoid initiating conflicts.

Jointly enhancing the representation and voice of Global South countries. Global South countries should strengthen communication and dialogue on major international issues and coordinate in multilateral settings to consolidate their cooperation consensus. They should collectively support and promote reforms of the UN Security Council that aim to increase the representation and voice of developing countries, and maintain the primary channel status of the Intergovernmental Negotiations (IGN) for Security Council reforms. They should continue to push for reforms in traditional international financial institutions such as the World Bank and the IMF, achieving adjustments in quota shares and comprehensive capital increases to better reflect member countries' relative positions in the global economy.

2.3.2 Advocating for a universally beneficial and inclusive economic globalization to build an open world economy

Against the backdrop of rising unilateralism and protectionism, the international community must avoid falling into the trap of isolationism and beggar-thy-neighbor policies. Countries should jointly advocate for a universally beneficial and inclusive economic globalization, address development imbalances caused by inequitable resource allocation and distribution, and collectively build an open world economy.

Jointly protecting and revitalizing the multilateral trading system. Members should uphold the authority and efficacy of the WTO-centered multilateral trading system, restore the operation of the WTO dispute settlement mechanism, prioritize the appointment of Appellate Body members, and encourage more countries to join the MPIA. Countries should reject discriminatory and exclusionary standards or rules, and jointly promote trade and investment liberalization and facilitation, with a focus on expanding market access for LDCs and supporting platforms like the WTO-led Aid for Trade Initiative to provide more effective assistance to developing members. They should modernize multilateral trade rules by addressing emerging issues such as climate change, green transition, supply chain resilience, and industrial policies, and work to integrate the Investment Facilitation for Development Agreement and the Agreement on Electronic Commerce into the WTO legal framework. Additionally, they should account for the disparities in the development stages and levels among members, balancing binding commitments with flexibility, and explore plurilateral agreements in more areas to enhance negotiation efficiency.

Working together to strengthen regional and cross-regional cooperation. Countries should promote regional economic integration through open regionalism by deepening regional trade arrangements such as the Regional Comprehensive Economic Partnership Agreement (RCEP), China-ASEAN Free Trade Area 3.0, and the African Continental Free Trade Area (AfCFTA). The aim is to enhance trade and investment liberalization and facilitation, promote standards alignment, simplify cross-border payment procedures, and strengthen connectivity. They should encourage and support regional economic cooperation mechanisms such as the Asia-Pacific Economic Cooperation (APEC), the Southern Common Market (MERCOSUR), and the AfCFTA to enhance coordination and build cross-regional cooperation platforms, giving full play to economies of scale and synergies.

Joining forces to promote open cooperation in science and technology. Countries should create an open, fair, just and non-discriminatory international environment for scientific and technological development. Under the frameworks of the International Science and Technology Cooperation Initiative and the Initiative on International Cooperation in Open Science, they should make stronger efforts to develop joint laboratories and international technology transfer centers, and support joint research by scientists from all countries (Box 2-3). They should increase investment in scientific and technological innovation to address global challenges and promote open sharing of related technologies. They should jointly guard against risks in digital and intelligent technologies, improve the science and technology governance system with the participation of multiple stakeholders, and define the boundaries of high-risk technologies to ensure that science and technology are used for good.

Box 2-3 The China-US Science and Technology Agreement: A catalyst for bilateral collaboration

On December 13, 2024, China and the US signed the Protocol on the Revision and Extension of China-US Science and Technology Agreement (STA), extending the STA for another five years effective from August 27, 2024.

The STA was originally signed in January 1979 by Deng Xiaoping, then vice premier of the State Council of the PRC, during his visit to the US. One of the first intergovernmental agreements established after the normalization of China-US diplomatic relations, it encompasses over 20 fields – including energy, environment, natural resources, public health, seismology, oceanography, and atmospheric sciences – and has played a pivotal role in stabilizing bilateral relations, fostering mutual understanding, and advancing scientific progress for the benefit of both countries.

For instance, under the STA framework, China and the US jointly validated the efficacy of folic acid supplementation in preventing neural tube defects, a significant step that has saved millions of newborn lives worldwide.

The Daya Bay Reactor Neutrino Experiment, one of the largest China-US collaborations in fundamental research, represents the US Department of Energy's second largest overseas investment in particle physics after the Large Hadron Collider, the world's largest and most powerful particle accelerator, near Geneva. The Daya Bay Reactor Neutrino Experiment's groundbreaking achievements were named as one of *Science*'s "Top 10 Scientific Breakthroughs of 2012".

Additionally, the China-US influenza surveillance collaboration has significantly enhanced China's monitoring capabilities, expanding the number of surveillance sites from dozens to over 30,000. This has led to China being designated as one of the WHO's influenza collaborating centers, providing crucial support for global vaccine development and pandemic early warning.

Source: "Let US-China Sci-Tech Collaboration Truly Benefit Both Nations and the World", *People's Daily*, December 19, 2024

2.3.3 Promoting joint responses to pressing challenges through cooperation in key areas

Amid escalating global instability and shrinking development resources, countries must prioritize urgent issues such as climate change mitigation, global health risk prevention, and food security in their collaboration to prevent vulnerable nations from plunging into humanitarian crises due to abrupt shortage of development resources.

Accelerating global climate action. Countries must uphold the central role of the UNFCCC and the Paris Agreement by adhering to the principle of "common but differentiated responsibilities", formulating ambitious nationally determined contributions (NDCs) from the dual perspective of promoting economic development and accelerating energy transition, and translating climate goals into tangible outcomes through systematic policy frameworks and concrete actions. Major economies such as the EU and China must jointly play a leading role in global cooperation to address climate change. Countries should jointly strengthen green technology innovation and market-oriented promotion to enhance the accessibility and applicability of key technologies such as wind power, PV power generation, energy storage, hydrogen energy, and carbon capture, utilization and storage (CCUS) in developing countries. Both public and private sector capital should be mobilized to scale up green and low-carbon investments in developing countries. This includes directing ODA and philanthropic funds towards climate adaptation support for vulnerable nations, while MDBs and green investment funds established by developed and emerging economies should prioritize long-cycle, financially viable green transition projects. Such strategic financing can catalyze private capital participation in high-return, commercially feasible green initiatives, thereby accelerating the low-carbon development trajectory of developing countries.

Jointly safeguarding global food security. The international community should support countries with adequate conditions to enhance their food supply capacity, assist nations with limited production capabilities to adopt diversified trade partnership strategies to ensure food security, and jointly establish effective emergency reserve mechanisms. They should collaborate with international institutions such as the UN Food Systems Coordination Hub and the Committee on World Food Security to advance global food security policy formulation, while fostering regional dialogue and cooperation on food security. Vulnerable countries should be prioritized in food security development assistance. International organizations should be advocated to establish dedicated funding mechanisms, including low-interest loans, grants, and direct access to special drawing rights (SDRs) for FAO technical assistance or emergency food imports.

Collaborating to prevent global health risks. Countries should strengthen support for the WHO through multiple approaches. They should strengthen the resilience of global supply chains for essential health products and healthcare service systems by implementing measures such as intellectual property waivers during pandemics and other emergencies, enabling countries with production capacities to obtain manufacturing licenses for immunization program vaccines and essential medicines. Countries should collaboratively establish and improve a global early warning platform based on digital and intelligent technologies to facilitate the sharing of epidemic and virus information as well as data flow. They should provide humanitarian assistance to conflict and disaster-affected regions through international organizations such as the Office of the United Nations High Commissioner for Refugees (UNHCR), the International Committee of the Red Cross (ICRC), and the WHO.

2.3.4 Promoting the development and revitalization of Global South countries through mutually beneficial cooperation

The collective and sustainable development of Global South countries serves as a vital source of certainty for promoting lasting world peace and shared prosperity. Countries should jointly advance more pragmatic, effective, and mutually beneficial development cooperation, with a focus on enhancing the autonomous development capacity and progress of Global South countries.

Collaboratively enhancing the sustainable development capacity of Global South countries. In agriculture, developed and emerging market countries should assist low-income countries to improve agricultural mechanization and infrastructure development. Low-income countries should formulate agricultural development strategies tailored to their specific conditions, prioritizing fiscal funding for rural and agricultural advancement. In terms of industrialization, developed and emerging market countries can provide low-income countries with applicable and accessible technologies by increasing direct investment and establishing technology transfer centers, thereby enhancing their localized production capabilities. Developing countries, based on their specific conditions, can adopt long-term industrialization strategies in a logical sequence, prioritizing industries that leverage their comparative advantages and have strong multiplier effects, while fostering a more stable and predictable business environment. In the realm of digital and intelligent technologies, countries should move faster to establish global clean energy power grids, next-generation networks, intelligent computing power, and data center infrastructure. Nations leading in AI can take concrete actions such as establishing joint laboratories, organizing capacity-building training programs, and facilitating AI industry supply-demand matching events to support developing countries in enhancing their comprehensive capabilities in AI innovation, application, and governance. Additionally, collective efforts should be made to improve public digital and AI literacy, with particular attention to safeguarding and strengthening the digital and intelligent rights of women and children, thereby bridging the digital intelligence divide.

Jointly strengthening development financing. Developed countries should fulfill their commitment to allocate 0.7% of GNI to ODA, while expanding financial support for new mechanisms beyond traditional ODA frameworks such as the Resilience and Sustainability Trust (RST), Poverty Reduction and Growth Trust (PRGT), and Fund for Responding to Loss and Damage (FRLD). The concept of "productive finance" should be embraced and all stakeholders mobilized to leverage emerging multilateral financial institutions like the New Development Bank and Asian Infrastructure Investment Bank, prioritizing investments in green energy, digital infrastructure, and other critical sectors. This approach will ensure long-term, low-cost funding for projects with viable financing conditions.

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Part II
Thematic Report

Chapter III

Jointly Maintaining an Open and Cooperative Global Trading System

Trade is a primary driver of global growth and a major force in enhancing people's wellbeing worldwide. The WTO-centered multilateral trading system serves as a fundamental guarantee for global trade. Rising unilateralism and protectionism are disrupting global trade arrangements and supply chain networks, heightening the uncertainties in global development. At the same time, however, the growth of digital and green trade, along with the expansion of South-South trade, is adding new impetus to global trade. Economic globalization is an objective law underpinning the development of productive forces and an irreversible trend of the times. All countries should work together to maintain the stability of the international trading system, promote global trade, and provide a sustained impetus for the world economy.

3.1 Profound transformations are reshaping the global trade landscape

3.1.1 Global trade trends

Global trade has expanded, but its contribution to global economic growth remains subdued. According to UN Trade and Development (UNCTAD) statistics, global trade in goods and services grew by 3.7% to approximately US$33.2 trillion in 2024, reversing the downward trend in 2023. The global trade volume accounted for 30.0% of the global GDP in 2024, marking a slight increase from the 2023 level of 29.3%. However, trade's contribution to economic growth remains low. During the 1988-2007 period, the growth rate of global trade was 1.9 times that of global real GDP growth. From 2011 to 2023, the growth rates of global trade and global real GDP were roughly comparable. This pattern continued in 2024, with global trade growth only slightly higher than that of global GDP (3.3%) (Figure 3-1).

Trade in goods, while remaining dominant, has slowed down, whereas trade in services and digital trade has grown rapidly, with trade in services playing an increasingly vital role in the global economy and international trade growth. In 2024, trade in goods registered approximately US$24.4 trillion, while the total volume of

Figure 3-1 Global trade growth vs. global real GDP growth, 1980-2024

Source: IMF

service trade was about US$8.8 trillion (Figure 3-2). Service trade has continued its growth trend since 2021, with its share in global trade rising to a new high of 26.4% in 2024 (Figure 3-3). In terms of incremental growth, goods trade grew by 2.3% in 2024, with an increase of approximately US$500 billion. Service trade went up by 8.8%, adding about US$700 billion to the global total and contributing nearly 60% to the global trade growth. It is noteworthy that global digital trade has shown strong momentum in recent years, growing from US$6 trillion in 2021 to US$7.1 trillion in 2023, with an average annual growth rate of 8.8%. Between 2021 and 2023, the share of global digital trade in total international trade increased from 19.6% to 22.5% (ITC, 2024).

Developing economies have witnessed relatively faster trade growth. While developed economies still account for a larger share of global trade, their growth has slowed over the past five years and basically stalled in 2024. Developing economies saw faster trade expansion, with their growth rate reaching 4% in 2024. Their share of global goods trade rose from 30% at the start of the century to 45% in 2023, establishing them as the primary engine of global trade growth.

While North-North trade dominates global trade, South-South trade has grown rapidly. In 2023, North-North trade volume was twice that of all other trade flows combined. Some of the North-North trade occurred between EU member states. Over the past five years, South-South trade grew more rapidly at an average annual rate of 5.5%, higher than that of North-North trade (3.3%). This expansion was fueled by regional trade within the Global South. However, South-South trade growth remains volatile, relying heavily on natural resources, and with relatively limited trade in manufactured and capital goods (UNCTAD, 2025a).

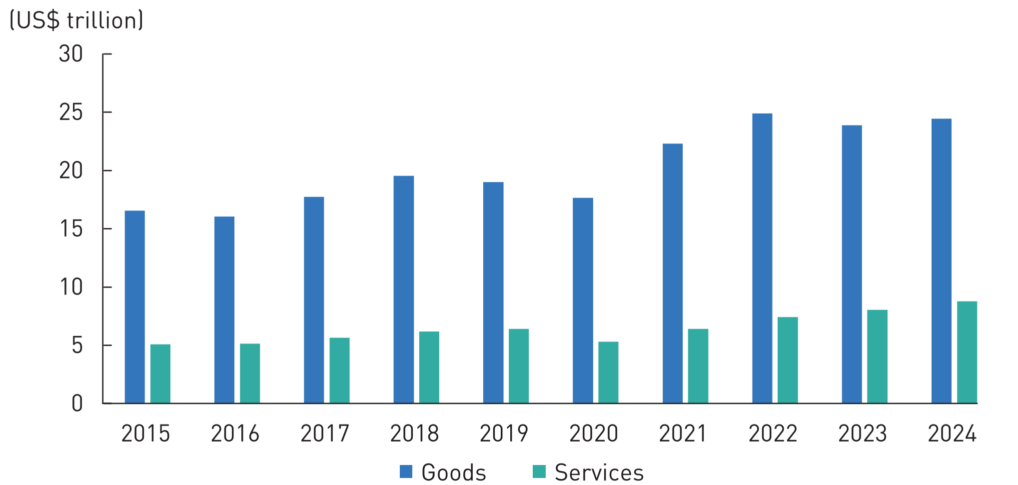

Figure 3-2 Changes in trade in goods and trade in services, 2015-2024

Source: UNCTAD database

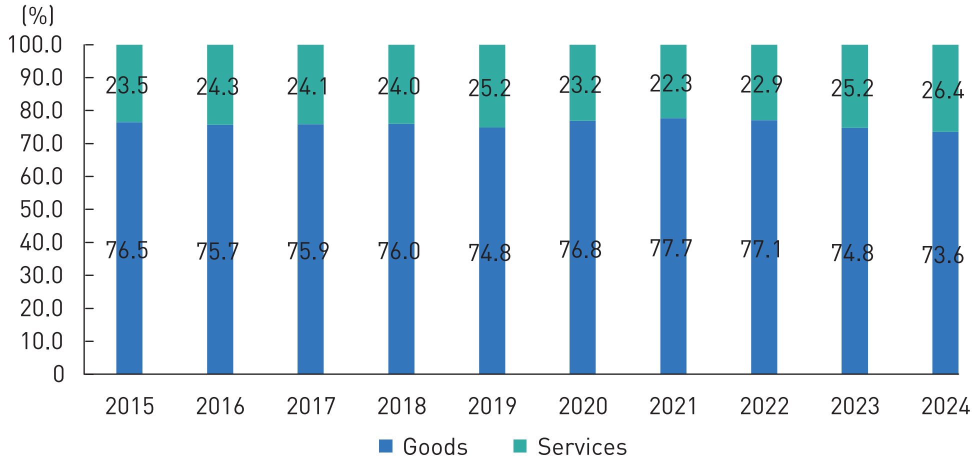

Figure 3-3 Changes in the share of trade in goods and services, 2015-2024

Source: UNCTAD database

With the multilateral trading system taking a hit, bilateral and minilateral trade agreements have become vital supplements. According to WTO statistics, the number of notified regional trade agreements (RTAs) worldwide increased from under 100 at the turn of this century to 618 as of the end of 2024. The number of RTAs in force has risen to 374, covering over 90% of countries and regions in the world. These agreements extend beyond trade and investment liberalization and facilitation into rule-making areas such as regulatory coherence and other “behind-the-border” measures, playing a pioneering role in shaping global trade rules.

3.1.2 Trade performance of different regions

Global trade performance shows marked divergence across different regions. Asia has become a major driver of global trade growth. In 2024, Asia’s trade growth rate reached 6.5%, the highest among all regions. Not only did its goods trade growth lead the world, but its service trade also expanded at a significant rate of 11.8%. Driven by South-South trade, Latin America and the Caribbean saw a trade growth rate of 5.0% in 2024. North America and Europe experienced a modest recovery. US economic and consumption growth supported trade growth within North America, while Europe’s growth was mainly driven by service trade (the growth rate of goods trade was -0.6%). Africa’s foreign trade shifted from negative growth in 2023 to a mildly positive rate of 1.4% in 2024 (Figure 3-4).

Global trade networks are becoming increasingly diversified. The UNCTAD Global Trade Update March 2025 reveals new trends in friendshoring, nearshoring, and trade concentration. Compared to 2023, friendshoring flows declined by approximately 2% in 2024, while nearshoring decreased by about 1%, signaling a revival of trade between geographically distant economies. Trade concentration dropped by

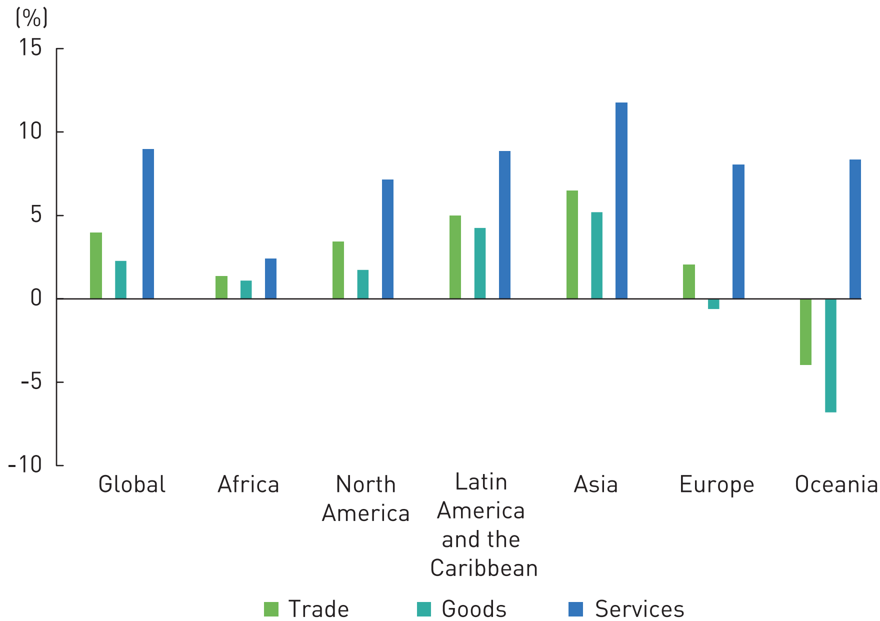

Figure 3-4　Growth rate of trade, goods trade, and services trade in different regions in 2024

Source: UNCTAD database, calculated and drawn by the authors

roughly 6 percentage points year on year, reflecting growing diversification in global trade structures (UNCTAD, 2025b).

3.2 Global trade faces challenges and shocks from unilateralism and protectionism

3.2.1 Trade-restrictive measures and trade barriers have increased significantly worldwide

In recent years, some countries have frequently introduced protectionist policies in the name of “national security” in a bid to reduce trade deficits and enhance the competitiveness of their domestic industries, leading to a marked increase in trade barriers.

The number of global trade-restrictive measures has increased rapidly. According to the Global Trade Alert (GTA) database, the number of discriminatory trade barriers worldwide exceeded 1,200 in 2024, which is much higher than the pre-pandemic annual average (over 200). In 2024, 28 new import bans and 58 export bans were announced worldwide. The WTO’s Overview of Developments in the International Trading Environment (2024) indicates that the newly imposed import and export restrictions in the 12 months to mid-October 2024 affected trade valued at US$887.7 billion and US$276.7 billion respectively, both substantially higher than the US$337.1 billion and US$159.1 billion recorded in the previous reporting period (WTO, 2024).

Green and digital trade barriers are on the rise. Some countries have been resorting to de facto trade protectionism by introducing stringent environmental regulations and technical standards, which have an impact on small and medium-sized enterprises (SMEs) and producers in developing countries. Trade protectionism is also extending into the digital sector. The measures include mandating compliance with specific digital technical standards or specifications to give local companies a competitive edge in entering the market and expanding their market share. These measures risk stifling digital trade, a key engine of global growth.

3.2.2 Global trade order faces mounting pressures

Since the beginning of 2025, the new US administration has unilaterally imposed tariffs on products from around the world under the pretext of achieving "fair trade". Relevant policies have been volatile. On the eve of the US announcement of "reciprocal tariffs", global trade policy uncertainty surged dramatically. The global Trade Policy Uncertainty (TPU) Index developed by Federal Reserve economists shows that the index remained stable below 50 from 2000 to 2015, spiked beyond 200 in the third quarter of 2018, climbed to 237.4 in the fourth quarter of 2024, and skyrocketed to a historic high of 477.9 in the first quarter of 2025 (Figure 3-5).

3.2.3 Global growth outlook worsens

Global trade growth has slowed down. Against the backdrop of a new round of tariff shocks and heightened policy uncertainty, the WTO projected in Global Trade Outlook and Statistics April 2025 the growth rates of goods and service trade to be 2.9 percentage points and 1.1 percentage points lower respectively than its previous forecast in October 2024. Even if the current 90-day suspension of some US tariffs is factored in, global trade in goods is still expected to shrink by 0.2% in 2025 (WTO, 2025). The WTO identifies trade uncertainty and market volatility induced by high tariffs as the core reasons for this trade contraction. Knock-on effects are particularly severe in some export-oriented,

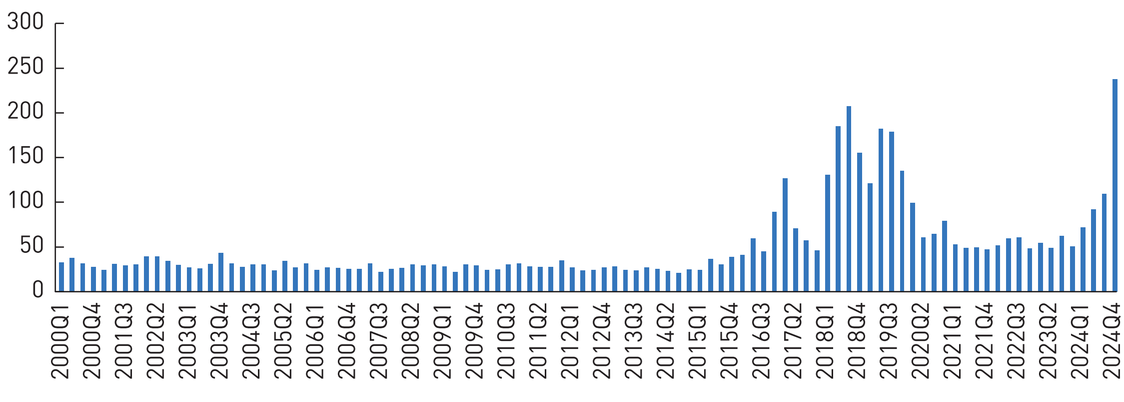

Figure 3-5 Global Trade Policy Uncertainty Index, 2020-2024

Source: https://www.matteoiacoviello.com/tpu.htm less-developed countries. A World Bank report in July forecasts that the global trade growth rate will dip to 1.8% in 2025, down from 3.4% in 2024, representing a downward revision of 1.3 percentage points from its January forecast (World Bank, 2025).

Multinational corporations (MNCs) are becoming more cautious about global investment. An UNCTAD report in May 2025 reveals that heightened trade tensions and policy uncertainty have put pressure on MNCs' investment decisions, while global supply chain fluctuations have pushed up production costs. Many enterprises have adopted a "wait-and-see" approach, with widespread downward revisions to their performance and profit forecasts (UNCTAD, 2025c).

The global economy faces headwinds. The WTO projected in April 2025 that, based on the tariff impositions as of April 14, global GDP growth in 2025 may drop by 1.1 percentage points compared with the previous forecast (WTO, 2025). The IMF estimates that amid a "highly unpredictable" global trade environment, global GDP in 2025 will grow by 2.8%, lower than both its January forecast of 3.3% and the historical average of 3.7% from 2000 to 2019 (IMF, 2025). According to a UNCTAD report in April, global economic growth is projected to plunge to 2.3% in 2025, a decline from 2.8% in 2024 (UNCTAD, 2025d). Research by the OECD in June says that surging trade barriers and trade policy uncertainty since the outset of 2025 have weakened business and consumer sentiment and are weighing on trade and investment. The OECD has revised its global growth projection for 2025 downward by 0.2 percentage point to 2.9% from earlier estimates in March (OECD, 2025).

3.2.4 Developing countries are confronted with multiple risks

Developing countries' efforts to advance industrialization and economic diversification are hampered. Unilateralism and protectionism have delivered a heavy blow to the developing countries heavily reliant on global markets for their exports. High tariffs on manufactured goods entrench their dependence on exporting raw materials, limiting their opportunities to integrate into global supply chains, move up value chains, create jobs, and diversify their economies.

The economic and financial stability of developing countries has been affected. Due to concerns over tariff policy uncertainty and technical restrictions, investors are putting their capital in assets and markets in advanced economies regarded as relatively safe and stable, propelling capital outflows and currency depreciation in developing countries. This may force the central banks in developing countries to raise interest rates and push up domestic borrowing costs. The uncertainties are also creating cascading effects beyond investment suppression. Trade disruptions fuel inflation, which in turn sparks exchange rate fluctuations. This prompts prolonged high-interest rate policies, ultimately compelling more countries to give up their development imperatives to ensure their debt-servicing capacity (UNCTAD, 2025d).

3.3 Remaining committed to opening up and cooperation and leveraging trade to power global economic growth

Although unilateralism and protectionism are gaining ground, the fundamental forces of economic globalization still prevail. Digital technological advances, expanding regional free trade, and the collective rise of developing countries continue giving momentum to the global trading system. From the perspective of social development, globalization is an irreversible and unstoppable trend as countries become increasingly interconnected and interdependent. All countries should take a positive approach and constructive actions, counter the headwinds of unilateralism and protectionism unitedly, diffuse the risk of global trade disorder caused by unilateral measures, and build a more sustainable and resilient economic and trade cooperation system.

3.3.1 Upholding true multilateralism and safeguarding the multilateral trading system

The multilateral trading system with the WTO at its core should be firmly upheld. The rules-based multilateral trading system is the cornerstone of globalization and free trade and plays a crucial role in global economic governance. It is imperative to deepen WTO reform, resolve differences and disputes through equal dialogue under the WTO framework, and jointly uphold multilateralism and free trade. Stable and smooth flow of global industrial and supply chains should be promoted, and the international economic and trade order, as well as global trade stability safeguarded, providing certainty to the world economy.

The WTO dispute settlement mechanism should be restored as early as possible. More flexible, efficient, and responsible decision-making practices should be explored through consultation, and the authority of the WTO should be enhanced. More member states should be encouraged to join the Multi-Party Interim Appeal Arbitration Arrangement (MPIA), the temporary mechanism for resolving trade disputes, to address the difficulties arising from the WTO Appellate Body having come to a standstill.

The WTO should continue to function as a rule-making institution. It is imperative to resolve issues such as agriculture and food insecurity, and implement agreements on fisheries subsidies, investment facilitation, and e-commerce as soon as possible. Discussions and negotiations on AI, as well as trade and the environment, should be conducted in response to present-day requirements.

3.3.2 Deepening multilateral, bilateral and regional trade cooperation and promoting mutually beneficial cooperation for common development

Regional trade arrangements should continue to be deepened. Regional economic integration is becoming a highlight of global trade, providing stability and new momentum for economic growth. Since the Regional Comprehensive Economic Partnership (RCEP) came into force on January 1, 2022, against a backdrop of escalating geopolitical conflicts and sluggish global economic recovery, it has strengthened industrial and supply chain cooperation within the region and vitalized regional cooperation by promoting trade liberalization and facilitation among its members and lowering intermediate goods costs. Research by the Asian Development Bank projects the RCEP will generate US$245 billion in additional economic output and create 2.8 million jobs for the countries in the bloc by 2030.

On May 20, 2025, the negotiations on version 3.0 of the China-ASEAN Free Trade Area (CAFTA) were concluded. CAFTA 3.0, adding nine new chapters, including on the digital economy and green economy, will facilitate broader and deeper regional economic integration under the new circumstances. The African Continental Free Trade Area (AfCFTA) has achieved significant progress, with 48 African countries depositing their instruments of ratification. In 2024, intra-African trade grew by 12.4%, reaching US$220.3 billion. The provision of trade financing and support for the development of the Pan-African Payment and Settlement System (PAPSS) will facilitate the implementation of AfCFTA, thereby boosting intra-regional trade and unlocking growth potential across Africa. The United Kingdom's accession to the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the bloc's expansion will also advance regional economic integration and trade and investment liberalization and facilitation.

Open regionalism and mutually beneficial sub-regional cooperation should be advanced. It is imperative to accelerate the establishment of the Free Trade Area of the Asia-Pacific (FTAAP) under the APEC framework based on the principles of openness, inclusiveness, and shared benefits. This initiative will foster connectivity and secure and stable industrial and supply chains while deepening regional economic integration. New high-quality sub-regional cooperation mechanisms should be advanced as well. Following the principles of development first, equal consultation, tangible results and high efficiency, openness and inclusiveness, cooperation should be deepened in priority areas such as infrastructure connectivity, industrial capacity collaboration, cross-border economies, water resources, agriculture, and poverty reduction to drive progress in sub-regional cooperation mechanisms like the Lancang-Mekong Cooperation (LMC), fostering comprehensive, high-quality, and coordinated development.

Regional organizations are encouraged to establish partnerships. High-level dialogue mechanisms should be introduced for regular communication. Drawing inspiration from models such as the ASEAN-GCC Summit (Box 3-1) and the EU-Mercosur Free Trade Agreement, regular summits of regional organization leaders should be held to identify priority cooperation areas and action roadmaps to accelerate trade and investment negotiations between regional organizations and advance cross-regional economic and trade cooperation.

3.3.3 Tapping the potential of service, digital and green trade to deliver gains to all

The new round of technological revolution and industrial transformation is accelerating, driving the trade sector to be more service-oriented, digital, and eco-friendly. Countries should seize the momentum of digitalization, interconnectivity, and intelligent transformation, as well as green and low-carbon development, to propel global trade growth and sustainable economic development. Service trade market access should be further relaxed. A fair, transparent and predictable market environment should be created and the level of liberalization and facilitation of service trade elevated. Coordinated development of global digital trade infrastructure should be accelerated and technology transfer and knowledge sharing between developing and developed countries in digital infrastructure facilitated to unlock digital trade potential and bridge the digital divide.

3.3.4 Strengthening South-South cooperation for new impetus to global economic and trade cooperation

The development potential of South-South trade should be fully unleashed by strengthening the alignment of strategies, rules, and standards and expanding the scope of cooperation.

Enhancing infrastructure development and connectivity among developing countries will boost trade facilitation. The priorities include strengthening cross-border railways, highways, ports, and aviation networks to improve

Box 3-1 ASEAN and GCC strengthen cross-regional cooperation

The engagement between ASEAN and the Gulf Cooperation Council (GCC) dates back to the 1990s. In recent years, the two have advanced cooperation in areas such as trade and investment based on their respective economic complementarities via regular ministerial and working-level meetings and joint initiatives.

In October 2023, the inaugural ASEAN-GCC Summit was convened, adopting the ASEAN-GCC Framework of Cooperation 2024-2028. This framework outlines key initiatives and practical actions focused on trade and investment, agriculture and food security, energy, tourism, and other areas, marking the launch of their strategic partnership. In November 2024, the Committee of Permanent Representatives (CPR) to ASEAN and the GCC Ambassadors' Council in Jakarta held a meeting in Jakarta. It noted the progress in bilateral cooperation and provided a key channel for advancing ASEAN-GCC cooperation.

Source: ASEAN, 2025

logistics efficiency; jointly developing regional power grid interconnections to ensure energy security, accessibility, affordability, and sustainability at national and regional levels (Box 3-2); further streamlining customs procedures and mutual recognition of inspection and quarantine standards and promoting policy coordination and alignment of rules and standards to advance trade facilitation.

Developing countries should unlock their trade potential through investment and capacity building. They should engage in trade and investment cooperation initiatives and industrial chain partnership programs, such as deep processing of agricultural products. They should step up cooperation with financial institutions to advance trade financing and design more flexible Aid for Trade programs to support digital and green infrastructure development and capacity building. This will create conditions for them to integrate further into globalization, increase their share in global trade, and move up the global value chains.

Developing countries should enhance technology and knowledge sharing to elevate their level of technical cooperation and experience exchanges. Efforts include setting up technology transfer centers to promote sharing cutting-edge technologies such as clean energy and digital economy, and establishing long-term mechanisms for talent development to enhance their industrial development capacity through joint R&D, vocational training, and distance education.

Box 3-2 ASEAN power grid development makes progress

The ASEAN Plan of Action for Energy Cooperation (APAEC) is intended to advance multilateral energy cooperation and integration. A key component is establishing an interconnected power grid among ASEAN member states – the ASEAN Power Grid (APG).

In 2024, the stakeholders advanced APG interconnections and multilateral power trade (MPT) and strengthened coordination to make electricity supply across ASEAN more sustainable and reliable. Key initiatives include launching the ASEAN Interconnection Masterplan Study (AIMS) III to define the minimum requirements of MPT, completing the technical and commercial feasibility study for the Indonesia-Malaysia interconnection project, enhancing project financing capacity building, advancing technical standard harmonization, establishing a dispute resolution mechanism, developing an ASEAN MPT roadmap, and formulating a regulatory framework.

Source: Compiled by the authors based on publicly available information

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Chapter IV

Actively Addressing New Climate Challenges

Global warming is accelerating at unprecedented speed. In 2024, the global mean temperature was 1.55℃ (±0.13℃) higher than the pre-industrial level for the first time. Climate change is causing a large number of extreme weather events and natural disasters, resulting in serious loss of life and economic damage. Interlinked grave challenges to climate response, such as faltering global climate actions, the backsliding energy policies of some countries, mounting green economic and trade barriers, and deadlocks in climate governance, have added uncertainties to global development. In this dire situation, all countries and sectors urgently need to build consensus, remove economic and trade barriers, and deepen green cooperation. They need to jointly promote low-carbon transition as a new driver for global economic growth and meet the climate goals through development.

4.1 Global temperatures breached the critical limit for the first time, causing serious impacts

4.1.1 2024 was the warmest year in the 175-year observational record

Atmospheric carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are at their highest level in 800,000 years. In 2023, the atmospheric CO_2 was 420.0±0.1 ppm, 2.3 ppm higher than in 2022 and 151% of the pre-industrial level; CH_4 and N_2O concentrations also reached the highest level in history in 2023 – 1934±2 ppb (265% of the pre-industrial level) and 336.9±0.1 ppb (125% of the pre-industrial level) respectively (WMO, 2025a). Real-time data shows that in 2024, concentrations of these three major greenhouse gases (GHGs) continued to rise and will remain in the atmosphere for generations to come.

Earth's average temperature breached the 1.5°C climate limit for the first time. In 2024, the global mean near-surface temperature was 1.55±0.13°C above the 1850-1900 pre-industrial average, compared to 1.45±0.12°C higher in 2023, making it the first calendar year when the global mean temperature exceeded the 1.5°C limit above its pre-industrial level (Figure 4-1). While this does not mean that the world has failed to meet the long-term 1.5°C temperature goal of the Paris Agreement[1], it is a sign that the pace of global warming has accelerated significantly and climate response is entering a challenging new phase. The decade from 2015 to 2024 comprised the warmest years on record. From June 2023 to December 2024, the monthly average global temperature broke the previous record in the same month.

Sea levels have risen more than expected, and the ocean stores more than 90% of the energy trapped in Earth's system by GHGs. In 2024, ocean heat content reached the highest level in 65 years of observation records. The rate of ocean warming over the past two decades

[1] A single year exceeding a global mean temperature of 1.5°C above the 1850-1900 baseline does not mean that the Paris Agreement temperature limit has been breached. It is generally thought that the Paris Agreement is about long-term changes (e.g. on a 10-year scale), not a single year.

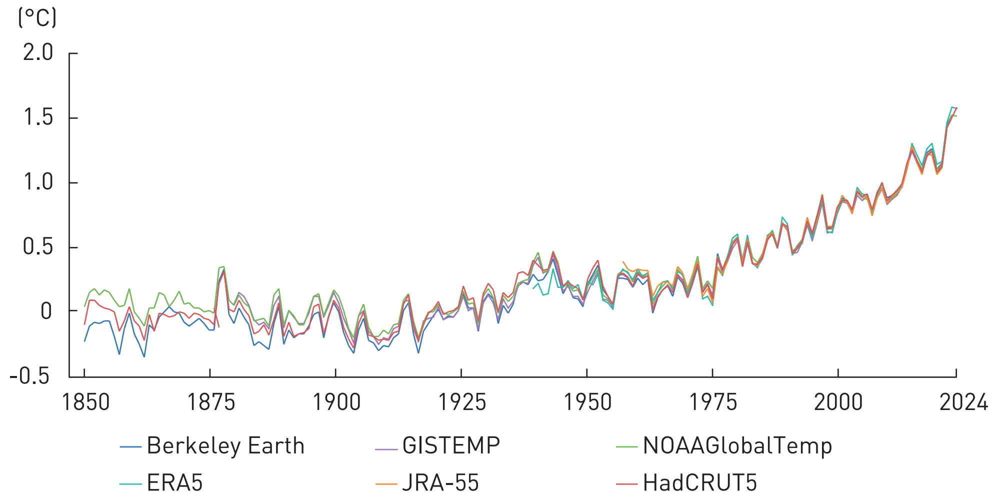

Figure 4-1 Annual global mean temperature anomalies relative to the pre-industrial (1850-1900) baseline, 1850-2024

Note: There are discrepancies in data definitions across institutions, and some of the statistical data cover different time periods.
Source: WMO, 2025a

(2005-2024) is more than twice that observed over 1960-2005. Ocean warming is fueling degradation of marine ecosystems, biodiversity loss, and rise of sea levels. The global mean sea level has reached a record high in the satellite record (from 1993 to present). The long-term rate of sea-level rise has more than doubled, increasing from 2.1 mm per year between 1993 and 2002 to 4.7 mm per year between 2015 and 2024 (WMO, 2025a). The sea levels, rising faster than expected, pose a threat to the living environment. Tuvalu, a Pacific Island nation sitting at an average elevation of just 2 meters with no island more than 5 meters above sea level, could be submerged by seawater in 25 years. Tuvalu has become the first country in the world to begin a planned migration of its entire population in response to climate change.

4.1.2 Climate change exacerbated the frequency and intensity of extreme weather events

The frequency of extreme weather events has increased worldwide. In recent years, extreme weather events around the world have become more frequent (Figure 4-2). In 2024, unprecedented disasters in many parts of the world, such as rainstorms, floods, droughts, and wildfires, led to the highest number of new displacements recorded in a year since 2008 (WMO, 2025a). It is predicted that by 2030, the frequency of extreme weather events could exceed 560 per year (WEF, 2025).

Tropical cyclones have become frequent. In September 2024, Typhoon Yagi crossed the Philippines, southern China, Viet Nam, Laos,

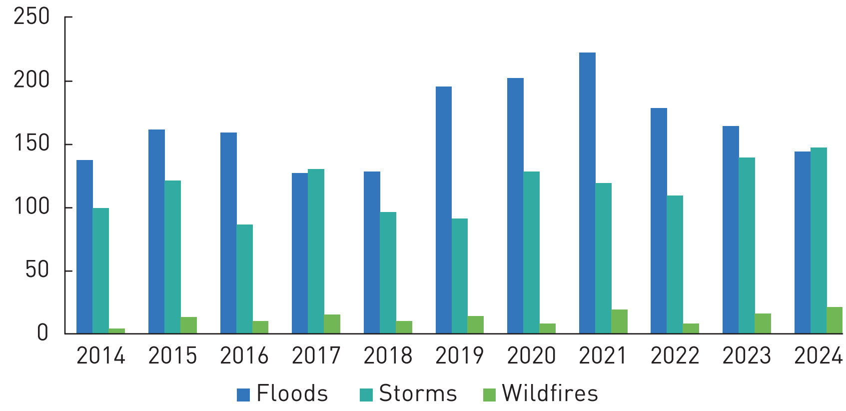

Figure 4-2 Frequency of some disasters around the world, 2014-2024

Source: Global Disaster Data Platform

Thailand and Myanmar, causing heavy casualties and infrastructure damage. From September to October, Hurricane Helene and Hurricane Milton both made landfall on the coast of Florida as major hurricanes and went on to produce exceptional rainfall and extreme flooding. Both had grave economic impact, causing damage worth tens of billions of dollars. Over 200 deaths were associated with Helene, making it the deadliest mainland US hurricane since Katrina in 2005. In the southern hemisphere, Tropical Cyclone Chido crossed Mayotte, a French overseas department in the Indian Ocean, in December 2024, before making landfall in Mozambique and moving onwards to Malawi. In Mozambique, Cyclone Chido displaced around 100,000 people and severely damaged roads and communication networks, greatly hampering relief efforts in the area (WMO, 2025a).

Many places were severely flooded. At the beginning of 2024, Afghanistan and the neighboring areas of Pakistan and Iran suffered a succession of disasters, with abnormal cold and highland snow first, followed by several flood events over the following months. Around 35,000 hectares of cropland were flooded on May 30, 2024, and several hundred deaths were reported in the flooding. Between March and May 2024, floods caused major loss of life in countries such as Kenya and Tanzania, as well as destruction of cropland and loss of livestock. Lake Victoria reached record high water levels, and later, the resultant downstream flooding badly affected South Sudan. In early May 2024, persistent heavy rainfall resulted in inundation in large parts of the city of Porto Alegre in Brazil and many surrounding areas, with significant effects on agriculture and fisheries, as well as over 200 deaths. At the end of October 2024, extreme rainfall hit the Valencia region of Spain. The town of Turis reported 185 mm of rain in one hour, a Spanish national record, and 772 mm was recorded in 24 hours. The rainfall led to exceptional flooding, causing over 200 deaths and significant property damage (WMO, 2025a).

Extreme drought and heat events have become more frequent. The global land area affected by drought doubled in the last 120 years (OECD, 2025). In 2024, dry conditions in what was usually the wet season resulted in significant drought in many parts of Southern Africa, particularly Zimbabwe, Zambia, Botswana and Namibia. The severe drought in Mexico persisted, and much of interior South America also suffered significant drought. The number of wildfires in the Brazilian Amazon was the largest since 2010, and major rivers reached record low levels. In early 2024, a fire around the city of Viña del Mar, Chile, resulted in over 300 deaths and damage to several thousand properties, one of the worst wildfire losses in the world this century.

North America also had an active wildfire season in 2024. In total, over 300,000 displacements were reported across both the US and Canada. Numerous record-breaking heatwaves were reported at many weather stations. This followed record-breaking heat in Southeast Asia and West Africa from March to May 2024. A June heatwave in Saudi Arabia caused temperatures near Mecca to reach 50°C during the Hajj pilgrimage, with many casualties reported. During the summer of 2024 in the northern hemisphere, regions particularly affected by heatwaves included East Asia, the Mediterranean, and the Southwestern United States. The impacts of extreme heat and heatwaves are often underestimated, and heat-related mortality could be many times higher than the current estimates (WMO, 2025a).

4.1.3 The impact of climate change on various aspects of the global development process

Huge economic losses. In 2024, weather-related extreme events caused US$242 billion in global economic losses (CRED, 2025). The global costs of climate damage are estimated to be between US$1.7-3.1 trillion per year by 2050, excluding the impact on the poorest countries (WEF, 2023). Region-wise, weather- and climate-related economic losses for Europe in 2024 were estimated at more than EUR18 billion, 85% of which was attributed to flooding (C3S et al., 2025). On average, African countries are losing 2-5% of GDP per year due to extreme weather, and many are diverting up to 9% of their budgets to respond to climate extremes. In Sub-Saharan Africa, the annual cost of climate adaptation is estimated to be between US$30-50 billion annually over the next decade, equivalent to 2-3% of the region's GDP (WMO, 2025b).

Serious threat to food security and health. Weather extremes, such as heatwaves, droughts, floods, and cold waves, are having an increasing impact on crop yield. In 2024, over 96 million people faced high levels of acute food insecurity in 18 countries. Weather extremes were the primary cause, with the disasters in Southern Africa the most severe (FSIN et al., 2025). Climate change is impacting health in a myriad of ways, including illness from frequent extreme weather events, such as heatwaves, floods and droughts. Worldwide, 3.6 billion people already live in areas highly susceptible to climate change. In low-income countries and small island developing states (SIDS), the death rate from extreme weather events in the last decade was 15 times higher than in less vulnerable ones (WHO, 2023). Recent research attributes 37% of heat-related deaths to human-induced climate change. Heat-related deaths among those over 65 have risen by 70% in two decades. Research predicts that between 2030 and 2050, climate change will cause approximately 250,000 additional deaths per year from undernutrition, malaria, diarrhea, and heat stress alone (WHO, 2023).

Systematic impact on global infrastructure and social productivity. Frequent disasters, such as floods and storms, have seriously damaged such infrastructure as roads, bridges, and power networks, not only costing substantial money in repair work, but also interrupting productivity continuously. Since 2021, the continuous high-pressure weather in Europe has led to a sharp drop in oceanic wind speed and wind power generation. The imbalance between supply and demand has pushed up energy prices, intensified inflationary pressure, and raised business production costs. Weather extremes have also disrupted regular operations of global supply chains, increasing transportation costs and risks of delivery delay. Flooded ports and transportation lines have resulted in backlogs and delivery delays, while droughts have affected the shipping capacity of inland rivers and increased logistics costs.

4.2 Global actions against climate change have been put to the test

4.2.1 The reorientation of energy policies by some countries intensified the pressure on global emission reduction

The US has returned to fossil fuel dominance. The new US administration declared a national energy[1] emergency, committing to "Unleashing American Energy", expanding production of oil and natural gas, and fast-tracking energy projects. At the same time, it canceled EV incentive policies, such as purchase subsidies and R&D support, put an end to the Green New Deal that sought to bring US GHG emissions down to net zero and meet 100% of power demand in the country through clean, renewable, and zero-emission energy sources by 2030, and supported the development of the traditional auto sector. The transition in US policies urges energy enterprises to reorient their investment, investing more in traditional fossil projects and less in renewables. Such transition may also cause slower growth in the American clean energy market and lead to high-carbon features in AI power growth, which will significantly increase the global pressure for emission reduction. According to the US Department of Energy, in 2023, data centers in the US (excluding cryptocurrencies) consumed approximately 4.4% or 176 TWh of the total US electricity.

[1] The new US administration redefines energy resources as "oil, coal, natural gas, biofuels, geothermal energy, nuclear energy, hydrokinetic energy, and critical minerals", and explicitly excludes wind energy, solar energy, and battery technologies.

By 2028, their consumption is projected to grow 13%-27% annually to reach between 325 to 580 TWh, or 6.7% to 12% of the total US electricity[1].

Some countries and regions have slowed down the pace of energy transition as they are worried about downward pressure on the economy. Some have re-balanced their economic growth and climate policy, giving higher priority to reducing industrial costs and maintaining energy security. For example, although the EU has issued a series of targets, actions and measures in recent years to promote green transition, the emission reduction requirements have pushed up energy costs and aggravated the pressure on industrial operations and the manufacturing dilemma. Also, there are differences within the EU itself regarding the bloc's 2040 climate target. Japan and the ROK continue to generate electricity from fossil fuels by co-burning hydrogen and ammonia, aiming to extend the lifespan of their coal-fired power plants and thereby slowing down energy transition (GEM, 2025). In 2024, the top 65 banks by asset size extended US$869 billion in financing to fossil fuel companies, an increase of US$162 billion over the previous year. These large banks significantly reversed the previous downward course and walked away from their original climate commitments (BOCC, 2025).

4.2.2 Trade protection and tariff barriers hinder the global transition towards clean energy

Global trade tensions have seriously hindered the distribution of green technologies and products. Free trade is essential for faster clean energy transition globally. In 2024, the value of trade in clean technologies[2] at around US$200 billion was nearly 30% of their global market value (IEA, 2025). Compared with fossil fuels, trade in clean technologies can facilitate the formation of longer-duration energy assets. A single large container ship of PV modules can generate the same amount of electricity as 50 LNG tankers, or 100 large coal ships. However, unilateralism and protectionism have been clearly on the rise in recent years, and some major economies have gradually raised trade barriers, hindering the trade of clean energy technologies and products. More tariffs imposed by the new US administration may increase the production costs of PV modules, wind power equipment, and batteries in America by 40%, which will further push up global costs for clean energy use. At present, the average tariff on renewable energy systems and their components is more than twice that on fossil fuels. A 100% tariff on solar PV modules today would cancel out the decline in technology costs seen over the past five years (IEA, 2024).

The decoupling risk of green industries is reducing the efficiency and progress of clean

[1] Source: US DOE Lawrence Berkeley National Laboratory

[2] These include the six major clean energy technologies, namely solar PV, wind turbines, electric cars, batteries, electrolyzers, and heat pumps.

energy transition. In recent years, trade measures for batteries, solar PV, electric vehicles, wind turbines, and electrolyzers have been continuously increasing. By 2024, there were nearly 200 such measures (Figure 4-3). Since 2020, about 40% of policy changes have involved tariffs, anti-dumping duties and countervailing measures, aiming to localize the clean energy industrial chains. Although these policies partly aim to address external uncertainties, they also lead to decentralization and fragmentation of global new energy industrial chains to a certain extent, reducing overall production efficiency. The over-reliance on localized policies could lead to duplicate investment in production capacity and weakened economies of scale, raise the deployment costs of clean technologies, and drag technological progress in key areas, such as batteries and PV, thus delaying global carbon neutrality for 10 years or more (IEA, 2024).

4.2.3 Widening funding gap for climate response in developing countries

There is insufficient support to provide climate funds for developing countries. According to estimates by the Independent High-Level Expert Group (IHLEG) on Climate Finance, around US$2.44 trillion of investment per year would be necessary to support climate actions by 2030 in EMDEs outside China. Among them, external finance would need to at least cover US$1 trillion per year of the total investment and around US$1.3 trillion by 2035. However, the current external financing gap is as high as US$850 billion. To meet this, private finance must increase by 15 to 18 times; multilateral development banks' (MDBs') climate finance commitments by 3 to 3.8 times; and bilateral contributions by 2 to 2.5 times (Table 4-1). In November 2024, COP29 reached

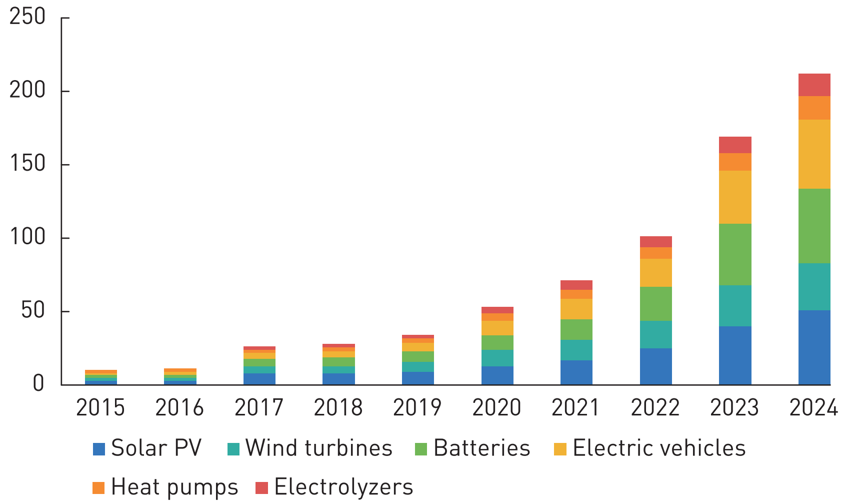

Figure 4-3 Cumulative sum of global trade policies related to clean energy technologies, 2015-2024

Source: IEA, 2024

a New Collective Quantified Goal on Climate Finance (NCQG): Developed countries would commit to mobilizing at least US$300 billion per year for developing countries as climate financial support. The meeting also called for all parties to work together to get closer to the US$1.3 trillion annual goal as global climate financing by 2035. Nevertheless, some countries have yet to fulfill these commitments (Box 4-1).

Table 4-1 Annual climate finance demand and gap for EMDEs outside China by 2030 (US$ billion)

<table>
<tr><th colspan="2">Demand (gap) in climate-related spending</th><th>Type of finance</th><th>Financial demand (gap)</th><th>Multiple of current funds needed</th></tr>
<tr><td rowspan="7">Total financing 2,440 (1,890)</td><td rowspan="2">Domestic resource mobilization 1,440 (1,040)</td><td>Public finance</td><td>800~900 (500~600)</td><td>2.7~3</td></tr>
<tr><td>Private finance</td><td>550~630 (440~540)</td><td>5~7</td></tr>
<tr><td rowspan="5">External financing 1,000 (850)</td><td>Private finance</td><td>450~550 (420~520)</td><td>15~18</td></tr>
<tr><td>MDBs</td><td>240~300 (160~220)</td><td>3~3.8</td></tr>
<tr><td>Bilateral finance</td><td>80~100 (40~60)</td><td>2~2.5</td></tr>
<tr><td>South-South cooperation</td><td>30~50 (10~30)</td><td>1.5~2.5</td></tr>
<tr><td>Other concessional finance</td><td>140~160 (130~150)</td><td>14~16</td></tr>
</table>

Source: Bhattacharya, 2024.

Box 4-1 US withdrawal from the Just Energy Transition Partnership has affected emerging economies' energy transition

The Just Energy Transition Partnership (JETP) was established at COP26 in Glasgow, the UK, in 2021 by developed countries from Europe and America as a financing mechanism to support emerging fossil-dependent economies to accelerate their transition from fossil fuels, such as coal, and provide help to the populations most vulnerable to the impacts of this transition. The JETPs are funded by public and private sectors, and the members of the International Partners Group (IPG), a consortium of 10 developed countries and regions, such as the US, the UK and the EU, are one of the sources of public funds. As of September 2024, South Africa, Indonesia, Viet

Nam and Senegal are some of the countries to have formed JETPs with developed countries, with an initial fund of nearly US$50 billion. The forms of funding include grants, preferential loans, commercial loans, and guarantees.

However, the progress of the JETPs lags far behind expectations. They focus on accelerating discontinuation of coal-fired power and developing renewable energy, but the donor countries have failed to provide low-cost and high-efficiency renewable technologies and capacity support. The types and scale of funding under the JETPs are also woefully inadequate to meet the actual needs of recipient countries. In March 2025, the US withdrew from its JETP with South Africa, Viet Nam and Indonesia. For South Africa, this withdrawal has resulted in the direct loss of US$56 million in grant funds and US$1 billion in potential commercial investments, reducing the total international pledge from US$13.8 to 12.8 billion. For Indonesia, the current JETP funds cover less than 25% of the demand. The US$2.07 billion promised by the US accounts for the largest share in Indonesia's JETP public funding. With the withdrawal and reduction of US capital commitment, the JETP funding pool will shrink, aggravating the financial pressure on Indonesia's energy transition.

Source: Foundation for Political Science and Politics (SWP)

The allocation of climate funds remains imbalanced. The LDCs and least developed regions still have limited access to climate funds. From 2016 to 2022, the climate finance provided and mobilized by developed countries increased from US$58.5 billion to US$115.9 billion, with 40.1% going to lower-middle-income countries (LMICs) in 2022, the highest share; 29.8% to upper-middle-income countries (UMICs); and only 9.6% to low-income countries (LICs) (Figure 4-4). The share of private mobilized finance was significantly lower for LDCs (7%) and SIDS (9%), compared to an average of 18% across all developing countries (OECD, 2024).

There is also insufficient investment in climate adaptation. Of the public climate finance provided by developed countries, 69% was in the form of loans. As a considerable part of them was non-concessional, developed countries lacked interest in adaptation projects with no short-term benefits. Of the limited climate funds flowing to developing countries, 65% was used to mitigate GHG emissions and only 25% for climate adaptation. Adaptation finance in the world grew from US$35 billion in 2018 to US$76 billion by 2022, but the flows continue to fall short of real needs. The estimated climate adaptation need for EMDEs alone is US$212 billion per year from 2024 to 2030, and US$239 billion every year from 2031 to 2050 (Figure 4-5). Even these figures may be a significant underestimate due to uncertain future climate impacts and the spiraling cost of inaction (CPI, 2024).

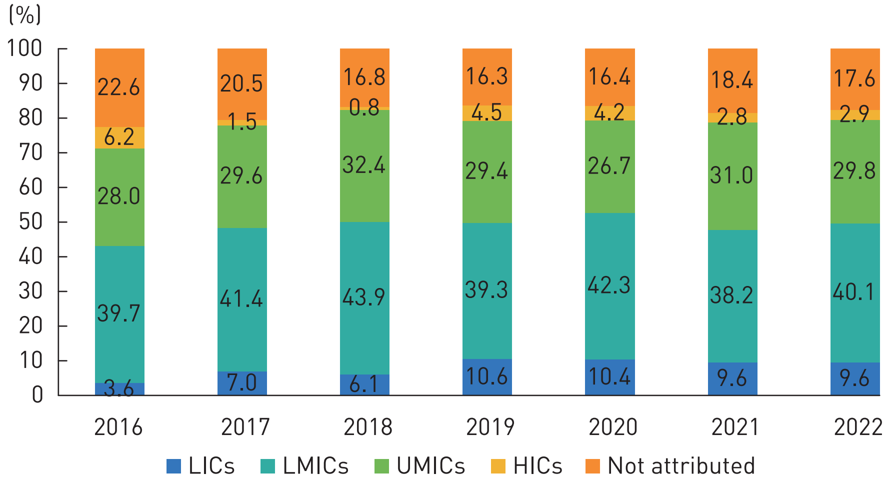

Figure 4-4　Flows of climate finance provided and mobilized by developed countries, 2016-2022

Note: Due to rounding, the percentages in some columns do not add up to 100%.
Source: OECD, 2024

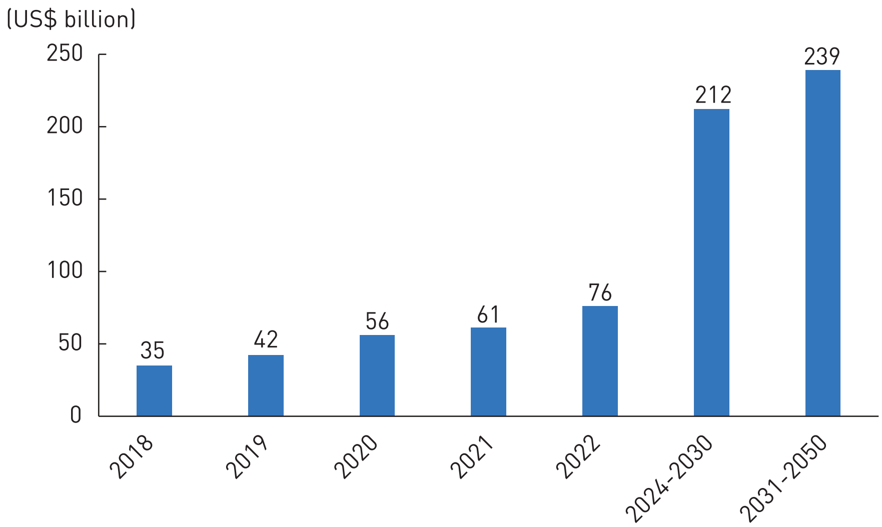

Figure 4-5　Scale of and demand for adaptation finance

Note: The data from 2024 to 2030 and from 2031 to 2050 represents the average annual capital demand.
Source: CPI, 2024

4.2.4 The US withdrawal from the Paris Agreement has affected global collective action on climate change

The global deficit in emission reduction is significantly increasing. In 2021, the US administration pledged under the Paris Agreement to cut domestic emissions to 50%-52% below 2005 levels in 2030 and to net zero in 2050. It implemented a long list of climate policies, including the Inflation Reduction Act. But under the subsequent administration, the US pulled out of the Paris Agreement and rolled back previous climate commitments. According to predictions in March 2024 by the European research institution Carbon Brief, the new US policy could lead to a cumulative addition of 4 billion tonnes of carbon dioxide equivalent ($GtCO_2e$) by 2030 (equivalent to the combined annual emissions of the EU and Japan, or the combined annual total of the world's 140 lowest-emitting countries), which would cause global climate damage worth more than US$900 billion. There is a high probability of the US deviating from its global climate commitments after withdrawing from the Paris Agreement. By 2030, the US GHG emissions are expected to decrease by only 28% compared with 2005, far below the target of 50%-52%. In that case, it would likely end any hope of keeping global warming below 1.5°C[1].

Generating negative demonstration effects and undermining confidence in international climate cooperation. In 2015, China and the US reached a climate agreement before the Paris Climate Conference, providing important political support for the new emission reduction model based on the Intended Nationally Determined Contributions (INDCs) in the Paris Agreement. However, in January 2025, the US, one of the main promoters of the Paris Agreement, withdrew from the agreement for the second time and abandoned its responsibility as a large country to respond to climate change. This dealt a blow to the confidence of all countries in working together to address global climate issues. Under the US influence, the sense of urgency to take climate actions has waned in some countries, and their commitments and actions to reduce emissions have stagnated. For example, the Argentine government pulled negotiators from the COP29 Climate Summit and is considering exiting the Paris Agreement. Some developing countries think it is unfair to ask developing countries to reduce their emissions when the US and other major emitters have failed to fulfill their obligations.

Reduced financial, technological and capacity-building support will affect the actions of developing countries to respond to climate change. The Paris Agreement requires developed countries to continue to take the lead in reducing emissions and provide financial, technological and capacity-building support to developing countries. The former agreed to mobilize US$100 billion annually by 2020 and through

[1] Source: https://www.carbonbrief.org/analysis-trump-election-win-could-add-4bn-tonnes-to-us-emissions-by-2030/

2025 to support climate action in developing countries. The US provided about US$7.3 billion in climate finance in the fiscal year 2021-2022, and mobilized a further US$10.7 billion in private finance in the same period so that developed countries fulfill their commitments on climate funds for the first time in 2022[1]. In November 2024, the US confirmed that the commitment to "scale up US international public climate finance to developing countries to US$11 billion per year by 2024" had been met. After the US withdrew from the Paris Agreement, its financial support to developing countries for climate response ended, and the deficit in climate funds promised by developed countries is bound to increase significantly. In addition, the original technological and capacity-building support for developing countries, such as the Clean Energy Investment Accelerator, Clean Technology and Trade Partnership Initiative, Forest Data Partnership, and Paris Agreement Transparency Accelerator, will also be canceled. The US failure to fulfill its financial, technological and capacity-building commitment to developing countries will widen the global funding gap for climate response, weaken the capacity of developing countries for climate mitigation and adaptation, and may delay the promotion and innovation of low-carbon technologies, creating greater challenges for global climate governance.

4.3 Deepening cooperation towards global climate goals

The policy adjustments by some countries, despite posing some challenges to global climate actions, cannot change the overall trend of global green and low-carbon development. As global green and low-carbon transition grows in strength and awareness of emission reduction among businesses and the public in various countries increases by the day, the technological path of the transition is becoming clearer. Green development is moving from ideas to in-depth institutional changes and pragmatic actions. All parties should rebuild confidence, enhance consensus, promote green transition as a new driver for global economic growth, and inject more stability and certainty into climate response and global development.

4.3.1 Bringing various actors together to steadfastly promote climate actions

Strengthening scientific understanding and early warning of global climate. Facing systemic risks from climate change, countries need to deepen their common understanding of the trends and impacts of global climate change and strengthen decision support systems based on scientific assessment. There should be extensive popularization and localized application of the achievements of intergovernmental climate science institutions (such as the IPCC), and

[1] Source: 2024 US Biennial Transparency Report

policymakers' and the public's scientific literacy and risk perception should be enhanced. Climate risk assessment and early warning systems should be supported in countries, particularly in vulnerable developing nations, with targeted policy design and strengthened adaptive and response capacities.

Updating climate targets and implementing policies at a faster pace. The multilateral climate governance system under the UN should be upheld as the main channel and all parties urged to enhance synergy under the principle of "common but differentiated responsibilities". The 2035 NDC should be updated, and the policy framework, technology roadmap, and funding plans behind the goals clarified. The progress in climate actions should be tracked and the transparency and measurability of NDC implementation improved. There should be stronger vertical cooperation among central and subnational governments and the implementation of specific policies and measures sped up.

Giving full play to the important roles of non-governmental actors. A diversified governance pattern involving businesses, financial institutions, think tanks, and social organizations should be fostered at a faster pace, and international climate cooperation networks built at different levels and in all directions. Leading businesses should be encouraged to take the lead in developing science-based targets (SBTs) and drive overall industrial transformation through such mechanisms as green supply chains and climate-related disclosures. Social organizations should play an important role in information disclosure, policy design, action advocacy, and international cooperation, and governments should be prompted to raise the priority of the climate agenda and provide bottom-up policy impetus.

4.3.2 Promoting green and low-carbon transition as a new driver of global economic growth

Developing a green approach to development. Green and low-carbon transition presents a growing number of strategic opportunities for countries to grow their economy, with economic feasibility and technological maturity (Box 4-2). With abundant global market liquidity and in a low-interest-rate environment in particular, there is an urgent need for long-term funds to find investment directions with stable returns and policy safeguards. Green infrastructure, new energy systems, and green manufacturing are becoming new pacesetters for countries to attract long-term capital. The leapfrog development of new energy and green technologies and the continuously declining costs in renewable power generation, such as wind and solar, have lowered their levelized cost of electricity (LCOE) in many countries and regions compared to that of traditional fossil fuels. Technologies such as energy storage, smart grid, and electric transportation are becoming well-developed, and green industrial systems are well-positioned for large-scale expansion.

The world is in a period of opportunity for in-depth integration of green transition and economic development. According to IRENA estimation, green and low-carbon transition of the energy system could boost cumulative global GDP gains by US$98 trillion between now and 2050, with every dollar spent bringing returns between US$3-8. This would also increase jobs in renewables to 42 million globally by 2050, four times more than today. Countries should seize this historic opportunity, rise above the outdated mentality of balancing development and emission reduction, turn green and low-carbon transition into a national development strategy, and pool funds to catalyze investment, stimulate consumption, and boost long-term competitiveness.

Guiding and strengthening green investment. Countries should improve their fiscal, taxation, finance, investment and pricing policies, and

Box 4-2 Green and low-carbon transition: a new engine for global economic growth

Green and low-carbon transition has become a main driver for global economic growth. With technological breakthroughs, reduced costs, and capital inflows, green development has shifted from an environmental issue to a strategic industrial opportunity for countries, opening up more space for global economic growth.

In the past decade, new energy technologies achieved leapfrog development. The global LCOE for solar PV and onshore wind power decreased by about 82% and 62% respectively, achieving grid parity in many countries. Energy storage and smart grid technologies are maturing. In 2024, the global newly installed capacity for electrochemical energy storage exceeded 50 GW, up nearly 60% year on year. Since 2010, the cost of lithium-ion batteries has decreased by over 90%, with increased energy density and extended lifespan. Green hydrogen is also enjoying a period of rapid expansion. The World Economic Forum predicts that the cost of hydrogen will decrease by over 50% before 2030, providing solutions for hard-to-decarbonize sectors, such as heavy industry and transportation.

Green and low-carbon transition is reshaping the traditional models of growth. Green investment not only promotes new energy projects, but also boosts equipment manufacturing, infrastructure construction, financial services, and other related industries, creating a strong economic multiplier effect. The upstream and downstream green supply chains are also amplifying their economic influence. The growth of demand for mineral resources and key materials in the upstream is promoting mining and refining; equipment manufacturing and construction engineering in the midstream are creating a large number of jobs; and smart grid, electric transportation, and green consumption in the downstream are creating new market demand.

Source: Compiled by the authors based on publicly available information

system of standards for green development, and guide and encourage businesses to engage in green investment and technological innovations through tax incentives, green credit, and other ways. Green emerging industries should be developed and public and private finance guided to increase long-term investment in renewable energy, smart grid, energy storage facilities, green manufacturing, energy-saving buildings, and green transportation (Box 4-3). Green transition of traditional industries should be promoted and the circular economy developed. Developing global markets in green consumption. A green label certification system should be promoted and goods with low-carbon attributes incorporated into green consumption catalogs. Economic incentive mechanisms for green supply chains should be improved, encouraging businesses to pursue green supply chain management with tax incentives. Green products should be included in public procurement catalogs and marketing channels expanded. Financial institutions should be encouraged to launch green consumer credit products,

Box 4-3 Solar investment expected to give new impetus to Nigeria's economic development

Nigeria is rich in oil and natural gas resources, but its power grid can meet only 19.5% of domestic power demand. More than 85 million people in Nigeria live without stable power supply, and 65% of the installed power generation capacity is idle due to poor maintenance and aging equipment, which forces millions of families and businesses to rely on diesel generators as backup power sources. It is estimated that the economic losses caused by unreliable power supply account for about 5% to 7% of Nigeria's GDP per year.

It is calculated that by 2030, Nigeria's electricity demand will double. Solar energy has become a promising and cost-effective solution for energy transition with a relatively low cost. Commercial-scale rooftop solar systems cost less than other alternatives, and are quieter and less polluting than diesel generators. Backup schemes, such as battery energy storage systems (BESS), natural gas, or hydropower can also provide stable power supply when there is no sunlight.

Nigeria has already made some initial investments in solar energy, but its market potential remains huge. Investment in the future can cover self-built and self-contained power supply systems for businesses, mini grids for families or villages, or large solar power stations connected to the national grid. Based on analysis, by 2030, Nigeria's solar energy sector is expected to attract an investment of up to US$8.5 billion, create 365,000 jobs, and provide a new impetus for economic growth with better energy supply.

Source: World Bank, 2025

supporting payment in installments or loans with discounted interest in green consumption scenarios, such as energy-saving home appliances and low-carbon transportation. Green consumption by individuals should be encouraged through such incentives as carbon credits and consumption subsidies for green products. Energy conservation should be advocated, green and low-carbon ways of life promoted, and unnecessary energy consumption curbed.

Accelerating innovation of green technologies and market promotion. Cross-border R&D collaboration should be increased on key green and low-carbon technologies, such as energy storage, hydrogen, carbon capture, utilization and storage (CCUS), and zero-carbon industrial processes. International standards and open data sharing in green technologies should be coordinated, barriers to technology acquisition reduced, and the efficiency of transnational collaboration improved. The integration of AI and other cutting-edge digital technologies into green technology R&D and scenario-based application, particularly renewable energy dispatch and energy efficiency management, should be encouraged. Technology solutions should be fostered for integrated intelligent and low-carbon growth through data-driven development and algorithm optimization at a faster pace. The innovation of business models for green technology should be supported and efforts stepped up to build cooperation mechanisms to promote low-carbon technologies. Policy support plans in such areas as demonstration, promotion, finance and taxation should be formulated and coordinated to accelerate large-scale application of technologies according to their maturity. Experience sharing and capacity building in green technologies should be supported through South-South cooperation mechanisms, exploring new and applicable green mechanisms for license sharing and benefit distribution, and enhancing the accessibility and applicability of green technologies in developing countries (Box 4-4).

4.3.3 Working together to reduce barriers to the distribution of green technologies and products

Reducing tariffs on green products so that high-quality green technologies and products can be freely distributed. An inclusive green trade cooperation mechanism with clear rules should be promoted, and greater trade liberalization of green goods and services under the multilateral trading system should be advocated. The costs of cross-border distribution of green products should be reduced. Green cooperation should be deepened under regional free trade agreements, such as the RCEP and CPTPP, supporting member countries to speed up tariff reduction and facilitate customs clearance of green goods, such as clean energy equipment, low-carbon manufactured products, and sustainable agricultural produce. High-standard green free trade zones should be built. Rules in green standards and certification and carbon footprint disclosure should be coordinated, forming a well-developed mechanism for free distribution of green goods and mutual recognition of policies in the region, and providing a replicable and scalable model system for global cooperation on green trade.

Box 4-4 China's green technological innovation facilitates global emission reduction

For over a decade, China has provided high-quality clean energy products and services to the world, continuously stepping up technological innovation, and constantly upgrading wind power, PV, NEV, and energy storage technologies. Based on sustained technological innovation, a sound system of industrial and supply chains, sufficient market competition, and the advantages of a super-large market, China has rapidly promoted new energy technologies. This has effectively lowered the costs of green technology around the world, paving the way for extensive and economical use of renewables in a growing number of countries.

At present, the production costs of PV modules, wind power equipment and batteries in the US, the EU and India are about 40%, 45% and 25% higher respectively than the costs in China. In 2023, the wind and PV products exported by China helped other countries reduce carbon emissions by about 810 million tonnes. China's continuous innovation and marketing promotion in green technologies has not only increased global clean energy supply and eased global inflationary pressure, but also accelerated global climate response and green transition.

Source: Compiled by the authors based on publicly available information

Bringing new energy sectors with technologies that have yet to mature into the category of "non-actionable subsidy" or "green box subsidy" under the WTO. For new energy sectors that have yet to mature, governments can provide R&D funding, tax credits, loan guarantees, direct investment, and other forms of support to reduce costs and risks of business R&D and marketing, and step up technology maturity and commercialization. If a country's support for new energy sectors meets the WTO "non-actionable" or "green box" standard, then they should not be subject to countervailing measures by other members. Moderate industrial support may be allowed to accelerate the commercialization of new technologies, and such support should be reduced as soon as possible after economies of scale are achieved, thus averting repetitive construction in mature industries through subsidies.

Maintaining openness and cooperation along global green industrial chains, and prohibiting export restrictions on green products and their key components. Unnecessary obstacles or restrictions in the trade of green technologies and products should be eliminated to ensure regular distribution and accessibility of high-performance computing chips and other important products.

4.3.4 Increasing investment to promote green and low-carbon transition in developing countries

Increasing support for green investment in developing countries and precisely channeling financial resources to key areas of green transition. The role of MDBs and regional cooperation platforms should be strengthened and global public finance, sovereign funds, and policy financing channeled to green projects. Developed countries and emerging markets should be encouraged to set up green investment funds to provide long-term and low-cost financial support. It is recommended that green financial innovation be promoted, making full use of instruments such as green equity and green bonds, and leveraging more private finance in green and low-carbon development. Developing countries should reduce fossil subsidies, accelerate the reform of energy pricing mechanisms, and enhance the competitiveness of new energy generation markets and the anticipated return on investment. The business environment should be optimized and institutional innovation promoted, improving policy systems for climate investment and financing, and making green investment more stable and attractive and turning it into a magnet for international capital. Projects that meet sustainable and climate goals should be launched at a faster pace to promote green growth in developing countries (Box 4-5).

Box 4-5 Green growth plan for developing countries

The global economy is accelerating its green and low-carbon transition. In 2024, global investment in low-carbon energy transition increased by 11%, reaching a record US$2.1 trillion. However, to achieve global net-zero emissions by 2050, the average annual investment in global energy transition needs to reach US$5.6 trillion from 2025 to 2030, which means the current investment is only 37% of the level needed to achieve the goal. Insufficient investment not only hinders the achievement of global climate goals, but also weakens the potential of developing countries to achieve economic growth through green transition.

Launching a "green growth plan for developing countries" should be considered to mobilize public and private finance through international cooperation, focusing on supporting transitional practices of developing countries in key areas such as renewable energy, energy storage equipment, and green infrastructure, and facilitating global green transition. As a future-oriented investment in growth, it could drive economic recovery and structural upgrading of emerging markets through green projects, and also lend impetus to global low-carbon development.

Based on historical experience, supporting the sustainable development of other countries not only exemplifies the sense of responsibility of a major country, but also serves as a catalyst for a new round of global economic prosperity. In the green economy era, it is necessary to promote green development of the Global South to respond to climate change, which is also a win-win strategy to tap global potential for green growth and promote inclusive development.

Source: Compiled by the authors based on publicly available information

Encouraging localized investment and industrial cooperation in clean energy and expanding the deployment of green and low-carbon technologies. FDI in clean energy should be encouraged to create jobs by building local factories. The market adaptability of green products should be enhanced, while the transfer of green technologies promoted. Bilateral or regional facilitation mechanisms for green investment should be built and supporting policies improved, such as project approval, tax incentives, and insurance subsidies. The consumption basis of green products should be expanded and the ability of green industries to penetrate local markets enhanced through strengthened industrial capacity alignment and technology adaptation with localized investment. Business models should be innovated and markets explored, with focus on new energy technologies. Clean energy benefits should be shared among all parties based on mergers, joint ventures, or cooperation of a cross-holding nature around different links of supply chains.

4.3.5 Increasing support for adaptation in climate-vulnerable countries

Giving play to the key roles played by public finance and enhancing financial support for climate-vulnerable countries. The reform of the MDB system should be promoted, with focus on increasing climate adaptation financing for small island countries, African countries, and other LDCs, to ensure that the allocation of funds is well-targeted and equitable. Developed countries should fulfill their historical responsibilities, play a leading role, channel ODA and charitable funds towards climate adaptation, provide financial support from diversified sources, and help vulnerable countries improve their ability to resist climate risks.

Promoting technology transfer and knowledge sharing and building synergy in global climate adaptation. Countries vulnerable to climate risks should be helped to build long-term response mechanisms. National and community climate resilience should be strengthened, developing scientific and effective solutions to climate extremes and environmental changes to ensure the safety of vulnerable groups and ecosystems. Technological innovation and transfer mechanisms should be improved and the use of applicable technologies in vulnerable countries promoted. Transnational platforms should be built for knowledge sharing and capacity building, and local social governance and emergency response should be improved to mitigate the negative impacts of climate change.

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Chapter V

Joining Hands to Prevent Global Health Risks

Health is the foundation of global development. In 2024, some health indicators improved globally, progress was made in global health governance, and rapid technological iteration provided strong support for enhancing global health standards. But at the same time, global health risks remained serious due to wars and conflicts, climate change, economic slowdown, and widening inequality. The uncertainties arising from the United States' announcement of its withdrawal from the WHO and significant cuts to its foreign health assistance have further escalated global health risks. The international community needs to make concerted efforts. All parties should support the central role of the WHO in the global public health governance system, increase contingent humanitarian health assistance, strengthen the resilience of the global health system and supply chains, introduce new financing models, and adopt new technologies on a wider scope to ward off global health risks and safeguard the health of humanity.

5.1 Overall improvement in global health conditions

5.1.1 Some health indicators have improved

Global health services have become more accessible, with improvements noted in certain health indicators. According to the WHO, from 2018 to 2024, an estimated 431 million more people were covered by essential health services without catastrophic health spending, and an estimated 1.4 billion more people were enjoying healthier lives. The coverage of basic public health services, such as the prevention and treatment of infectious diseases like malaria and HIV/AIDS, hypertension management, and safe contraceptive measures, continued to improve (WHO, 2024a). WHO statistics show that Global South countries in Africa and the Western Pacific region made notable progress in improving health indicators. Malaria vaccination was expanded in Africa, with global malaria incidence reaching a historical low. Egypt and Cabo Verde joined the ranks of malaria-free countries, and some regions were on track to meet the 2030 Sustainable Development Goal of malaria elimination (WHO, 2024b). The incidence rates of HIV/AIDS, tuberculosis, and neglected tropical diseases such as Buruli ulcer and leprosy further declined globally. Maternal and child health continued to improve. In 2024, the global maternal mortality ratio for women aged 15-49 was estimated to drop to 136.38 per 100,000 (Figure 5-1), the under-five mortality rate to 35.69 per 1,000, and the neonatal mortality rate to 16.75 per 1,000 (IHME, 2024) (Figure 5-2).

A larger share of the population was protected during public health emergencies. According to the WHO, between 2018 and 2024, approximately 637 million people gained better protection in pandemic preparedness, early detection, social mobilization, and equitable access. In October 2024, the Global Health Emergency Corps (GHEC), designed to address public health emergencies, was activated for the first time to coordinate global resources to support countries affected by monkeypox outbreaks. The WHO, in collaboration with the Africa Centres for Disease Control and

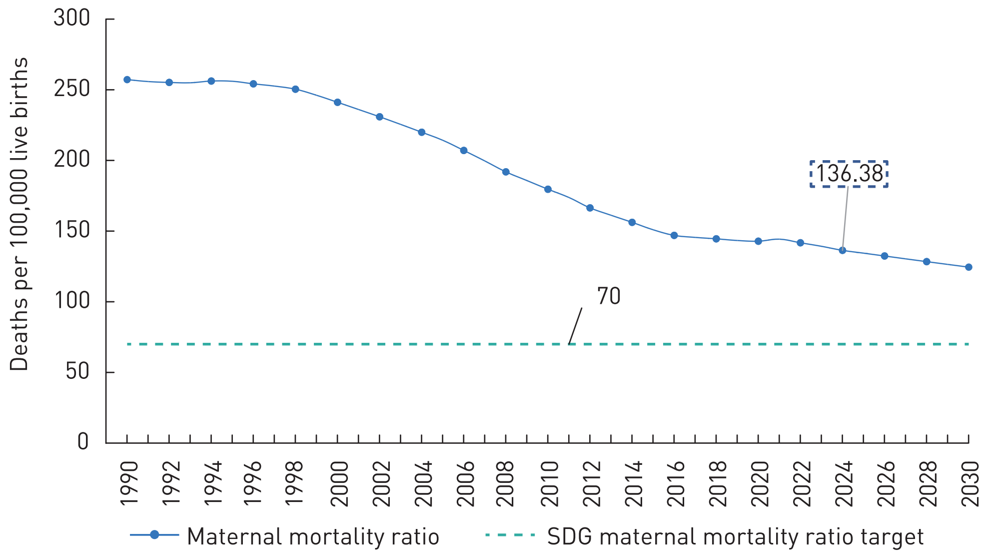

Figure 5-1 Global maternal mortality ratio among women aged 15-49, 1990-2030

Note: Data for 2023-2030 is forecast.
Source: IHME

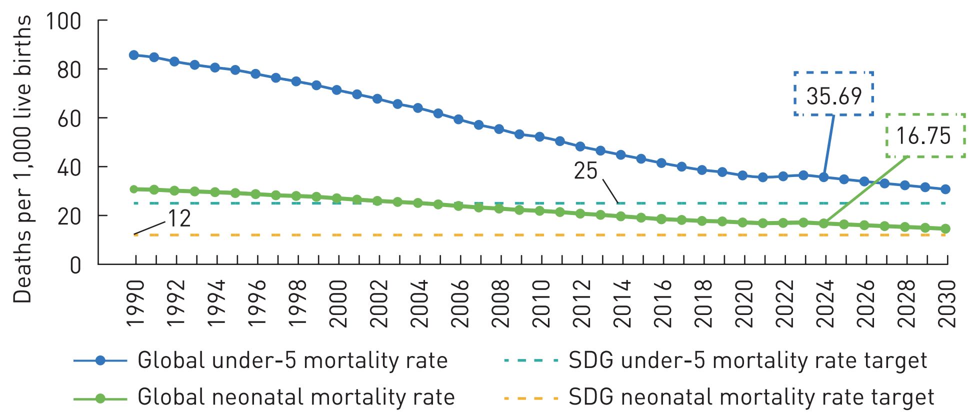

Figure 5-2 Global neonatal mortality rate and under-5 mortality rate, 1990-2030

Note: Data for 2023-2030 is forecast.
Source: IHME

Prevention (Africa CDC), distributed 259,000 monkeypox testing kits in 32 countries, and donated 6 million doses of monkeypox vaccines globally, including 899,000 doses to nine hard-hit African countries (WHO, 2024a). Regional outbreaks were brought under control. Rwanda swiftly contained an Ebola-like Marburg virus outbreak through prompt government action, rigorous monitoring, and effective community engagement, successfully averting a large-scale epidemic (Grobusch et al., 2024).

Progress was made in global efforts to address noncommunicable diseases (NCDs) and implement comprehensive interventions for health determinants. In 2024, over 100 countries implemented policies to reduce health-affecting factors. Seventy-nine countries adopted policies for tobacco control, 15 for stronger alcohol regulations, and at least 13 for higher taxes on tobacco, alcohol, and sugar-sweetened beverages (WHO, 2024a). Global drowning deaths decreased by 38% in 2021 compared to 2000 (WHO, 2024c). By the end of 2024, 70 million more people had access to mental health services, and at least 1 million patients with mental health issues had received treatment. In March 2024, the first Global Cervical Cancer Elimination Forum secured nearly US$600 million in multi-party commitments to scale up cervical cancer prevention and treatment. The plan focuses on high-incidence regions, particularly African countries, to make cervical cancer the first cancer to be eradicated through coordinated public health actions (WHO, 2024d). Additionally, countries continued to improve water and sanitation infrastructure, which led to significantly expanded access to clean drinking water and sanitation facilities in both urban and rural areas.

5.1.2 Progress was made in global health governance

The legal foundation for global health governance was reinforced. In June 2024, the World Health Assembly (WHA) adopted an amendment to the International Health Regulations (2005), which draws lessons from several global public health emergencies, including the COVID-19 pandemic. It introduced the definition of a pandemic emergency, representing a higher level of alarm on top of a public health emergency of international concern (PHEIC) to generate more effective international collaboration. It also established a coordinating financial mechanism to strengthen financial support for developing countries, enhancing their pandemic prevention, preparedness, and response-related capacities. It formed an Implementation and Compliance Committee to share experience and lessons among the states parties at the national, regional and global levels to ensure effective technical assistance, logistical support, and mobilization of financial resources to improve equity in funding and access to health products. The amendment incorporated equity and collaboration as legal obligations, aiming to fundamentally address the shortcomings of traditional regulations that prioritize monitoring over distribution, marking a milestone in global health governance.

Progress was made in negotiations on a WHO Pandemic Agreement. At the 2024 WHA, the member states agreed to continue negotiations on drafting the agreement. In October 2024, at the Berlin Global Summit, countries signed a statement in support of the agreement, demonstrating their solemn commitment to enhancing pandemic preparedness and response and ensuring equitable access to health resources. The Pandemic Agreement was adopted at the 78th WHA in May 2025. The WHO established an intergovernmental working group to continue negotiations on the Annex to Article 12 of the agreement. The outcomes will be submitted to the 79th WHA for review, and the agreement will officially enter into force upon ratification by 60 countries.

Reform of the WHO continued to advance. The WHO plays a pivotal role in global health governance and promotion, including promoting the diffusion and innovation of globally accommodative health technologies, advancing global preparedness for and response to public health emergencies, coordinating global health resources, and reducing global health inequality. Its reform and development are therefore of great importance for global health governance and resource coordination. The WHO launched its first investment plan in May 2024 to provide stable, flexible and resilient funding for the period 2025-2028. By the end of 2024, 71 member states, as well as donors from charities and the private sector, had made new commitments. Forty of them are first-time voluntary contributors. Seven of the new donors are from low-income countries, and 22 from middle-income countries (WHO, 2024e). This marks a transformation in the WHO's funding sources and represents a milestone in the organization's development process. As funding for multilateral institutions declines, the WHO is also reforming to streamline its operations.

5.1.3 Rapid technological advancements provided strong support for global health cooperation

Digital technology has made healthcare services significantly more accessible and affordable. The advancement of digital technology has accelerated cross-border data and information sharing, facilitating global health coordination, health management, and the detection, early warning, and prevention of public health emergencies. Digital health governance mechanisms improved in 2024. The WHO's Global Initiative on Digital Health (GIDH) encourages country-led digital health transformations and has set up a global digital health certification network of the digital health records of nearly 2 billion people. An analysis of 42 typical cases implemented globally between 2015 and 2024 found that telepathology diagnostic programs significantly increased specialist service coverage, effectively addressing the shortage of medical human resources (Rossetti et al., 2025). A joint report by the WHO and the International Telecommunication Union (ITU) reveals that an additional annual investment of US$0.24 per patient in digital healthcare interventions could save over 2 million NCD patients in the next decade. This investment could also prevent approximately 7 million acute cases and hospitalizations, thus significantly alleviating the burden on global healthcare systems (WHO et al., 2024).

Advancements in "AI Plus" technologies and biomedicine have significantly enhanced the efficiency of pharmaceutical R&D and the accuracy of diagnosis and treatment. The integration of AI with synthetic biology has led to precise predictions that shorten new drug development cycles and reduce production costs through automated cell manufacturing. AlphaFold3, introduced in May 2024, became the first AI system to surpass prediction tools based on real biomolecular structures, with 50% more accurate predictions. Combined with supercomputing and molecular dynamics simulations, it promises a seamless process from target discovery to novel drug design, which will accelerate the development of drug design and genome research, among other fields (McClure, 2024). Google and Harvard University jointly utilized serial-section electron microscopy to image a sample of the human temporal cortex. The study, which reconstructs the largest-to-date brain ultrastructure dataset, provides the first nanoscale "structure-function" map for neural circuit research. This advancement has deepened understanding of the brain's function and disease mechanisms, and advanced diagnostic and therapeutic technologies (Harvard Gazette, 2024). In the field of clinical therapy, therapy and new drug R&D saw rapid evolution. In the field of cancer treatment with immunotherapy and targeted therapy, a Chinese research team dedicated to CAR-T therapies developed a non-viral PD1 site-specific integrated CAR-T therapy, which has achieved an objective response rate of 100% and a complete response rate of 87.5% in treating patients with relapsed lymphoma. The team further followed the efficacy of CAR-T targeted therapies for solid tumor treatment, with the aim of higher precision (Zhao et al., 2025) (Box 5-1). In the field of genetic engineering, the world's first CRISPR gene-editing therapy (Casgevy) for the treatment of sickle cell disease and β-thalassemia was approved for marketing in the UK and the US (GOV.UK, 2023). In 2024, the *Science* journal named the long-acting HIV/AIDS drug lenacapavir its "Breakthrough of the Year". It is a groundbreaking achievement in the long-term treatment of the disease, greatly improving patient adherence and reducing treatment burdens, offering new hope for preventing mother-to-child transmission.

Box 5-1 Chinese research team's breakthrough in CAR-T cell therapy for solid tumors

CAR-T cell therapy (Chimeric Antigen Receptor T-cell Therapy) is a revolutionary cancer immunotherapy that has demonstrated remarkable efficacy in hematologic malignancies such as leukemia, lymphoma, and multiple myeloma. However, its application in solid tumors (pancreatic cancer, lung cancer, etc.) still faces significant challenges. The main obstacles include tumor microenvironment barriers, insufficient T-cell infiltration, and poor localization, which limit therapeutic efficacy. To address these challenges, the National Natural Science Foundation of China (NSFC) has been funding research in this field. Recently, a research team at Shandong University in eastern China developed a collagenase nanogel backpack delivery system that significantly enhances the therapeutic efficacy of CAR-T cells in pancreatic cancer models by improving their tumor-penetrating ability. The findings were published in *Nature.* The research provides a novel solution to the core challenge of the limited efficacy of CAR-T cells in solid tumors, offering broad prospects for clinical application as it hopefully advances CAR-T cell therapy from hematologic malignancies to solid tumors.

Source: NSFC

5.2 Lingering risks in global health

5.2.1 Multiple long-term factors continued to impact global health

The world continues to face a heavy disease burden. NCDs are the leading cause of death worldwide and also one of the major causes of death across all income groups. NCDs cause the death of more than 40 million people each year, accounting for 74% of all global deaths. The root causes of NCDs are a series of modifiable behavioral risk factors such as smoking, unhealthy diet, and harmful alcohol consumption. These risk factors can lead to overweight, elevated blood pressure, and increased cholesterol, and ultimately result in diseases (WHO, 2025a). Approximately 1.8 billion adults worldwide suffer from heart diseases, type 2 diabetes, and cancers due to the lack of physical activity (WHO, 2024f). The number of obese and diabetic patients keeps rising rapidly, with over 800 million adults worldwide living with diabetes (WHO, 2024g). More than one-third of the global population suffer from neurological conditions such as migraines, strokes, and dementia, which have become leading causes of disability. Due to the uneven distribution of treatment resources, over 80% of deaths and health impairments from neurological disorders occur in low- and middle-income countries (Harris, 2024). Global issues such as drug and alcohol abuse are becoming increasingly severe. Each year, 2.6 million people die from alcohol consumption, accounting for 4.7% of all deaths, and 600,000 die of psychoactive drug use (WHO, 2024h).

Armed conflicts also had severe impacts on health and healthcare systems. By the end of 2024, the number of forced displacements worldwide had reached a record 123 million. This included nearly 43.7 million refugees and 4.4 million individuals stripped of their nationality, who were denied access to basic rights such as healthcare and education. Conflicts and wars also halted public health services like vaccination and infectious disease control in the regions affected, increasing the risk of disease outbreaks. Ongoing conflicts also led to significant mental health risks, with a sharp increase in demand for intervention services such as psychological counseling and trauma therapy (Mediazona, 2025). In 2024, the WHO recorded 1,674 attacks on medical facilities across 16 countries and regions due to violent conflicts and other causes that resulted in disruptions in healthcare services and significant casualties.

Climate change is affecting human life and health in multiple ways, threatening the fundamental elements of health – clean air, safe drinking water, nutritious food supply, and secure shelter – and the risks are reversing decades of progress in global public health. It is estimated that between 2030 and 2050, climate change will cause approximately 250,000 additional deaths per year from malnutrition, malaria, diarrhea, and heat stress. By 2030, the direct health damage costs from climate change will reach US$2-4 billion annually (WHO, 2025b).

Growing socioeconomic inequality exacerbates health disparities. Health equity has a greater impact on health status than genetic factors or access to medical services. The 2025 WHO annual report says residents in impoverished areas face greater socioeconomic challenges and higher health risks. This leads to disproportionately increased incidence and mortality rates for certain diseases, as well as poorer life expectancy and healthy life expectancy (WHO, 2025c). High-income countries have a healthy life expectancy that is 12.61 years higher than that of low-income countries and 8.16 years higher than that of lower-middle-income countries. Low- and lower-middle-income countries account for 94% of global maternal deaths. Excessive concentration of production and R&D of medical necessities and inequality in profit and value also severely impact fair access to vaccines and medicines. The African region has long faced issues such as vaccine and medicine shortages, with 68 countries reporting stockouts of essential medicines in 2023 alone (WHO, 2024i).

There should be greater emphasis on developing health systems. Health systems and infrastructure play a foundational role in improving global health, yet the input remains insufficient (Holst et al., 2023). In 2023, the largest proportion of global health aid funding was allocated to infectious disease prevention and control, accounting for 53.54%, followed by maternal and child health at 27.24%, while only 6.92% of funds was earmarked for health systems.

5.2.2 The US withdrawal from the WHO has further weakened global health governance efficiency

The US withdrawal from the WHO will have a significant impact on global health governance and infectious disease response. The first is a significant budget shortfall at the WHO. In 2026-2027, the WHO is projected to face a funding gap of US$560 million to US$650 million, which will undermine its ability to coordinate global responses to health emergencies, provide technical guidance on disease prevention and treatment, and facilitate the mobilization and allocation of global health resources. The second is the disruption of the global health cooperation ecosystem. The US withdrawal could make Pandemic Agreement negotiations less difficult, and conversely facilitate the agreement's conclusion, as there is still consensus across the international community on working together to address global health risks. But given that major countries are regarded as role models in global governance, the US withdrawal may affect the willingness and inclination of other countries to participate in global health governance. Besides, the shift in health cooperation from multilateral to bilateral or regional configurations will lead to increased fragmentation of global health governance. Finally, there is the possible failure to address global health risks, including those within the US itself. In an interconnected world, a WHO with a weaker central role undermines the collective defense capacity against pandemics and ultimately makes every country, the US included, less secure (Gostin et al., 2025).

Risks of decoupling in global bioinformation data are increasing. The US National Institutes of Health (NIH) announced that it would prohibit institutions in "Countries of Concern" such as China, Russia, and Iran from accessing key NIH-controlled data platforms, including the Database of Genotypes and Phenotypes (dbGaP) and the cloud-based AnVIL platform for genomic data analysis. These data are crucial dependencies for researchers worldwide in conducting studies on biomedicine, disease mechanisms, and precision therapy. Take cancer research for example: NIH's The Cancer Genome Atlas (TCGA) program and Genomic Data Commons (GDC) provide omics data covering 33 cancer types and supporting over 60% of global tumor drug target screening studies. Reducing scientific and technological data sharing and cooperation to a political tool will make global collaborative efforts in biomedicine costlier, the production and development of vaccines and medicines even more centralized, and global industrial and supply chains even more vulnerable.

5.2.3 Sharp decline in global health funding exacerbated vulnerability of global health systems

Global development assistance for health saw a drastic decline. Development assistance for health (DAH) is an important health funding source for some developing countries (Figure 5-3). But in recent years, official development assistance (ODA), including DAH, has seen sharp cuts. Global DAH peaked in 2021 and began to decline in 2022. It was projected that it would drop to US$60.9 billion in 2024, a 27.5% decrease compared to 2021 (Figure 5-4). The new US administration announced the shutdown of the US Agency for International Development (USAID) and cuts to aid funding in areas such as climate, global health, and education (US Foreign Affairs, 2025), which will pose greater challenges to health financing in regions like Africa.

Developing countries face direct disruptions to their epidemic preparedness, basic health service delivery, and health infrastructure. The

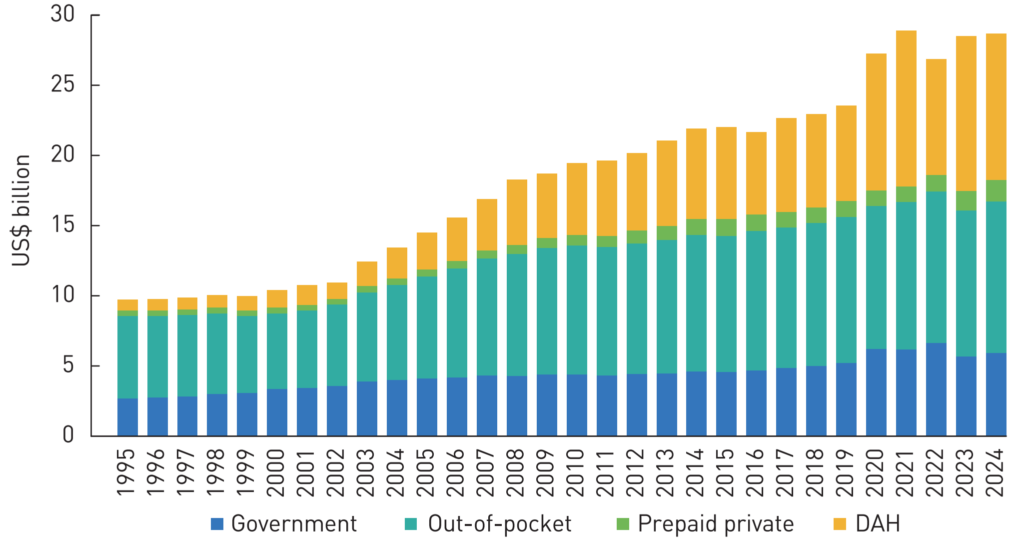

Figure 5-3 Composition of health expenditure sources in low-income countries in World Bank classification, 1995-2024

Note: Data after 2021 is forecast.
Source: IHME

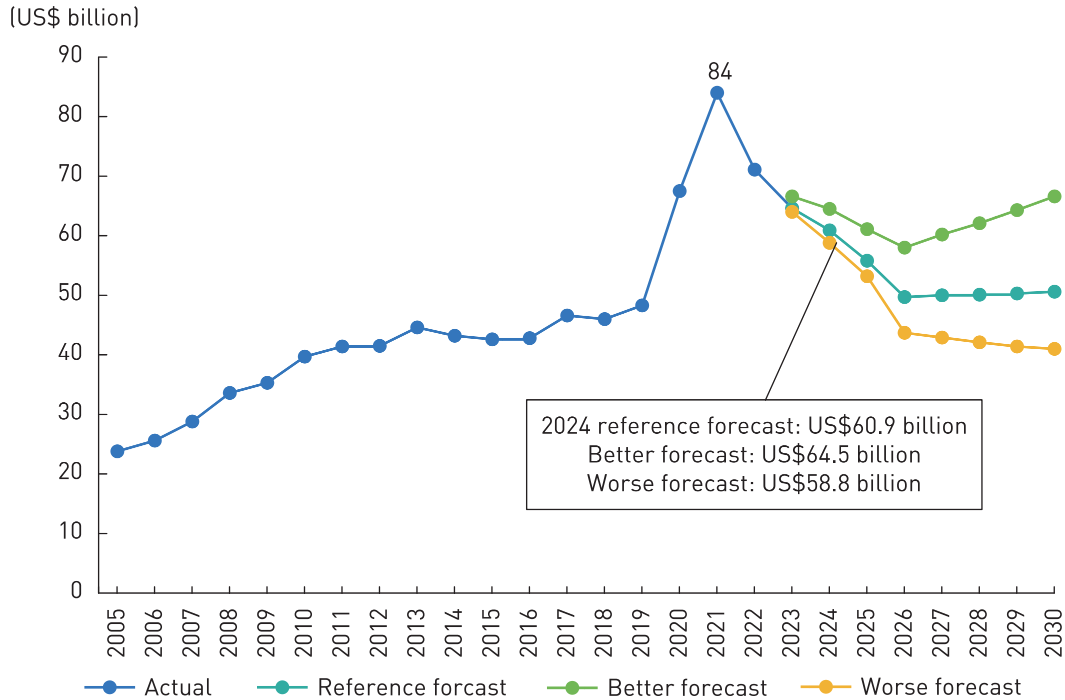

Figure 5-4 Total global DAH, 2005-2030

Note: Data after 2023 is forecast.
Source: IHME

suspensions or reductions in some developed countries' ODA are disrupting health system functions in certain countries. The severity and scale of disruptions to healthcare services are comparable to those during the peak of the COVID-19 pandemic, alongside a very severe shortage of medicines and health products. Over 40% of countries experienced disruptions to key information systems, including collaborative surveillance and emergency systems, health management information systems, disease-specific reporting systems, lab information systems, and household/population surveys. In particular, the shutdown of the USAID and significant cuts in US international aid have stalled multiple global health assistance programs, such as those targeting malaria and HIV/AIDS in regions like Southeast Asia and Africa. Public health security initiatives for infectious disease testing and surveillance have been shelved. The incidence of vaccine-preventable diseases including malaria, tuberculosis, and polio could potentially rise. A study by UNAIDS country offices estimates that if the US President's Emergency Plan for AIDS Relief is discontinued, up to 11 million new HIV infections and nearly 3 million HIV-related deaths could occur in 26 countries by 2030 (KFF, 2025).

Developing countries face sustained pressure on their own health investments. Against the backdrop of economic slowdown and shifting development priorities, governments no longer consider health expenditure a priority. Some debt-burdened developing countries face weak domestic health financing capacity and high out-of-pocket payments. The result is significant challenges in the basic health infrastructure and the accessibility and affordability of essential health supplies.

5.3 Joint efforts to avert and contain global health risks

The risks and uncertainties global health faces today can be addressed in three ways. First, to mitigate the impact of the US withdrawal and sharp aid decline, the gaps should be filled immediately by providing contingent humanitarian assistance to the regions affected and ensuring access to basic public health and medical services in vulnerable areas. Second, the global supply chain for essential health products should be made more resilient, and national health systems should be strengthened. Collaboration is needed to improve the social determinants of health. Third, institutional innovation is required so that technology and governance mechanisms enhance the capacity, efficiency, and health outcomes of the global health system.

5.3.1 Supporting the central role of the WHO and increasing contingent humanitarian health assistance

Upholding the WHO's central role in global health governance. Countries need to continue supporting multilateral health governance and increase their support for the WHO. This can be done by increasing their arrears and voluntary contributions to fill the financial gap caused by the US withdrawal. They also need to facilitate better resource allocation at the WHO and other international organizations to fill the gaps in emergency supplies, manpower support, and technical guidance in a swift and targeted manner for suspended infectious disease prevention and maternal and child health programs, to prevent the collapse of the prevention and treatment system and mitigate the impact as much as possible. For instance, countries with a high burden of HIV/AIDS should be supported to procure antiretroviral drugs to prevent large-scale disease outbreaks due to project disruptions. Moreover, regional health cooperation should be enhanced. This includes practical cooperation in emergency supplies stockpiling, epidemic information sharing, medical technology collaboration, and talent development under the existing framework of regional multilateral cooperation mechanisms. For example, the Africa CDC should be supported in coordinating member states' resources to expand laboratories in South Africa and Kenya and enhance their capacity to monitor infectious diseases, and reduce reliance on technical assistance from a single country. A regional cross-border medical mutual assistance mechanism should also be established to offer emergency medical supplies and technical support to the countries and projects affected and close their funding gaps.

Increasing humanitarian assistance to conflict- and disaster-affected areas. Emergency medical and health assistance should be provided to countries affected by war and regions prone to natural disasters through international organizations such as the UNHCR, the International Committee of the Red Cross (ICRC), and the WHO. To ensure planned immunization, services such as "vaccination without borders" can be provided by setting up temporary vaccination sites, with priority given to displaced children and other vulnerable groups. Other actions include mobile rapid vaccination stations in refugee camps, medicine delivery services for the elderly, and incorporating basic health services into the conditions for distributing humanitarian cash assistance. Countries may provide conflict-affected areas with essential medical supplies such as mobile clinics and first aid kits through multilateral and bilateral health aid or humanitarian assistance. All conflicting parties should observe the Geneva Conventions and relevant provisions of the Universal Declaration of Human Rights to grant relevant organizations and individuals access to conflict zones for rescue operations and ensure the safety of rescuers. This is essential for aid personnel, supplies, and services to reach the areas and populations most in need.

5.3.2 Enhancing resilience of the global supply chain for essential health products and the health service system

Increasing support for the pharmaceutical industry in Africa and other regions. In the face of declining aid funds and rampant unilateralism, local production of medical supplies will be a critical path for developing countries to ensure their own or regional medical supplies going forward. In terms of technology sharing, measures such as intellectual property waivers during pandemics or other emergencies, or patent-sharing agreements for the least developed regions (e.g., mRNA technology open platforms) may be leveraged to help countries with a certain degree of production capacity obtain licenses for manufacturing immunization vaccines and essential medicines, and gradually enhance local production capacity starting with the mass production of generic and local drugs. Regarding procurement and access criteria, international multilateral institutions and regional multilateral organizations should gradually advance the mutual recognition system for certification standards in the procurement of global public health goods, thereby enriching the global production and supply reserves for urgently needed health materials such as vaccines and essential medicines. The WHO, Global Alliance for Vaccines and Immunization (Gavi), and other multilateral institutions and organizations may provide customized training (such as the GMP audits and quality traceability system) for regulators in developing countries to narrow the gap in standard implementation, or foster global dialogue mechanisms engaging vaccine and drug regulators and procurement authorities to enhance regulatory and procurement transparency. In terms of stockpiling and supply, the LDCs should be helped to build national emergency medical material reserves for products including masks, ventilators, and vaccines to avoid supply disruptions caused by the withdrawal of a single donor. Finally, countries need to continue global sharing of bioinformation databases and provide data support for vaccine and drug R&D worldwide. Establishing a "data staking pool" may be considered to grant countries or institutions that share pathogen gene sequences and clinical trial data priority access in subsequent vaccine or drug distribution, or allocate a percentage of patent licensing fees as remuneration.

Strengthening health systems and augmenting the health-impacting external environment. Countries need to prioritize safeguarding the health of their citizens in national development and ensure investments in public health. Systems for community-focused healthcare delivery and universal healthcare should be improved. This encompasses continued efforts to strengthen primary healthcare, advance universal health coverage, bolster the primary-level medical service system and medical personnel training, and explore the application of digital health technologies such as telemedicine and smart healthcare. Countries also need to enhance policies that promote the pharmaceutical industry and regulatory capabilities in the sector. This includes reducing barriers for foreign investment through digital transformation and alignment with international standards and certifications, optimizing and accelerating new drug approval and testing procedures, and establishing essential medicine lists that support local production through procurement and pricing policies. The health-impacting external environment should be continuously improved by building a health-friendly society through enhanced community sanitation and living conditions and strengthened infrastructure for water, sanitation, electricity, and other essential services; promoting a healthy lifestyle and health awareness; addressing social issues such as obesity, alcoholism, and substance abuse; and setting up a support system for psychological and mental health improvements. Finally, concrete actions should be taken to mitigate the health impacts of climate change, and an early warning system for climate-related health risks should be established.

5.3.3 Enhancing the effectiveness of health risk prevention with innovative financing methods and new technologies

Introducing new global health financing mechanisms. Countries need to deepen cooperation with health-related international organizations and aid agencies, such as the WHO, UNICEF, Gavi, ICRC, and international multilateral institutions like the World Bank, Asian Infrastructure Investment Bank (AIIB), Asian Development Bank, and African Development Bank. This will enhance the sustainability of health financing and ensure planned transitions (Box 5-2). They need to give full play to multilateral development banks (MDBs) as instrumental supporters for developing countries in areas such as immunization programs, health system improvement, and response to climate change and health challenges. They also need to make good use of bilateral health assistance and non-governmental players by encouraging and guiding private companies, foundations, and other institutions to donate off-patent drugs (such as anti-tuberculosis medications) to low-income countries and extending technology licensing to reduce procurement costs for recipient countries.

Promoting new technologies and improving the global system for public health emergency early warning, prevention, and response. Qualified countries and international multinational organizations are recommended to build and

Box 5-2 AIIB and Gavi form new partnership to invest in health

MDBs serve as a critical channel for countries to secure sustainable immunization and healthcare financing and expand existing funding options. With official aid funding declining, MDBs play an ever more crucial role in health financing for developing countries. The AIIB and Gavi signed a cooperation agreement to scale up sustainable funding of health and immunization projects in low-income and lower-middle-income countries.

Under the agreement, the AIIB will provide US$1 billion in financing to support critical investments including in health systems and immunization infrastructure strengthening, vaccine procurement, and the introduction of high-impact vaccines from middle-income countries. It will also provide targeted assistance to countries that are transitioning out of Gavi support.

Source: Compiled by the authors based on AIIB information improve AI-based early warning platforms for global diseases to support epidemic and virus data sharing. Regional multilateral organizations or neighboring countries are recommended to set up cross-border joint prevention and control mechanisms, such as "health corridor" pilot initiatives in border areas, with consistent infectious disease screening and quarantine protocols (e.g., the malaria prevention belt in Southeast Asia). Inclusive technologies, such as low-power offline electronic information archiving systems in Africa, should be adopted on a larger scale in developing countries. A "Smart Vaccination Certificate +" initiative that links to social services such as food rationing and education access should be advanced.

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Chapter VI

Jointly Promoting Agricultural Development to Empower Global Poverty Reduction and Bolster Food Security

While global food security and the extreme poverty situation are improving, they are likely to be hindered in the future by the rising uncertainty in trade policies, intensive impacts of climate change, significant reduction of development assistance resources, and the slow growth of agricultural productivity in low-income countries. The international community and low-income countries should make agricultural development a policy priority, strengthen the effectiveness of agricultural infrastructure investment, and improve agricultural technology innovation and extension. They should also enhance the climate resilience of agricultural and food systems, coordinate the governance of food security and agricultural trade and investment, and focus on the living conditions of vulnerable countries and vulnerable populations[1]. Such efforts would not only contribute to achieving the food security and poverty reduction goals but also bring stability and certainty to global development.

6.1 Global food security and the poverty situation are gradually improving

6.1.1 Global food security has generally improved, but deteriorated in low-income countries

Global food insecurity has been gradually declining. In 2024, 2.3 billion people worldwide were affected by moderate to severe food insecurity, accounting for 28.0% of the global population, down 0.4 percentage point from 2023 (FAO et al., 2025). Among them, 828 million faced severe food insecurity, accounting for 10.4% of the global population, a decrease of 0.3 percentage point from the previous year. In 2024, about 673 million people were undernourished, 15 million fewer than in the previous year, with a malnutrition incidence rate of 8.2%, down 0.3 percentage point from 2023 (FAO et al., 2025).

Food security in low-income countries has further deteriorated. In 2024, the proportion of people experiencing moderate or severe food insecurity in low-income countries reached 64.95%, 1.27 percentage points higher than in 2023. In lower-middle-income and upper-middle-income countries, the proportion of people facing food insecurity declined by 1 percentage point and 0.53 percentage point respectively from the previous year, indicating a modest improvement (FAO et al., 2025). Table 6-1 shows food insecurity in countries with different income levels from 2014 to 2024.

6.1.2 Global poverty reduction is recovering slowly

Global poverty reduction is gradually recovering. In 2024, the number of people living in extreme poverty worldwide was approximately 692 million, a decrease of 13.4 million compared to 2023 but 81.24 million more than before the outbreak of the COVID-19 pandemic in 2019. The global extreme poverty incidence

[1] Vulnerable populations generally mean those who are the most food-insecure and the poorest in this chapter.

Table 6-1 Proportion of population experiencing moderate or severe food insecurity in countries with different income levels (%), 2014-2024

Year	Low-income countries	Lower-middle-income countries	Upper-middle-income countries	High-income countries
2014	53.59	29.21	12.25	8.37
2015	54.47	29.18	13.00	7.98
2016	57.64	30.16	13.53	7.60
2017	58.82	30.37	15.90	7.70
2018	58.24	34.13	15.30	6.99
2019	58.30	36.10	14.06	6.80
2020	60.79	43.36	15.92	7.24
2021	62.53	43.66	15.26	6.94
2022	64.39	42.54	14.28	7.65
2023	63.68	42.75	13.37	8.05
2024	64.95	41.75	12.84	7.75

Source: FAO

in 2024 was 8.5%, a decrease of 0.24 percentage point from 2023 (Figure 6-1) (World Bank, 2024). Despite this modest improvement, poverty reduction has been markedly slower than in the pre-pandemic decade due to multiple uncertainties. The number of people in extreme poverty fell by 1.07% in 2023 and 1.90% in 2024, well below the average annual decline recorded between 2010 and 2014 (Figure 6-2). If the current trajectory continues, the global extreme poverty incidence is expected to be 7.6% in 2030, meaning that the 2030 Agenda for Sustainable Development's goal of eradicating extreme poverty is unlikely to be achieved.

Multidimensional poverty remains high. According to survey data from 112 countries and regions between 2011 and 2023, 1.1 billion people lived in multidimensional poverty, with a multidimensional poverty incidence rate of 17.46%. Among them, 500 million lived in conflict-affected countries and regions, and 83.7% in rural areas (OPHI et al., 2024).

6.1.3 Progress in food security and poverty reduction shows significant regional and urban-rural disparities

Sub-Saharan Africa (SSA) faces particularly grave poverty and food security challenges. From 2019 to 2024, the number of people experiencing moderate or severe food insecurity in SSA increased by an average of 36.18 million per year, making it the most severely food-insecure region. In 2024, the number of people living in poverty in SSA continued to rise, reaching 464 million, an increase of 6 million compared to the previous year. The poverty

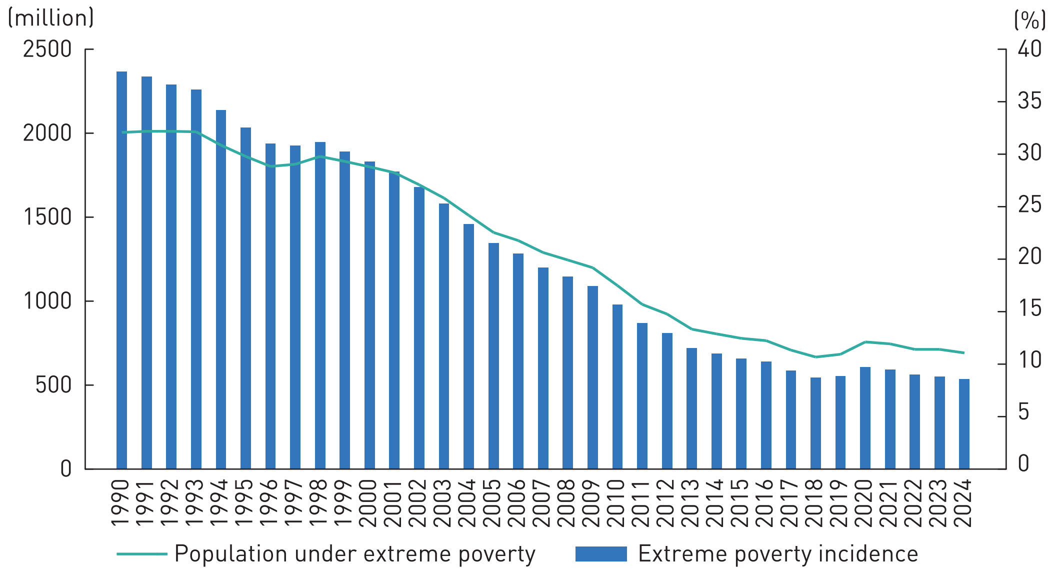

Figure 6-1 Trends in the extreme poverty incidence and the number of impoverished people, 1990-2024

Note: The standard for extreme poverty is US$2.15 per person per day; the same applies below.
Source: World Bank

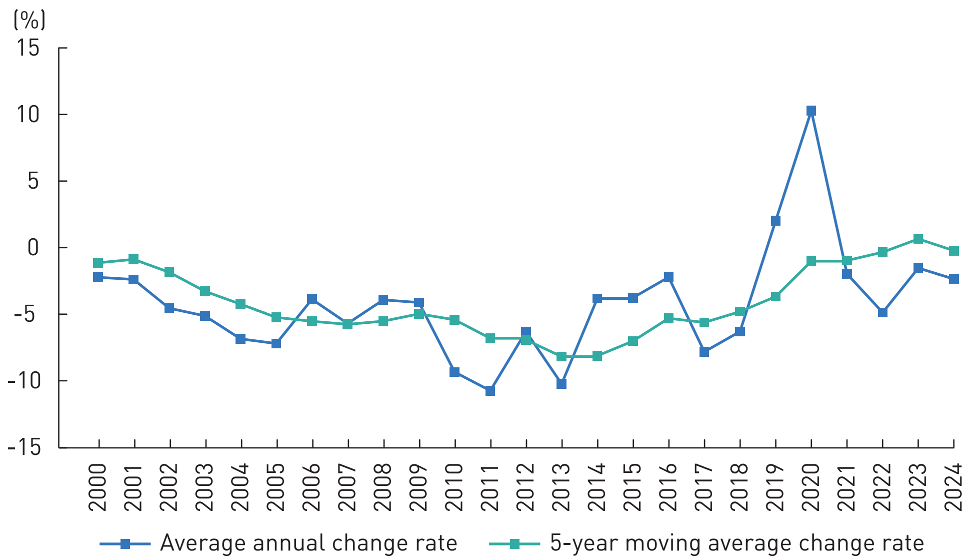

Figure 6-2 Change in the population living in extreme poverty, 2000-2024

Source: World Bank

incidence rate stood at 36.5% (World Bank, 2024). SSA accounts for 60% of the world's extremely impoverished population and 50.27% of the population living in multidimensional poverty. From 2019 to 2024, the number of people living in poverty in SSA increased from 411 million to 464 million, with the region's share in the global impoverished population rising from 60.09% to 67.05% (Figure 6-3).

The issue of poverty and food security in South Asia has been somewhat alleviated. The population experiencing moderate or severe food insecurity declined from 826 million in 2023 to 791 million in 2024. The incidence rate of food insecurity dropped by 2.1 percentage points, indicating some improvement. The situation of extreme poverty in South Asia also improved, with the incidence rate of extreme poverty decreasing from 8.7% in 2023 to 7.6%, and the extremely poor population falling from 168 million to 149 million. But it remains one of the regions with a high concentration of people living in poverty (World Bank, 2024).

Latin America and the Caribbean have made certain progress in eliminating hunger. In 2024, the proportion of people facing moderate or severe food insecurity in this region was 25.2%, down by 1.5 percentage points from 2023. Around 8.6 million people experienced improvements in their food security. The nutritional situation has improved remarkably. The incidence rate of malnutrition was 5.1% in 2024, with more than 1.5 million people seeing their nutritional situation improved (FAO et al., 2025). The incidence rate of extreme poverty in Latin America and the Caribbean was 3.3% in

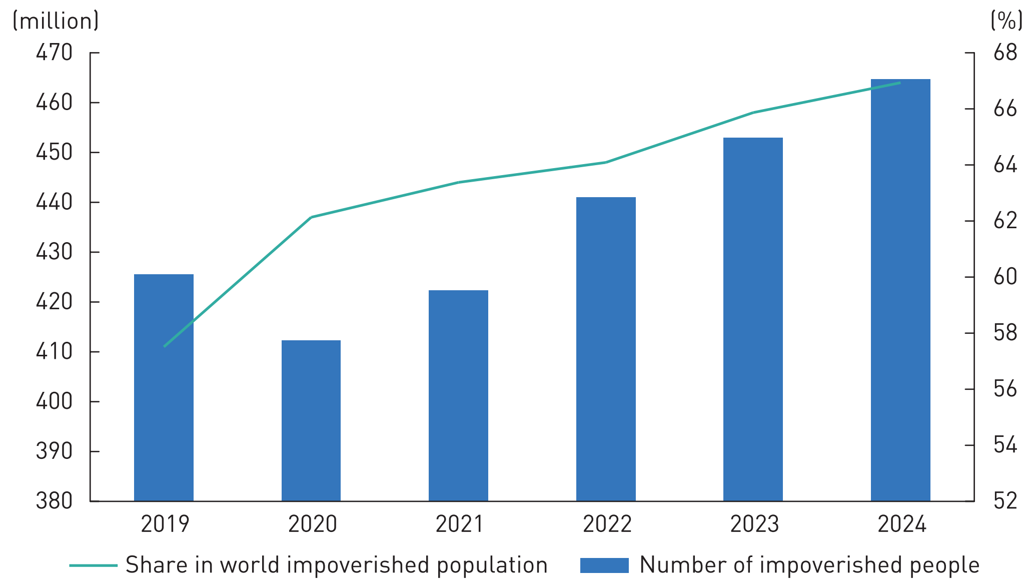

Figure 6-3 Number of impoverished people in Sub-Saharan Africa and share in global impoverished population, 2019-2024

Source: World Bank

2024, with 22 million people living in extreme poverty, roughly the same as in 2023 (World Bank, 2024).

The incidence rate of food insecurity was higher in rural areas compared to the urban areas of underdeveloped countries. In 2023, 31.9% of the rural population experienced moderate to severe food insecurity, 6.4 percentage points higher than in urban areas (FAO et al., 2024). Except high-income countries where food insecurity among urban populations is more severe, rural areas in countries in other income groups had higher rates of food insecurity. In low-income, lower-middle-income and upper-middle-income countries, the proportion of people in rural areas experiencing moderate to severe food insecurity was higher than in urban areas by 3.8, 4.9 and 4.7 percentage points respectively. Food security issues were particularly pronounced in the rural areas of low-income countries, where as much as 63.7% of the population faced moderate to severe food insecurity (Table 6-2).

Poverty is more severe in rural areas. Although rural populations accounted for 43% of the global total in 2022, 77.39% of the world's extremely poor lived in rural areas (World Bank, 2024), where the extreme poverty rate was 11 percentage points higher than in urban areas. From 2015 to 2018, the share of rural residents among the global poor increased by more than 2 percentage points (World Bank, 2020). According to 2021 estimates, rural areas also exhibited a higher incidence and intensity of multidimensional poverty, with 84% of those in severe multidimensional poverty residing in rural regions (UNDP et al., 2021). In 2022, the rural extreme poverty rate stood at 46% in SSA, which was 26 percentage points higher than in urban areas, making it the region with the largest urban-rural extreme poverty gap (Figure 6-4).

Table 6-2 Comparison of food security situation in urban and rural areas in countries by income level

	Share of population in severe food insecurity (%)			Share of population in moderate to severe food insecurity (%)		
	Rural	Suburban	Urban	Rural	Suburban	Urban
Low-income countries	24.9	28.5	22.8	63.7	69.5	59.9
Lower-middle-income countries	17.8	18.7	16.1	45.6	43.6	40.7
Upper-middle-income countries	3.5	2.6	2.7	16.4	9.9	11.7
High-income countries	1.5	2.1	2.2	7.8	8.3	9.4

Source: The State of Food Security and Nutrition in the World 2024, FAO, July 24, 2024

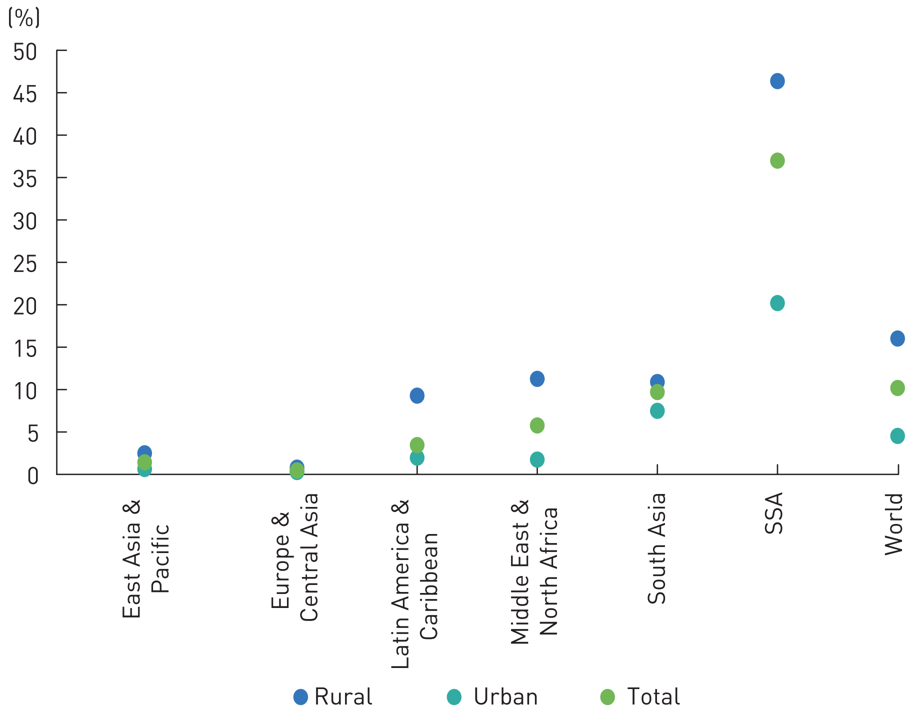

Figure 6-4 Incidence rate of urban and rural poverty across various regions in 2022

Source: World Bank

6.2 Global food security improvement and poverty reduction still face severe challenges

6.2.1 Rising trade policy uncertainty undermines food supply chains and poverty reduction efforts

Tariff hikes will exacerbate the instability of global food systems. Trade barriers represented by tariffs not only go against the multilateral trading system's rules for agriculture, primarily governed by the WTO Agreement on Agriculture, but also exacerbate the fragmentation of the global food market, cause greater volatility in food prices, and lead to supply-demand imbalance. They impact global food security and ultimately undermine the basic right to survival of the poor in developing countries.

Tariff hikes will undermine the stability of global food supply. Affected by the US "reciprocal tariff" policy, global agricultural food trade will contract by 3.4%-4.7% (Glauber et al., 2025). Combined with some countries' restrictions on agricultural produce export and the risk of shipping disruption caused by geopolitical factors, the food trade mix may be distorted, and the flow of international food trade may change. Cross-border circulation costs could increase, triggering trade diversion and substitution, and weakening the stability of food supply.

Tariff hikes may exacerbate regional disparities in global food security. Uncertainties in food production and trade could increase the cost burden of imports, especially for SSA, which relies heavily on food imports and may face more severe poverty and food insecurity issues (Emediegwu, 2025). The food insecurity problem will also become more pronounced in 44 low-income food-deficit countries worldwide.

They may worsen the misallocation of global agricultural production resources. Agricultural production costs are likely to rise rigidly, and prices of key agricultural inputs such as food and fertilizers will increase. Smallholder farmers in developing countries with limited resources may face survival pressures in production. The diffusion of agricultural technology could be hindered, cross-border agricultural investment suppressed, and opportunities and channels for developing countries to access advanced agricultural technologies reduced.

Trade policy uncertainty adversely impacts the economic growth and employment of vulnerable groups. Recently, the huge uncertainty over the trade policies of certain countries has exacerbated global trade tensions and significantly affected the expectation of global economic growth. Multiple international organizations have repeatedly lowered their economic growth forecasts. Uncertainty in trade policies may cause large fluctuations in commodity prices, which will restrict the growth prospects of two-thirds of developing economies (World Bank, 2025). The "reciprocal tariff" policy that the US declared on April 2, 2025 has significantly increased the average tariff rate of many developing countries' exports to the US, and the industrial development and employment of export-oriented countries have been the first to bear its brunt (Box 6-1).

Box 6-1 US tariffs to impact Cambodia's employment and poverty reduction achievements

In 2024, Cambodia's total exports amounted to US$26.2 billion, with nearly 40% of its goods sold to the US. Among these exports, 97.7% consisted of shoes, hats, and clothing. The weighted average tariff between Cambodia and the US was merely 7.21%, and 10.55% of tariff lines were entitled to zero tariff. After the unilateral imposition of tariffs by the US, Cambodia's textile and clothing industry, which has created more than 800,000 jobs, is expected to suffer a heavy blow, and the poverty reduction achievements and social stability developed over the years will face huge challenges.

Source: Compiled by the authors based on publicly available information

6.2.2 Climate change threatens food production and the livelihoods of the impoverished population

Climate change poses a serious threat to food production in low-income countries. The speed and extent of climate change have far exceeded expectations, and agriculture bears the brunt. Between 2007 and 2022, agricultural losses accounted for 23% of the total losses incurred by climate disasters (FAO, 2024). In 2024, 96 million people in 18 countries faced acute food insecurity due to extreme weather, with Southern Africa among the most severely impacted regions (FSIN et al., 2025). The phenomenon El Niño in 2023-2024 caused widespread drought in Southern Africa. Corn production in Zimbabwe and Zambia was halved, regional stock were depleted, and 30 million people needed food aid (WFP, 2024). Studies show that from 2020 to 2025, climate change will cause welfare losses of US$0.5-1.1 trillion to agriculture in SSA and South Asia (Chen et al., 2024).

Climate change threatens the livelihoods of the poor. As high as 17.9% of the world population suffer serious losses due to climate change and lack the ability to cope and recover. The widespread poverty makes it difficult for everyone exposed to extreme weather events to cope with the impacts of climate change (World Bank, 2024). Developing countries, premised to have limited financial resources, have to spend a lot to mitigate the results of natural disasters; hence, support for poverty reduction and development is decreasing.

6.2.3 Significant reduction in development resources increases the risk of hunger and poverty

In recent years, some developed countries have significantly cut development aid funds and public product supply. This has hugely impacted food security, agricultural development, poverty reduction, and other undertakings in underdeveloped countries. In 2024, the development aid funds provided by the Development Assistance Committee of the OECD decreased by 7.1% from 2023 (OECD, 2025). The US is the largest donor of development aid, and its drastic cuts in foreign aid and adjustments to its priorities will have a serious impact on the agricultural and food security sectors. The funding shortfall of development agencies that rely heavily on voluntary donations, such as the World Food Program (WFP), will also widen. It is anticipated that the total funding for WFP in 2025 will decrease by 40% from 2024 (WFP, 2024). While cutting operating costs by laying off employees and closing offices, the WFP will have to further reduce the scope of aid and food rations. It is estimated that the number of people receiving emergency assistance from the WFP will decrease by 21% in 2025, and as many as 16.7 million people may lose food assistance. Funding for fragile countries such as Sudan, Gaza, South Sudan, Haiti, and Mali will decrease by 8%-66% (European Commission, 2025). SSA was a key focus of US foreign aid, receiving US$12.3 billion in funding from the US Agency for International Development (USAID) in 2024. The closure of the USAID would lead to a sharp increase in the number of people living in extreme poverty and experiencing severe food insecurity in the region (Zhang, 2025).

6.2.4 Agriculture in low-income countries provides insufficient support for food security and poverty reduction

In low-income countries, agricultural productivity is low and the value chain underdeveloped, with per capita food production continuously declining. Regarding agricultural labor productivity, in 2021, as much as 58.75% of employment in low-income countries was in agriculture, but agriculture's value added accounted for only 25.56%. Per capita agricultural output in low-income countries was less than 1/20 that of high-income countries. Two-thirds of the world's extreme poor were engaged in agriculture (UN General Assembly, 2022). In terms of land productivity, cereal yield in Africa was 1,698.8 kilograms per hectare in 2023, only two-fifths of the global average. With regard to total factor productivity (TFP) in agriculture, from 2013 to 2022, the annual average growth rates in SSA and in Latin America and the Caribbean were 0.37% and 0.11% respectively, which were 0.37 and 0.63 percentage point lower than the global average (Agnew et al., 2024). Between 2020 and 2023, global per capita cereal production showed a fluctuating upward trend, but in Africa, it continued to decline (Figure 6-5). In 2023, Africa's per capita cereal production dropped to 95.7% of the 2014-2016 average. This trend has led to a widening gap between food supply and demand, insufficient supply of basic staple food, worsening nutritional levels, and a rebound in chronic malnutrition rates. The agricultural value chain is locked in low-end segments, with low agricultural

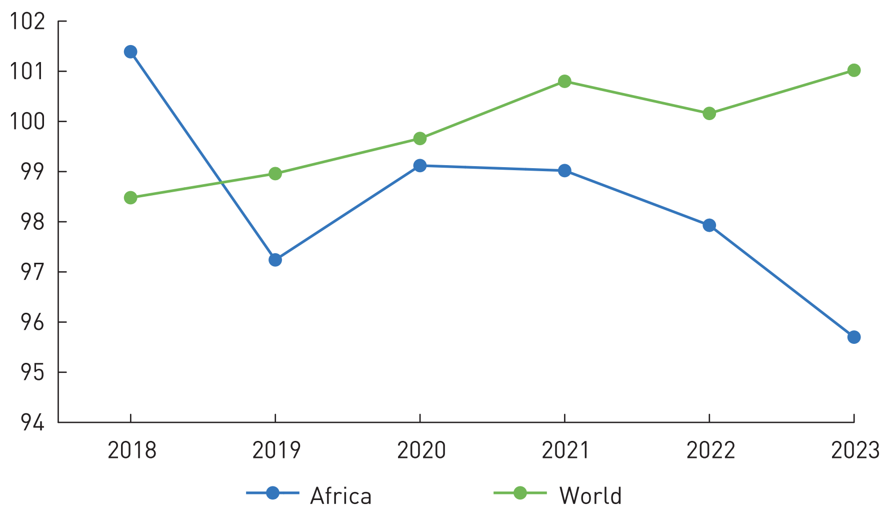

Figure 6-5 Per capita cereal production in Africa and the rest of the world, 2018-2023

Note: The average production between 2014 and 2016 is set to 100.
Source: FAO

added value. Most low-income countries lack the capacity to produce agricultural inputs and rely on imports for upstream farm inputs such as pesticides and fertilizers, resulting in large fluctuations in agricultural production costs. The downstream part of the agricultural industry chain is dominated by primary agricultural products, causing a loss of value in agricultural processing. Smallholders at the low end of the value chain cannot benefit from the value-added gains.

There is a systemic insufficiency of agricultural infrastructure. Low-income countries have inadequate irrigation facilities. In Africa, irrigated farmland accounts for only 5.71% of total cropland, 16.88 percentage points lower than the global average. A production model that relies mainly on rain-fed agriculture results in large year-to-year fluctuations in yields and high production vulnerability. Deficient flood control and drainage infrastructure, coupled with limited capacity for disaster prevention and response, has led to a 10%-15% reduction in agricultural output in low- and lower-middle-income countries over the past three decades. In addition, rural transportation networks are underdeveloped. In Africa, rural road density is only 50% of that in the European Union, and 43% of the agricultural population live in unpaved areas (Mikou et al., 2019). Agriculture and rural livelihoods suffer from inadequate basic and supporting infrastructure, high logistics and transportation costs, and a high proportion of post-harvest losses. The rural energy infrastructure is also deficient. According to the World Bank data, in 2023, only 29.0% of the rural population in low-income countries had access to electricity, far below the global average. Unstable energy systems hinder widespread use of agricultural machinery, storage, and cold chain facilities, impeding the development of modern agriculture in low-income countries.

Agricultural technology innovation and application is slow. Low-income countries invest insufficiently in agricultural R&D, and the pace of developing locally appropriate technologies is slow. While high-income countries account for the largest share of global public-sector agricultural R&D spending, low-income countries' expenditure accounts for only 2% of the global total. Locally appropriate technologies are lacking. The proportion of existing agricultural patents suited to the needs of low-income countries is low, and the supply of locally adaptable technologies is seriously insufficient. Smallholders are trapped in a "technology vacuum" caused by the triple mismatch of plot size, climatic characteristics, and labor structure. The diffusion and application of agricultural technologies is insufficient. A lack of access to new technical knowledge and information, the absence of insurance and capital markets, high transaction costs, and insecure land rights all hinder farmers in low-income countries from adopting and promoting new technologies.

Agricultural investment is insufficient. Per capita public spending on agriculture in rural areas is low. From 2010 to 2019, annual per capita public agricultural spending in rural areas of low-income countries and lower-middle-income countries averaged only US$8 and

US$37 respectively (FAO et al., 2025). International development assistance allocates relatively little funding to agricultural production. Between 2017 and 2021, total annual ODA and other official input averaged US$76 billion, of which 34% was specifically directed towards food insecurity and malnutrition. However, most of this was used to promote food consumption, while less than 15% was invested in agricultural production (FAO et al., 2024; UN General Assembly, 2022). This capital gap limits yield potential. In addition, farmers in low-income countries often lack collateral, have limited access to financial institutions, face high financing costs, and experience poor credit accessibility. The challenge of "difficult and expensive financing" remains prominent and restricts agricultural production inputs.

6.3 Agricultural development cooperation should be promoted to empower poverty reduction and bolster food security

Integrating the rural impoverished population into higher-productivity agricultural industries plays a fundamental role in safeguarding food security and promoting poverty reduction. The international community, particularly low-income countries, should make prioritizing agricultural development a policy baseline and give emphasis to the development of smallholders. Agricultural infrastructure should be strengthened, agricultural technology R&D and the promotion of its application accelerated, and the climate resilience of agricultural and food systems enhanced. Coordinated governance of food security and agricultural trade and investment systems should be strengthened. These measures can effectively promote agricultural modernization, safeguard global food security, and empower poverty reduction.

6.3.1 Agricultural development should be made a priority

The importance of agriculture for improving food security and reducing poverty should be fully recognized, and agricultural development should be made a policy priority. Agricultural development and food security strategies should be formulated based on each country's resource endowments, level of socioeconomic development, and cultural traditions. While maintaining policy autonomy, countries are encouraged to draw on international experience and explore development paths suited to their national realities. Countries with favorable conditions should be encouraged to enhance their food supply capacity across the entire industrial chain, including production, harvesting, storage, and processing. For countries with limited production capacity, a trade partner diversification strategy should be adopted to ensure food security. An effective emergency reserve mechanism should be established. In addition, the development of rural non-agricultural industries such as agricultural processing and rural manufacturing should be given due importance. These efforts should be coordinated to boost agricultural production and create more jobs for the poor.

Investment in agricultural development should be increased. Priority should be given to ensuring sufficient funding for agricultural and rural development, and the proportion of agricultural expenditure should be specified in the annual fiscal budget. The 10% investment target set by the Malabo Declaration should be met stage by stage[1] and incorporated in fiscal performance evaluation systems. Private-sector investment should be mobilized by creating a favorable business environment in the agricultural and rural sectors. Approval procedures should be streamlined, and "green channels" should be established to accelerate the utilization of investments. Agricultural businesses and companies that invest in impoverished areas should be provided with tax incentives, interest-subsidized loans, and fiscal subsidies. These measures will encourage private capital to enter rural and agricultural fields. In addition, performance-based subsidies should be offered according to the contributions made to food production, processing, and poverty eradication. Agriculture should be made the top priority for receiving foreign aid. Donor countries and international organizations should be encouraged to establish agricultural assistance programs. The alignment between international development cooperation and domestic agricultural development should be strengthened, with particular attention to supporting food security, technology transfer, and capacity building. A coordination mechanism for agricultural foreign aid should be established to integrate multilateral and bilateral resources and to avoid duplication of efforts.

6.3.2 Agricultural infrastructure should be developed in a more focused and effective manner

Efforts should focus on accurately identifying key areas for infrastructure development. Agricultural infrastructure needs must be thoroughly assessed based on the actual conditions of each country, including land scale, level of modernization, and degree of farming intensification. Priority should be given to funding for infrastructure development such as irrigation, storage, and transportation in grain-producing regions. Input in developing disaster relief facilities should be increased in areas vulnerable to natural disasters. Poverty-stricken regions should be supported to carry out small-scale, low-cost infrastructure construction.

Rural residents and communities should be mobilized to participate in agricultural infrastructure construction. The implementing agencies and financing models should be determined based on the type and scale of agricultural infrastructure and tailored to local conditions. Farmers, cooperatives, and other stakeholders should be encouraged to participate in the design, construction, supervision, and maintenance of small-scale infrastructure projects. Cooperation with international organizations and research institutions should be strengthened to enhance infrastructure quality and cost-effectiveness.

Maintenance and management of infrastructure

[1] In 2014, African Union (AU) member states adopted the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods. The declaration pointed out the direction for improving African agriculture from 2015 to 2025 and became an important document for AU member states to achieve agriculture-led economic growth and eliminate poverty and hunger.

needs to be strengthened. Infrastructure projects should adopt durable, low-maintenance, and easily repairable technical solutions during the design phase. Maintenance funding should be reserved in advance to reduce future burdens. Incentives such as rewards and subsidies can stimulate farmer and community involvement in infrastructure maintenance. A sound system of project evaluation, management, and post-construction maintenance should be put in place.

6.3.3 The agricultural science and technology innovation and extension system should be strengthened

Localized production of agricultural inputs should be promoted. Full consideration should be given to a country's environmental carrying capacity and farmers' usage habits, and pesticide and fertilizer quality standards should be established appropriate to the national context.

Crop variety should be improved and agricultural machinery upgraded. Focus should be placed on introducing and cultivating new varieties of key agricultural products that are well-suited to local conditions, and priority given to guaranteeing staple food security and enhancing the value of regional specialty agricultural produce. Agricultural mechanization should be improved step by step through equipment leasing and sharing among cooperatives, helping small farmers lower purchase costs (Box 6-2). An integrated agricultural machinery service system should be established, supported by services such as usage training, maintenance, and spare parts supply.

Box 6-2 Ethiopia's wheat yield increases significantly

Since Ethiopia launched the "irrigated wheat initiative", wheat has become a focus of the national food security strategy, and both the planting area and yield per hectare have increased. Annual wheat production rose from 4.65 million tonnes in 2015 to 5.8 million tonnes in 2023, while the yield per hectare increased from 2,794.1 kilograms to 3,118.3 kilograms. As a result, some regions have achieved self-sufficiency and even exported small quantities to neighboring countries like Kenya.

The key to Ethiopia's wheat yield increase lies in strengthening the agricultural technology extension system and expanding investment in irrigated agriculture. The main measures include: Improving agricultural mechanization. Mechanization service centers have been established in major grain-producing areas to provide farmers with machinery rental services covering sowing, harvesting and threshing. Medium- and small-sized agricultural machinery has been introduced in light of the predominance of smallholder farmers and fragmented farmland. Expanding irrigated agriculture. Small-scale pump stations, canal systems, and other facilities, constructed jointly by the government and farmers, have boosted wheat production. By 2022, the cumulative area of rain-fed and irrigated wheat in Ethiopia had reached 2.6 million hectares. Selecting and promoting high-yield varieties suitable for the local climate. The area planted with heat-tolerant wheat varieties increased from 5,000 hectares in 2018 to more than 2.2 million hectares in 2023.

Source: FAO

The application of new agricultural technologies should be promoted. Rural communities and social networks should be leveraged to demonstrate and promote the adoption of agricultural technologies. Selected farmers should be encouraged to take the lead in piloting and disseminating new technologies. The diffusion of agricultural technologies should be promoted through a "farmer-led" approach, in which experienced farmers help transfer knowledge and practices to other farmers. Barriers to agricultural training should be lowered by designing culturally and locally appropriate programs, thereby increasing farmers' acceptance of new knowledge and skills.

Agricultural technology cooperation should be strengthened in South-South cooperation and North-South dialogue (Box 6-3). Agricultural talent should be developed and mechanisms for agricultural technology transfer established to facilitate the application of technological achievements in developing countries. Agricultural production capacities, particularly food production capacities, can be enhanced through technology transfer and training in underdeveloped countries.

Box 6-3 Chinese machinery manufacturers support agricultural modernization in Africa

Agriculture is a key focus in China-Africa cooperation. According to a development report on China-Africa cooperation under the Belt and Road Initiative released in 2024, China has established agricultural cooperation mechanisms with 23 African countries and regional organizations. Stock of Chinese agricultural investment in Africa exceeded US$1 billion, and more than 200 Chinese enterprises have established business presence on the continent. At present, agricultural machinery manufactured by Chinese companies is in use in 37 African countries.

The characteristics of Chinese agriculture such as diverse arable land types and a predominance of smallholder operations are highly compatible with those in Africa, laying a solid foundation for Chinese agricultural machinery exports. Chinese agricultural machinery companies directly respond to the needs of African farmers and adapt their products accordingly. For example, Chinese firms have developed high-chassis crawler tractors to address the challenge of varied terrains, while also reducing soil compaction and damage. To minimize maintenance difficulties, Chinese companies optimized equipment structures so that key components such as engines and gearboxes can be disassembled and replaced. Local farmers are able to conduct routine maintenance using just a basic toolbox. In addition, Chinese agricultural machinery companies provide comprehensive after-sales services through regular maintenance visits by technical staff and school-company cooperation. These efforts offer hands-on support for the use and promotion of agricultural machinery in Africa.

Source: Compiled by the authors based on publicly available information

6.3.4 Climate resilience of agricultural and food systems should be improved

Development and promotion of crop varieties suited to local climates should be strengthened. Crop varieties should be selected based on local resource endowments and climatic conditions, and planting structures and boundaries should be adjusted in a timely manner. It is important to encourage the adoption of climate-smart agricultural technologies in countries with the capacity to do so.

Climate early warning systems and information dissemination should be enhanced. The international community should work together to help low-income countries build robust climate monitoring mechanisms and forecasting capabilities (Box 6-4). Multiple communication channels such as government agencies, local communities, and media should be used to deliver timely forecasts of climate disaster risks to smallholder farmers. This will help improve their knowledge and capacity for disaster preparedness and emergency response.

Financial instruments should be used in an innovative manner. Collaboration between governments and financial institutions should be strengthened to leverage the synergies of transition finance policies and inclusive finance policies. These efforts should support smallholder farmers in transitioning to climate-smart agriculture. For example, rapid development of grain drying and storage facilities can reduce climate-related losses.

6.3.5 Coordinated governance of food security and agricultural trade and investment systems should be improved

Global cooperation on poverty reduction and food security should be supported. Governments and stakeholders should strengthen support for institutions such as the UN Food Systems Coordination Hub, the Committee on

Box 6-4 China supports modernization of meteorological early warning systems in other developing countries

China's Action Plan on Early Warning for Climate Change Adaptation (2025-2027) was released at COP29 to the UN Framework Convention on Climate Change (UNFCCC) in November 2024. The plan outlines China's commitment to help other developing countries enhance their early warning capabilities and adapt to climate change.

Based on Pakistan's specific meteorological disaster risks and early warning needs, the China Meteorological Administration worked with the Pakistan Meteorological Department to tailor a cloud-based early warning system for Pakistan. This system focuses on developing toolkits for forecasting glacial lake outburst floods, monsoon onset, and heavy rainfall. It integrates satellite data products, numerical weather prediction models, and AI technologies to deliver one-stop, rapid disaster weather response and warnings. On November 30, 2024, a batch of intelligent meteorological observation equipment donated by China arrived in Pakistan. Integrated with the cloud-based early warning system, the equipment has significantly enhanced Pakistan's disaster risk reduction capabilities and climate change response.

Through building operational platforms, providing technical support, and offering personnel training, China's early warning solutions for weather-related disasters have been rolled out in multiple countries. China's *Fengyun* meteorological satellites now provide over 100 types of data products and services to more than 130 countries and regions worldwide.

Source: China Meteorological Administration

World Food Security (CFS), and other international and regional organizations to build closer and more effective partnerships that facilitate consensus and concrete actions at the global, regional, and national levels. All cooperation should take into account the specific contexts, needs, and expectations of individual countries. The development of humanitarian exemption channels for food should be strengthened.

The WTO Agreement on Agriculture and its related rules should be improved. True multilateralism should be upheld, the international system with the UN at its core should be safeguarded, and the multilateral trading system with the WTO at its core should be maintained. The WTO dispute settlement mechanism should accelerate rulings on violations of tariff commitments. The provisions on market access in the Agreement on Agriculture should be upheld, and commitments on agricultural tariff reductions should be honored. Under the provisions of the Special Safeguard Mechanism, options should be explored for granting tariff exemptions to developing countries that are net food importers. Consideration should also be given to adding provisions for the establishment of an agricultural trade remedy fund for developing countries. A food security "whitelist" should be created to exempt basic livelihood products related to food security from sanctions.

The global agricultural investment environment should be improved. Countries should fully mobilize funding from multilateral financial institutions and the private sector to support agricultural development in low-income countries. Tools such as blended finance should be used to build investment models that are commercially attractive. These measures aim to achieve win-win outcomes for both investors and host countries and help close the funding gaps caused by reductions in development resources from major donor countries (Box 6-5).

6.3.6 Greater attention and support should be given to vulnerable countries and vulnerable populations

Vulnerable countries should be prioritized in development assistance. International organizations should establish dedicated aid funds, simplify approval procedures, and prioritize the timely provision of low-interest loans and grants to fragile states. It is necessary to improve risk assessment and early intervention

Box 6-5 International Fund for Agricultural Development (IFAD) innovates financing models to support agricultural development

Agricultural development is crucial to the global food system. According to the World Bank estimates, every US$1 invested in transforming agricultural systems can generate US$16 in social and environmental returns. Despite the critical importance of agricultural development, funding support remains insufficient. IFAD has enhanced private lenders' investment confidence by adopting blended financing and risk-sharing mechanisms. At the same time, it provides borrowers with technical assistance, thereby improving project success rates by offering the resources and knowledge they require. In addition, it has established classification standards to evaluate investment outcomes.

Over the past decade, remittances from migrants from low- and middle-income countries back home have exceeded US$5 trillion, which is about three times the total amount of foreign direct investment. IFAD, in collaboration with the European Union, has launched the Resilient Remit initiative, which aims to reduce remittance costs and transform remittances into development resources through improved financial services.

Source: IFAD

mechanisms and develop comprehensive vulnerability monitoring indexes and systems that cover food security, climate risk, social stability, and economic growth. These efforts will help assess development conditions in fragile countries and implement proactive measures. Developed countries should be urged to fulfill their ODA commitments to developing nations.

Existing international reserves should be leveraged to support vulnerable countries. The scope of Special Drawing Rights (SDRs) should be expanded to allow fragile countries to use them directly to pay for FAO technical assistance or to finance emergency food imports. International multilateral institutions can offer credit guarantees to help fragile countries issue long-term bonds for projects such as agricultural infrastructure development.

Targeted assistance should be strengthened to provide timely and effective support for poor and hungry populations. Vulnerable groups should be identified through various means such as digital technology and social participation. A dynamic database should be established to track, update, and monitor the living conditions of the vulnerable and the impoverished in a timely manner (Box 6-6).

Box 6-6 Bangladesh's Ultra-Poor Graduation Program improves long-term welfare for the poor

In 2002, the Bangladesh Rural Advancement Committee (BRAC) launched the Ultra-Poor Graduation (UPG) Program. The program identifies poor households through community participation and institutional verification. Instead of simple cash transfers, the program provides a package of targeted support measures, including free provision of productive assets (such as livestock, poultry, and seeds), free training in practical skills such as livestock rearing or crop cultivation, and short-term cash support for basic livelihoods. These measures complement each other and help the poor escape the poverty trap.

Since 2002, more than 2 million households have participated in the program. Of them, 95% have got rid of poverty, and 93% continued to experience significant benefits seven years after the program ended. Nobel Prize-winning economists Abhijit Banerjee and Esther Duflo have verified the program's effectiveness in improving the medium- and long-term welfare of the poor through randomized controlled trials (RCTs) conducted in six countries including Ethiopia and Ghana.

Source: Compiled by the authors based on publicly available information

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Chapter VII

Advancing the Industrialization of Developing Countries in the New Context

Industrialization is an essential path for developing countries to realize modernization and an important driving force for global development. Currently, the industrialization of developing countries faces new circumstances and conditions brought about by rising unilateralism and protectionism, reconfiguration of global industrial and supply chains, rapid development of digital and intelligent technologies, accelerating green and low-carbon transition, and the growth of the Global South. In this new context, developing countries should promote industrialization in accordance with local conditions, give full play to their comparative advantages, and accelerate the formation of economies of scale. They should take into full account their stage of industrial development, make good use of green and digital opportunities for their new industrialization, optimize the business environment, and vigorously improve human capital. They should also enhance industrial competitiveness through open cooperation.

7.1 The industrialization of developing countries is slow overall, with varying progress across different regions

Over the recent decade, the industrialization[1] of developing countries in general has made slow progress. The three regions – Asia and the Pacific, Africa, and Latin America and the Caribbean (LAC) – show divergent performance.

7.1.1 The industrialization of developing countries has progressed overall, but the pace is slow

The industrial value added of developing countries and their proportion of the global total have steadily increased. From 2015 to 2024, the industrial value added of developing countries grew from US$7.73 trillion to US$10.61 trillion. The global share of developing countries' industrial value added increased from 49.4% to 53.8%, an increase of 4.4 percentage points (Figure 7-1). The BRICS[2] countries showed a particularly impressive performance. Their industrial value added grew from US$5.45 trillion to US$7.97 trillion, and their global share increased from 34.2% to 40.4%.

The industrialization of developing countries has been comparatively slow. In terms of structural transformation, the share of industrial value added in GDP in developing countries remained around 20% on average from 2015 to 2024 (Figure 7-2), and the share of industrial employment stayed around an average of 18.6%, indicating sluggish economic structural transformation. The BRICS countries performed relatively well. Their share of industrial

[1] There are various methods to measure the level of industrialization, and the indicators are also relatively complex. This chapter mainly uses the indicators of industrial value added and industrial value added per capita to measure the industrialization progress of 142 developing countries, while taking into account related indicators such as industrial employment, manufacturing value added, manufacturing employment, and manufacturing exports.

[2] Unless otherwise specified, the BRICS countries mentioned in this chapter include 10 countries: Brazil, China, Egypt, Ethiopia, India, Iran, Russia, Saudi Arabia, South Africa, and the United Arab Emirates.

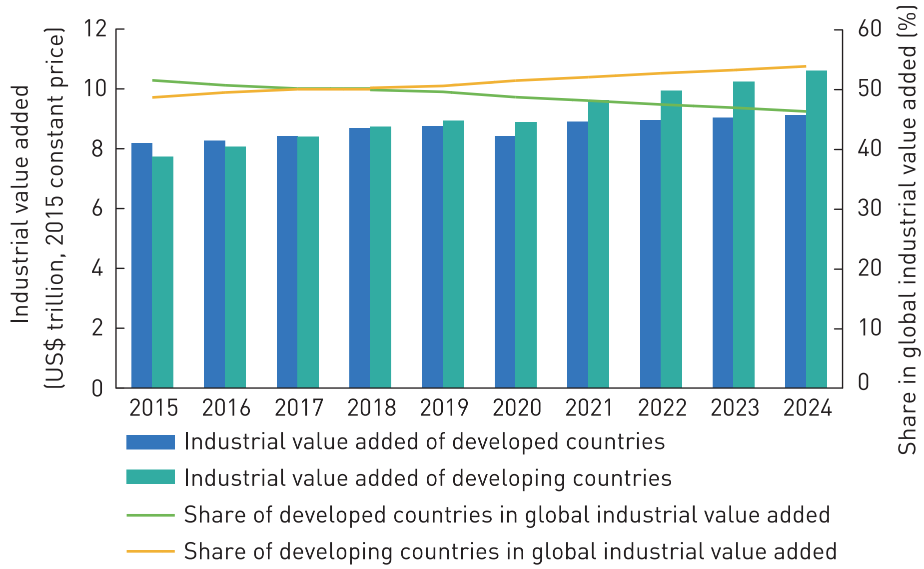

Figure 7-1 Industrial value added of developed and developing countries and their global shares, 2015-2024

Source: Calculated by the authors based on UNIDO data

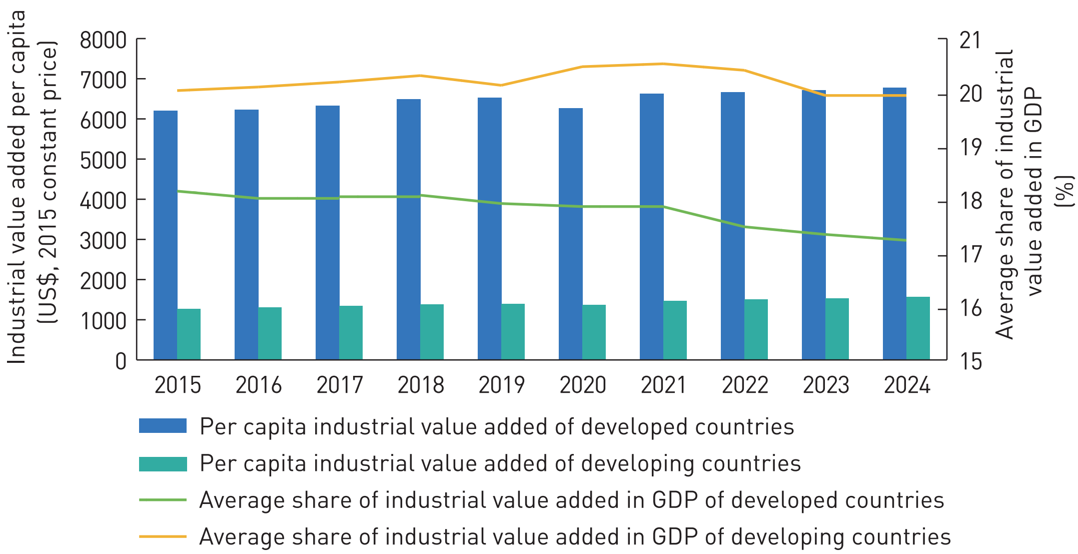

Figure 7-2 Industrial value added per capita and average shares of industrial value added in GDP of developed and developing countries, 2015-2024

Source: Calculated by the authors based on UNIDO data value added in GDP and share of industrial employment remained around 24% on average.

7.1.2 Industrialization performances are divergent in developing countries across different regions

Developing countries in the Asia-Pacific region have a relatively high level of industrialization with rapid progress. From 2015 to 2024, their industrial value added increased from US$6.10 trillion to US$8.98 trillion, up by 47.2%. Their industrial value added per capita increased from US$1,428.8 to US$1,953.4, a growth of 36.7% (Figure 7-3). From 2015 to 2023, their share of manufacturing in total exports steadily rose from 51.7% to 59.0%, an increase of 7.3 percentage points. Their share of medium- and high-tech products in manufacturing exports remained stable at around 36%, higher than that of LAC countries and African developing countries (Figure 7-4). Among the developing countries in the Asia-Pacific region, China, along with some Southeast Asian countries like Viet Nam and Cambodia, showed particularly notable progress in industrialization. China and Southeast Asian countries also formed a close division of labor and cooperation in industrial and supply chains (ADB et al., 2021). In some South Asian countries, industrialization was constrained due to poor infrastructure, a challenging business environment, and limited

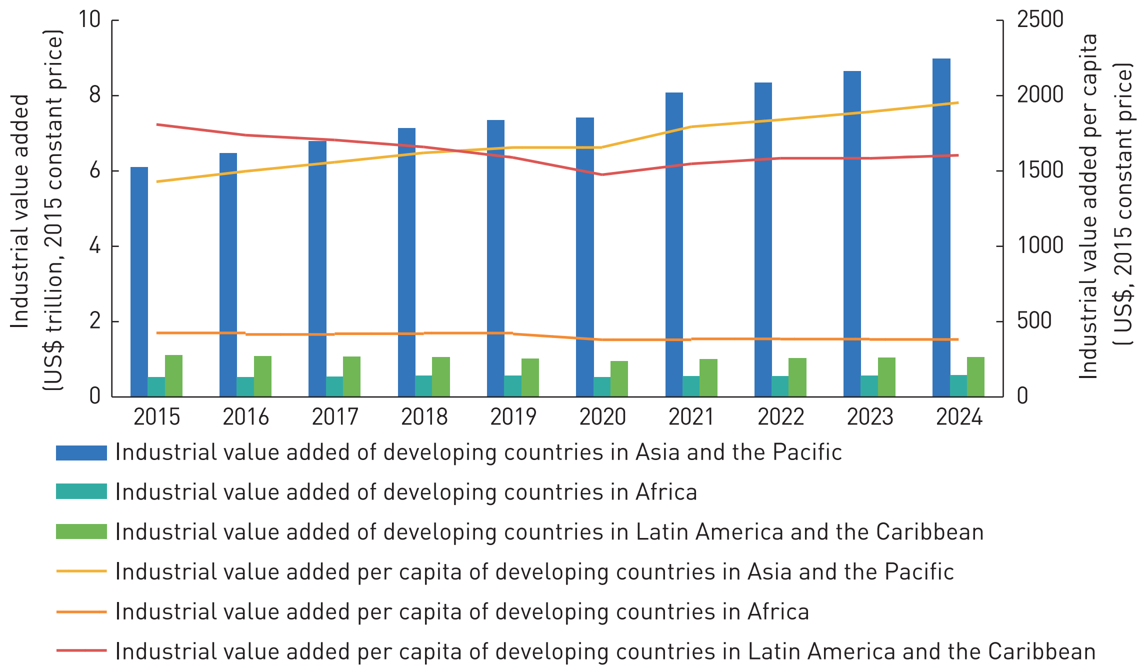

Figure 7-3 Industrial value added and industrial value added per capita of developing countries in different regions, 2015-2024

Source: Calculated by the authors based on UNIDO data

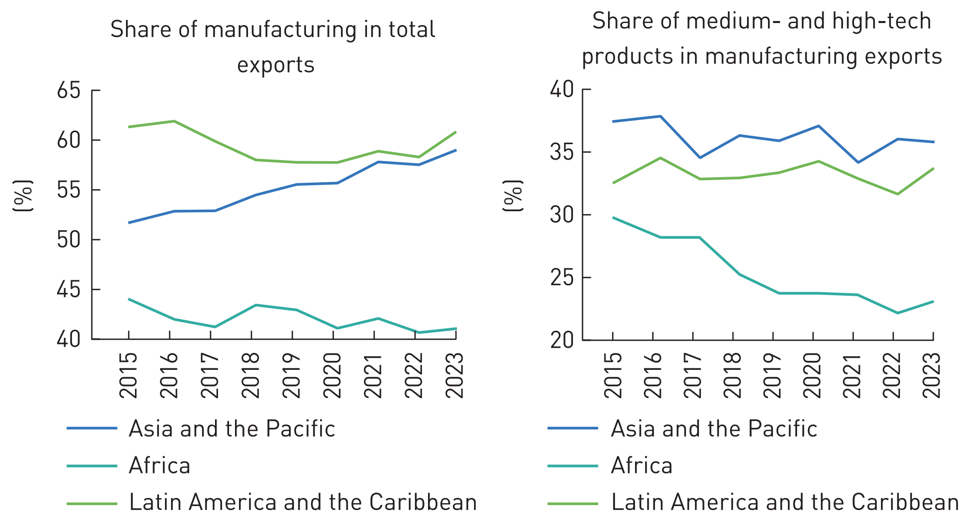

Figure 7-4 Manufacturing exports of developing countries by region, 2015-2023

Source: Calculated by the authors based on UNIDO data

regional economic integration (ADB, 2025). Some Pacific Island nations, due to geographic isolation, limited natural resources, and their small domestic markets, saw relatively slow industrialization (UNIDO, 2024a).

Developing countries in the LAC region have experienced industrial decline, a phenomenon known as premature deindustrialization. LAC nations saw a continuous decline of the manufacturing sector in both industrial and employment structures before their industries fully developed, resulting in premature deindustrialization (Rodrik, 2016). From 2015 to 2024, as Figure 7-3 indicates, industrial value added of the developing countries in LAC fell from US$1.11 trillion to US$1.06 trillion, a decrease of US$0.05 trillion. Their industrial value added per capita decreased from US$1,808.8 to US$1,604.1, a decline of 11.3%. Between 2015 and 2023, the share of manufacturing in GDP dropped from 14.4% to 13.3%, the share of manufacturing employment decreased from 12.7% to 12.0%, and the share of manufacturing in total exports declined from 61.3% to 60.9% (Figure 7-4a). This premature deindustrialization caused many countries in the region to be caught in a prolonged middle-income trap (World Bank, 2024). In an attempt to break free from this predicament, some Latin American countries began to make efforts to reverse the trend of such deindustrialization. For instance, Brazil launched the New Industry Brazil plan in 2024, starting a reindustrialization process with initial results. Among the LAC countries, Guyana, Panama, and Costa Rica made relatively rapid progress in industrialization.

Developing countries in Africa have made some progress in industrialization, but their development remains inadequate. From 2015 to 2024, industrial value added of the developing countries in Africa increased from US$517.82 billion to US$573.07 billion, while their industrial value added per capita decreased from US$425.0 to US$378.7. As Figure 7-4 shows, the share of manufacturing in total exports and the share of medium- and high-tech products in manufacturing exports in Africa also lagged behind those of the Asia-Pacific and LAC regions. Within Africa, North Africa had the highest level of industrialization, followed by Southern Africa, while Central and West Africa were at intermediate levels, and East Africa had the lowest level (AfDB et al., 2022). In terms of individual countries, Sierra Leone, Ethiopia, Djibouti, Guinea, and Liberia saw relatively rapid industrialization. Egypt and Morocco formed substantial industrial sectors with strong growth momentum.

7.2 The industrialization of developing countries is facing new circumstances and conditions

These include rising unilateralism and protectionism, the development of digital and intelligent technologies, accelerating green and low-carbon transition, and the Global South growing in strength.

7.2.1 Unilateralism and protectionism are undermining the industrialization prospects of developing countries

Some developed countries are using unilateral and protectionist measures to force industrial relocation, attempting to promote "decoupling and supply chain breaking" and nearshoring or friendshoring. For example, the US imposed tariffs on global steel and aluminum products, which impacted related industries in many countries. In 2025, it even claimed to impose "reciprocal tariffs" of 10%-50% on all of its trading partners (over 180 countries and regions), including LDCs like Lesotho and Madagascar.

Developing countries' foreign trade has been notably impacted. Many of them have incomplete industrial systems and small domestic markets, forcing them to rely on international trade to import intermediate goods and export domestic products to develop economies of scale. The US is the largest consumer market in the world and an important export destination for industrial products from many developing countries. The "reciprocal tariffs" will increase the export costs of these products and hinder export growth in developing countries, which is detrimental to their efforts to form economies of scale. Countries with weak local consumption capacities that are heavily dependent on the American market will be hit particularly hard. For example, when the news of a 50% tariff on Lesotho's exports to the US broke, many clothing orders to the US were canceled, a number of local factories shut down, and many workers faced unemployment.

Against the backdrop of a continuous decline in global cross-border investment, investment flows to developing countries have decreased. European countries and the US are major sources of investment for developing countries, but "onshoring", "nearshoring", "friendshoring", and "reciprocal tariffs" have disrupted global supply chains, increased global economic uncertainty, and undermined investor confidence, thus negatively impacting investment inflows into developing countries. According to UNCTAD statistics, in 2023, global FDI in developing countries fell by 7%, with investment in developing economies in Asia and LAC falling by 8% and 5% respectively. In 2024, although FDI in developing countries rebounded slightly by 0.2%, investment in developing economies in Asia and LAC continued to decline, falling by 3% and 12% respectively (UNCTAD, 2025). Although some countries geographically close to major global markets (such as Mexico and Viet Nam) have obtained some opportunities for industrial transfer and their industries have grown rapidly in the short term, in the long run, the highly uncertain international economic environment will impact trade stability and further affect investment, which will be unfavorable to the industrialization of most developing countries.

7.2.2 While digital and intelligent technologies enable development, they also undercut developing countries' traditional comparative advantages

Digital and intelligent technologies have injected new momentum into the industrialization of developing countries, spurring new business models like platform economies, sharing economies, and experience economies, and helping enterprises in developing countries connect to broader markets and increase product value added. For example, Kilimall, a Chinese e-commerce platform headquartered in Kenya, is promoting two-way trade between China and Africa. It has sold more than 1 million products, enabled more than 8,000 Chinese and African companies and individuals to start businesses, and created more than 5,000 jobs in Kenya (People's Daily, 2024). Big data and cloud computing can help enterprises in developing countries improve production processes, optimize resource allocation, and increase production efficiency and quality. Robotics and AI can help companies in developing countries overcome challenges in some industries with high technological requirements and harsh working conditions. Industrial internet can facilitate connectivity among enterprises, reduce transaction costs, enhance collaboration across industrial chains, and optimize the organizational structure and efficiency of industries in developing countries. The integration of digital technologies with traditional industries has given rise to new products like internet-connected vehicles and smart homes, creating new growth engines for relevant industries in developing countries.

Digital and intelligent technologies can help developing countries catch up. Developing countries are often engaged in manufacturing and processing in global supply chains, occupying the low end of the global value chain's smile curve. Digital and intelligent technologies are changing the traditional characteristics of low profit, low value, and high substitutability in manufacturing by promoting high-end manufacturing and the integration of manufacturing and services. This transformation is turning the value chain from the smile curve to the silent curve, thereby helping developing countries catch up in value distribution (CAICT, 2024). Furthermore, disruptive technologies in the digital and intelligent fields can help developing countries catch up by taking a different development road. For example, China's DeepSeek-V3 language model has innovatively achieved low-cost efficiency, and its open-source strategy allows researchers and developers to apply the model across industries, greatly reducing technological barriers and costs for industrial catch-up in developing countries.

But digital and intelligent technologies have also brought adverse effects on developing countries' traditional comparative advantages. In the history of industrialization, late-developing countries have often leveraged the advantage of large-scale, low-cost labor forces to undertake industrial transfers from early industrializers. The "flying geese" model of development in East Asia, which describes how a less developed country industrializes by following the lead of a more advanced economy, similar to geese flying in a V formation, is a typical example. However, the development and application of digital and intelligent technologies have made traditional labor-intensive industries, such as textiles, increasingly capital- and technology-intensive. Advanced robots and AI are gradually replacing labor in some areas. The traditional comparative advantage of large yet low-cost labor forces in developing countries might be undercut, and the scale and speed of industrial transfer restrained. Although the pace of labor replacement by machines is slower than expected, and AI is currently having a more direct impact on knowledge-intensive industries (especially high-tech services), the trend towards digitalization is unstoppable, and a "winner-takes-all" situation may emerge (UNIDO, 2024b). Many developing countries have gaps in digital development, such as underdeveloped electricity and digital infrastructure, low levels of automation and digitization in enterprises, a lack of data production factors, and insufficient digital skills in the workforce. It is crucial for them to make up for these shortcomings and improve their digital adaptability to avoid being marginalized in the global production landscape.

7.2.3 Green and low-carbon transition creates new opportunities for industrialization in developing countries

Some developing countries endowed with critical mineral resources have gained major opportunities for industrial development. As global energy transition deepens, industries such as photovoltaic (PV) and wind power generation, new energy vehicles (NEVs), and batteries are rapidly expanding, leading to a substantial increase in demand for critical minerals like lithium, copper, chromium, nickel, and rare earth elements. The International Energy Agency (IEA) has estimated in its Stated Policies Scenario that from 2024 to 2040, global demand for lithium will increase fivefold, demand for graphite and nickel will double, demand for cobalt and rare earth elements will increase by 50% to 60%, and demand for copper will increase by 30% (IEA, 2025). Developing countries such as Chile, Indonesia, the Democratic Republic of the Congo, and Zimbabwe, which possess abundant critical mineral resources, have thus gained opportunities to advance the deep processing of mineral products. According to the IMF, SSA holds 30% of the world's critical minerals. By 2050, mineral extraction will boost the region's GDP by over 12%, and if these countries shift from mineral extraction to higher value-added mineral processing, this growth will be even more significant (IMF, 2024).

Green technology innovation and application enable developing countries to pursue green industrialization. While traditional fossil energy resources are concentrated in a few countries, renewable energy sources such as solar and wind power are widely distributed. In recent years, breakthroughs in clean energy technologies such as PV and wind power generation have led to significant cost reductions. Between 2010 and 2022, the levelized cost of electricity (LCOE) for solar PVs fell by 89%, and the LCOE for onshore wind power by 69% (IRENA, 2023). If developing countries can acquire cost-effective green technologies, they can provide more diverse and sustainable energy supplies for industrialization by balancing traditional and new energy resources. In recent years, emerging green industries, such as PVs, batteries, and green hydrogen, have grown rapidly in China, Viet Nam, Morocco, Brazil, and other developing countries. Such progress has driven the innovation and diffusion of low-cost green technologies, helping developing nations achieve green industrialization.

7.2.4 The collective rise of the Global South provides new opportunities for industrialization in developing countries

The rise of the Global South brings new market demand, investment sources, and industrial division of labor. The Global South countries are expanding their market openness, and their middle-income groups are also growing, making them increasingly important consumer markets for industrial products from developing countries. In 2022, South-South trade accounted for 54% of the total trade of the Global South, surpassing North-South trade (UNDP, 2025). Outward direct investment (ODI) from developing economies is expanding as well. It reached US$491.48 billion in 2024, accounting for 30.5% of global ODI, much of which was used to fund industrialization in developing nations (UNCTAD, 2025). Within the Global South, emerging economies, particularly the BRICS countries, have formed economies of scale in many manufacturing industries, improved their position in the global division of labor, and are playing a leading role in driving industrialization across other developing economies. Serving as pivotal nodes in global and regional industrial and supply chains, BRICS members like China, Brazil, and South Africa provide large volumes of cost-effective capital goods and intermediate products to fellow developing countries, offering long-term support for their industrialization (CIKD, 2024). In 2022, BRICS nations accounted for nearly or over 40% of global outputs in industries including basic metals, electrical equipment, chemicals, computers, machinery and equipment, and coking coal and refined petroleum. This is creating a gradient complementarity in industrial structures with other developing countries, facilitating division of labor within the Global South and promoting industrial transformation and upgrading across developing economies (Table 7-1).

The rise of the Global South provides valuable experience and creates favorable external conditions. In recent years, a number of economies including China, Viet Nam, Cambodia, Ethiopia, and Egypt have explored and accumulated successful industrialization experience, offering important references for countries at different development stages and with varying resource endowments. Latecomer nations can selectively adopt knowledge, technologies, and models applicable to their respective industrial development. Furthermore, the Global South has set up new mechanisms and platforms for development cooperation such as the BRICS cooperation mechanism, the African Union's Agenda 2063, Global Development Initiative, and ASEAN 2045, which will strengthen North-South dialogue and South-South cooperation as well as create new opportunities and space for the industrialization of developing countries. Multilateral financial institutions including the NDB and AIIB are funding infrastructure development in developing countries. In its first decade, the NDB approved 120 projects valued at US$39 billion, supporting infrastructure construction, clean energy, and sustainable development in member states (NDB, 2025). By June 2025, the AIIB had approved 322 projects valued at over US$61.49 billion, benefiting 38 members across Asia and beyond (AIIB, 2025).

Table 7-1 BRICS' global share of selected manufacturing industries in 2022

Industries	BRICS (%)
Basic metals	60.5
Electrical equipment	56.2
Other non-metallic minerals	48.5
Chemicals	42.4
Computers, electronic products, and optical products	40.3
Machinery and equipment	39.1
Coking coal and refined petroleum	38.7
Motor vehicle, trailer and semi-trailer manufacturing	36.9
Rubber and plastics	31.2
Metal fabrication products (excluding machinery and equipment)	29.5
Other transportation equipment	25.9
Pharmaceuticals	20.9

Note: BRICS countries in this table include Brazil, China, Egypt, Ethiopia, India, Iran, Russia, South Africa, and the United Arab Emirates.
Source: Compiled by the authors based on UNIDO data

7.3 Responding to changes proactively and advancing the industrialization of developing countries

Advancing industrialization helps developing countries to enhance their economic autonomy and develop endogenous momentum for development to better cope with the turbulent and changing external environment, and at the same time provides more stability and certainty for global development. Under the new circumstances and conditions, the industrialization of developing countries can be promoted in the following aspects:

7.3.1 Taking local conditions into account and giving full play to comparative advantages

Fully utilizing and leveraging comparative advantages. Based on their resource endowments, industrial base, labor conditions, and cultural characteristics, developing countries need to accurately identify their positions within the global division of labor, assess the positive and negative impacts of the new circumstances and conditions, and develop leading industries that leverage and give full play to their comparative advantages (Box 7-1). Countries with abundant labor resources can develop labor-intensive

Box 7-1 Ethiopia utilizes multiple advantages to develop the light industry

Ethiopia possesses several comparative advantages and favorable conditions to develop light industries. It has abundant labor resources with a population exceeding 100 million, and young people account for over 60% of it, providing a large and low-cost labor force for industrialization. Second, it is endowed with rich water resources. By constructing hydropower stations, Ethiopia is harnessing water resources to deliver ample and affordable power supply for industrialization. Third, it enjoys favorable trade terms. Its exports enjoy multiple concessions thanks to the EU's Everything but Arms (EBA) initiative that removes tariffs and quotas for all imports of goods except arms and ammunition coming into the EU from LDCs, and membership in the Common Market for Eastern and Southern Africa (COMESA), a regional economic community of 21 member states.

By fully leveraging these favorable conditions, Ethiopia has vigorously developed export-oriented labor-intensive light industries such as textiles, apparel, and leather products, and made rapid progress in industrialization. From 2015 to 2024, Ethiopia's merchandise exports increased from US$2.91 billion to US$4.5 billion, a 54.6% growth. In this period, its industrial value added rose from US$3.46 billion to US$7.99 billion, a 130.9% increase, while industrial value added per capita grew from US$34.6 to US$61.5, a 77.7% rise.

Source: Compiled by the authors from publicly available information processing industries; those rich in resources such as oil and minerals can develop resource extraction and processing; those with abundant agricultural resources can develop agricultural product processing; and those with advantageous geographical locations can develop productive services such as transportation, warehousing, and logistics.

Accelerating the formation of economies of scale. Developing countries should specialize in industrial sectors and segments where they can fully leverage their comparative advantages, promote refined division of labor, lengthen industrial chains, and achieve economies of scale. This will enable their manufacturing industries to achieve optimal cost-effectiveness and strong competitiveness regionally and globally. During this process, different countries and regions should leverage the roles of both the market and government, taking into account their local political systems, social structures, and historical and cultural contexts. On the one hand, they should fully leverage the role of market mechanisms, reduce direct government intervention in the market, and promote the efficient allocation and rational flow of production factors. On the other hand, they should better leverage the role of the government by formulating and implementing appropriate industrial policies and strengthening cross-sectoral coordination to mobilize and organize resources and efforts from all sectors to promote industrialization.

7.3.2 Taking full consideration of the development stages of industrialization

Advancing industrial development and upgrading progressively. Industrialization is a gradual and cumulative process. In the early stages of industrialization, the emphasis should be on utilizing local natural resources or labor, developing light industries such as agricultural product processing and textiles, and engaging in foreign trade while meeting domestic livelihood and industrial needs, gradually achieving capital accumulation. In the mid- and late stages of industrialization, the emphasis should be on strengthening investment and technology application, developing capital- and technology-intensive industries at a faster pace, fostering and meeting domestic demands, and extending local industrial chains, as well as increasing product added value, thus gradually climbing up the global value chain. In addition to gradually promoting industrial upgrading based on comparative advantages, developing countries can also develop strategic key sectors and new industries aligned with green and digital development to catch up better.

Building infrastructure in line with industrial needs. Infrastructure plays a strategic, fundamental, and pioneering role in industrialization. Developing countries should prioritize infrastructure development in line with industrial needs (Box 7-2). Based on the geographical distribution, features, and development trends of local industries, they should proactively plan and build supporting infrastructure such as energy, transportation, water conservancy, and information and communications to reduce production costs and expand industrial scale. Industrial growth generates tax revenue, which in turn provides more funding for infrastructure construction, creating a virtuous cycle.

Box 7-2 Egypt develops infrastructure to lay a solid foundation for industrialization

From 2015 to 2024, Egypt's investment in infrastructure, including roads, ports, and cities, exceeded US$553 billion. In 2023, its private-sector infrastructure investment reached US$2.3 billion, ranking first in Africa. According to the Ibrahim Index of African Governance, Egypt's infrastructure progress ranked second among African countries from 2014 to 2023.

In recent years, it has accelerated the construction of highways, railways, ports, industrial parks, and smart cities. For example, the National Road Project was launched in 2014 and by 2020, approximately 5,000 kilometers of expressways had been built. The Ain Sokhna Port infrastructure was expanded to develop the port into the Red Sea's largest hub port. The construction of industrial parks was strengthened through international cooperation. With over US$2.1 billion of actual investment, by July 2024 the China-Egypt TEDA Suez Economic and Trade Cooperation Zone has developed industries such as chemicals, building materials, textiles, electrotechnics and electrical engineering, metal processing, and engineering machinery. It has become the industrial park with the best comprehensive environment, the highest investment density and unit output, and the highest concentration of Chinese enterprises in Egypt.

Infrastructure development and connection have provided reliable energy supply and convenient transportation, and expanded urban areas as a foundation for industrialization. It has also driven the development of related industries such as cement and steel, supporting Egypt's industrialization.

Source: Compiled by the authors from publicly available information

Economic corridors can be planned and constructed in developing countries to drive infrastructure development and industrial trade and investment along their routes. Technical standards and the construction scale of infrastructure should be set scientifically and reasonably. In line with industrial development, the quality, efficiency, connectivity, and digitalization of infrastructure should be improved.

Starting industrial development from industrial parks. Given their limited resources, developing countries can adopt an imbalanced development strategy by prioritizing the development of industrial parks and fostering an ecosystem for industrial development. Domestic and foreign enterprises should be encouraged to invest in industrial parks, fostering industrial clusters with local characteristics and supporting upstream and downstream industries, to integrate into global and regional industrial and supply chains. Strong connections and mutual support between industrial parks and key infrastructure should be established, enabling industrial development to radiate to surrounding areas.

When developing industrial parks, urbanization and industrialization should be synergized as a priority, leveraging agglomeration effects to stimulate industrial growth.

7.3.3 Leveraging green and digital opportunities for new industrialization

Applying new technologies to reduce industrial pollution and emissions. The textile and clothing industry, as well as mineral mining and the processing industry, are often important sectors for developing countries to start industrialization, but traditionally they also cause high pollution and emissions. But emerging technologies can provide solutions to a certain extent. R&D and industrialization of waterless dyeing, hydrometallurgy, and other new technologies should be accelerated to help developing countries prevent and resolve water pollution and CO_2 emissions in textile printing and dyeing, mineral smelting, and related industries to explore pathways for green industrialization (Box 7-3).

Promoting new energy development. The new energy sector can provide important opportunities for the industrialization of developing countries. Developed and emerging economies

Box 7-3 China's new technology supports green industrialization in other developing countries

The textile and clothing industry widely faces problems of high water consumption and high pollution. China-developed ECOHUES, the world's first waterless dyeing technology for reactive dyes, replaces water with non-aqueous combination media. It is a disruptive technology in the dyeing industry that can achieve zero water consumption, zero salt usage, and zero emissions during dyeing. Currently, brands like Li-Ning, DETERMINANT, and HAZZYS have launched products featuring this technology. In the future, it can help other developing countries such as Bangladesh, Egypt, and Brazil sustainably develop their textile and clothing industry through new green production models.

Utilizing low-grade laterite nickel ore is a global challenge. China's advanced hydrometallurgy technology has resolved nickel ore smelting difficulties and also reduced energy consumption and emissions. The Ramu nickel project in Papua New Guinea uses this technology, employing a high-pressure acid leaching process and thereby saving 50,000 tonnes of standard coal equivalent annually compared to the same-scale hydrometallurgical nickel-iron processes. It also reduces CO_2 emissions by 1.55 million tonnes.

Source: Compiled by the authors from publicly available information need to leverage their technological edge in renewable energy and smart power management to support developing countries in exploiting critical minerals and new energy sources (such as solar and wind), and in establishing green, accessible and affordable energy systems. At the same time, they should also extend local new energy industrial chains, achieving industrial development while promoting green and low-carbon transition.

Utilizing digital technologies to empower traditional industries. Developing countries can leverage their latecomer advantages and acquire mature digital technologies and models at a lower cost through importing equipment, purchasing patents, personnel exchanges, and attracting foreign investment to promote the development of traditional industries. They should also promote suitable digital and intelligent technologies in textiles and apparel, electronic assembly, mineral processing, automotive manufacturing, and other industries to enhance production efficiency and increase product value.

7.3.4 Improving the business environment

Building a transparent, stable, and predictable institutional environment. Optimizing the business environment is crucial for attracting foreign investment to boost industrial development. Developing countries should enhance the rule of law in their business environment, improve laws, rules and systems, enhance the standardization and fairness of law enforcement involving enterprises, and protect the legitimate rights and interests of foreign investors. They should maintain domestic policy stability, enhance the transparency, stability and predictability of industrial policies, and boost investor confidence.

Gradually relaxing restrictions on foreign investment access. Developing countries can increase their efforts to attract foreign investment to promote local industrialization. Foreign investment should be encouraged in infrastructure, manufacturing, services, and other fields, connections with local business models should

Box 7-4 Indonesia facilitates industrial catch-up by attracting foreign investment

Indonesia has caught up in industrial development by optimizing its business environment to attract foreign investment. It has improved its business climate through multiple measures, including tax incentives (such as import duty exemption for self-use equipment of foreign-invested enterprises, tax rebates for raw materials of export products, and income tax cut for specific industries and large investments); fewer or relaxed foreign equity restrictions in priority investment sectors; and a nationwide online single submission system for business license management, handling permit applications for domestic and foreign investors. With the business environment improved, substantial foreign investment has come in, particularly in mineral extraction and processing.

Indonesia has also leveraged foreign capital and mature technologies from China and elsewhere and achieved a breakthrough in domestic deep processing of mineral products. In 2021, it became the world's largest nickel-iron producer with an annual output of 840,000 metric tons. By 2023, its stainless steel production capacity had reached approximately 6 million metric tons annually, making Indonesia the world's second-largest stainless steel producer.

Source: Compiled by the authors from publicly available information

be built and enhanced, and mutually beneficial international cooperation promoted (Box 7-4). The playing field should be further leveled and the flow of production factors facilitated to encourage healthy competition and complementarity between foreign and domestic investors.

Creating an internationalized business environment. Developing countries need to proactively align with international trade rules and make good use of them. They also need to harmonize standards and ensure regulatory compatibility in intellectual property protection, environmental issues, labor protection, and finance based on industrial needs and national conditions. Besides, they need to make foreign residents' work and life convenient, facilitating their entry, residence, healthcare, payment, and education.

7.3.5 Enhancing human capital

Strengthening education and vocational training. Developing countries should learn from the development experiences of developed countries at similar stages and improve education and on-the-job training systems in light of local industrial development. Schools should strengthen education in general-purpose technologies and popularize basic digital knowledge and skills such as computers and information technology. They should strengthen collaboration with enterprises, align teaching content with industry realities, promote the integration of classroom and practical learning, and help the working-age population develop the professional skills required by businesses. Public technology centers can be established in industrial parks to provide targeted education and training to local workers, tailored to the common needs of local industries and businesses. Developing countries can leverage technological assistance from international organizations such as the United Nations Industrial Development Organization (UNIDO) and the World Bank, international vocational education exchanges and cooperation initiatives such as China's Lu Ban Workshops, and mentoring partnerships between multinational corporations and upstream and downstream businesses to strengthen education and training for their workforce.

Cultivating local entrepreneurs. Governments, industry organizations, and international institutions can focus on training entrepreneurs and business operators in developing countries who are hardworking and innovative as well as possess industry knowledge, helping them to strengthen their entrepreneurial skills, such as opportunity identification, market development, risk management, and business operations. The government can increase support for local small and medium-sized enterprises, providing them with more tax incentives, financial support, technological assistance, and consulting services, helping business owners and managers grow into outstanding entrepreneurs.

7.3.6 Strengthening industrial competitiveness through open cooperation

Upholding an open international trade and investment environment for cooperation. The multilateral trading system with the WTO at its core should be safeguarded, WTO reform promoted, and fairer and more equitable trade and investment rules advocated. Unjustified trade barriers against developing countries need to be brought down and technology transfer and industrial investment from developed to developing nations facilitated. High-quality development of the new platforms and mechanisms for development cooperation such as the BRICS Cooperation Mechanism and the BRI should be promoted.

Strengthening regional economic cooperation. Regional organizations such as the ASEAN, the African Union, and the Community of Latin American and Caribbean States (CELAC), alongside mechanisms like the Regional Comprehensive Economic Partnership (RCEP) and the African Continental Free Trade Area (AfCFTA), need to play active roles. Intra-regional trade and investment cooperation need to be promoted, national strategies effectively aligned, regional markets integrated, regional industrial division systems built, and developing countries supported in scaling up their industrial capacities.

Enhancing South-South cooperation. South-South trade needs to be enhanced in volume, quality, and structure. Developing countries need to work more closely in technology learning, trade complementarity, and investment collaboration to diversify their industry and trade. The Global South nations need to make industrialization a key focus of South-South cooperation, deepen mutual learning of industrial policies, and share development experiences to explore industrialization pathways suitable to their respective national conditions and strengthen their industrial competitiveness.

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Chapter VIII

Empowering Global Development with Digital Technology

In recent years, there has been unprecedented iteration of cutting-edge digital technologies, such as AI, advanced computing, and low earth orbit satellites. The convergence of these technologies has created new knowledge and tools and fueled new breakthroughs. The digitalization drive has brought about a new wave of intelligence and integration, playing a unique role in empowering global economic growth, promoting sustainable development, and helping developing economies catch up. It has become an important source of certainty in an increasingly uncertain world. Having said that, we should also be aware of the new risks that come with technological advances. For the vast majority of developing countries, deepening cooperation is the key to reaping the dividends of the new technological revolution. The international community should strive to seize the valuable opportunities brought by the digital wave, share digital technologies with an open mind, bridge the digital divide, enhance human capital, and strengthen cooperation in digital technology governance.

8.1 An unprecedented wave of digital revolution is unfolding

8.1.1 The rapid development of AI has boosted the transition from digital transformation to digital intelligence

AI has entered a new stage of general application. Large models are evolving at a faster pace, the knowledge density is significantly increasing, and complex reasoning capabilities are continuously improving. Multimodal understanding and generation capabilities have been significantly enhanced, and the system demonstrates human-like conversational features in language comprehension, context awareness, and emotional response, enabling real-time, cross-modal interaction comparable to human dialogue. Agent technology has progressed on multiple fronts, with breakthroughs in cognitive architecture, spatial interaction, and multi-domain decision-making, as well as significant improvements in autonomous planning and complex task-processing capabilities. These advances indicate AI is evolving from specialized use to general application.

The cost of AI development and application continues to decline. The AI industry shows a trend of structural cost optimization, underpinned by advances in computing power, algorithms, and system efficiency. The continuous iteration of chip technology is driving continuous leaps in AI hardware performance. The new generation of GPU architecture has seen significant optimizations in process technology, power consumption management, and throughput capabilities. This has led to a substantial reduction in the cost per unit of computing power, paving the way for a new phase of post-Moore's Law exponential cost reduction. In terms of algorithms and system efficiency, sparse activation, model compression, parameter sharing, and efficient scheduling have been adopted to deliver similar performance with less computing power. It is estimated that the marginal cost of training and reasoning is decreasing by 50% to 70% annually[1], and the unit inference cost is falling by 80% to 90%. Combined, the computing cost per unit has fallen by orders of magnitude. The cost curve has jumped from the early high-cost range to a steep decline, significantly lowering the technical threshold for model development. This transformation provides unprecedented possibilities for small and medium-sized enterprises and developing countries to develop localized and customized AI applications, thereby accelerating the advent of an inclusive intelligent era (Box 8-1).

Box 8-1 Open-source AI large models accelerate global digital transformation

The rapid advances in large model technology and the emergence and application of open-source large models, such as DeepSeek, are significantly reducing the cost of AI application and popularization. This is a landmark in the shared and inclusive development of AI around the world. At the technological level, through architectural design and engineering optimization, these new models have shifted away from the past reliance on computing power. In terms of the cooperation model, they have adopted an open-source strategy that discloses parameters and weights to global developers, helping to form an open ecosystem and facilitate international technology exchange and resource integration. In terms of cost control, the unique training algorithms significantly reduce training cost. The training cost of DeepSeek V3 is much lower than that of OpenAI. Finally, in terms of application innovation, global developers can adapt to various scenarios and customize new applications based on open source.

Since its launch, DeepSeek has seen rapid increase in its downloads in a short period of time, helping small and medium-sized enterprises develop localized AI solutions and driving digital transformation. Scholars from many countries have called DeepSeek a new opportunity for the world to bridge the technology gap and accelerate digitalization, giving new impetus to South-South cooperation.

Source: Compiled by the authors based on publicly available information

[1] Chip performance is doubling each year, with costs decreasing by 40%, while algorithm costs are dropping by 50%-66% annually. See also: Heim Lennart & Pilz Konstantin. Feb, 2024. "What increasing compute efficiency means for the proliferation of dangerous capabilities". https://www.governance.ai/analysis/what-increasing-compute-efficiency-means-proliferation-of-dangerous-capabilities.

AI is being applied in multiple fields at a faster pace. As the performance of large models continues to improve and the cost of computing power drops significantly, the scientific research paradigm is undergoing a fundamental reform. AI has become a crucial catalyst for R&D in frontier areas such as biomedicine, chemical materials, simulation, and meteorological warning. In the field of new drug R&D, AI is expediting drug screening, accurately identifying targets, and optimizing the molecular design. Many new drugs designed with AI assistance have entered the clinical stage (Hutston, 2024). In the field of material R&D, the combination of generative AI and high-throughput screening has significantly improved the R&D efficiency of new batteries and electromagnetic materials, among others. In the field of simulation, AI accelerates the modeling and calculation of complex systems such as quantum chemistry and particle fluids, fostering a shift in scientific experiments towards a “virtual first” approach. In terms of meteorological warning, AI-driven global weather forecast models have outperformed traditional methods by enhancing the accuracy of extreme weather prediction and reducing response time (ECMWF, 2025). At the same time, embodied intelligence is evolving from experimental prototypes to industrial applications, representing a prime example of “AI stepping out of the virtual world”. Tesla’s Optimus robot has completed its initial deployment in car factories and is capable of performing complex operations. Tesla projects that it will annually produce 1 million units by 2027 (Business Insider, 2025a). According to Gartner’s Hype Cycle for Emerging Technologies 2024, the vast majority of AI-enabled emerging technologies will be ready for commercialization within the next two to five years (Figure 8-1). AI is penetrating industries across the board, ushering in an intelligent age for humanity.

8.1.2 The digital revolution is accelerating cross-technology integration and industrial restructuring

New breakthroughs have been made in emerging digital intelligence across multiple fields. Examples include 5G integration with satellite communications, accelerated commercial deployment of millimeter waves, and installation of industrial 5G private networks in manufacturing, energy, ports and other fields. Blockchain technology has entered its 3.0 stage. Modular architecture and zero-knowledge proof have significantly enhanced scalability and privacy protection capabilities. Quantum-resistant blockchain prototypes have entered testing in finance and identity authentication. Cross-chain and interoperability protocols have promoted the efficient flow of resources on and off the chain. Low-orbit satellite constellations are being deployed rapidly to provide wide-area, low-latency connectivity for remote areas. Quantum computing is moving from laboratory to industry validation, with multiple technology routes being tested for performance in drug design, material simulation, and codebreaking. Technological breakthroughs and accelerated applications are reshaping the landscape of science and technology and driving integration and innovation across different domains.

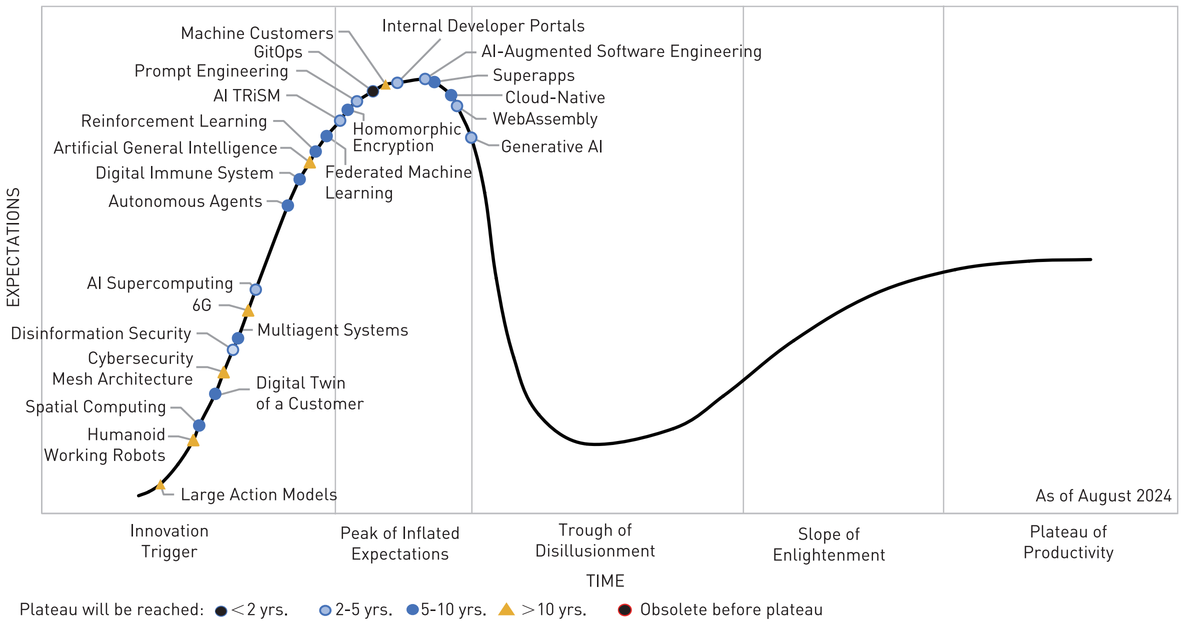

Figure 8-1 Hype Cycle for Emerging Technologies 2024

Source: Gartner

A new round of intelligent industrial transformation is speeding up along both ends of the value chain. Digital intelligence technology, initially applied in R&D, design, and marketing services, is rapidly penetrating the middle of the "smile curve" from both ends. In the R&D and design stage, AI accelerates the molecular modeling, material prediction, and product simulation processes, and transitions from "trial and error experiments" to "data-driven predictions", greatly shortening the innovation cycle, reducing R&D costs, and promoting breakthroughs in frontier fields such as life sciences, new materials, and smart hardware. In the marketing and service stage, big models enable brand management, user portrait, content generation, and precise reach, strengthen intelligent interaction with consumers, and drive the rise of new business forms such as digital marketing, content e-commerce, and customized services, achieving a transition from "experience-driven" to "data insight". In contrast, the penetration of digital intelligence technology in the manufacturing stage is relatively slow. Although industrial large models, digital twins, and smart factories have been initially applied in some leading enterprises, they are still constrained by equipment heterogeneity, data silos, and high transformation costs.

8.2 The digital revolution has created significant new opportunities for global development

8.2.1 Digital technologies inject new momentum into global economic growth

Digital technology has become an important driving force for economic growth. In recent years, the world has been grappling with slow economic growth, weakened growth momentum, and rising pressure for structural adjustment. Global growth has continued to slow down since 2022, with 2024 described by the World Bank as “the weakest year in 17 years” (World Bank, 2025). Global economic slowdown results from cyclical disruptions, such as policy uncertainty and geopolitical conflicts, as well as structural challenges, such as an aging population, slowdown in globalization, and geopolitical reshuffling. These intertwined factors have gradually rendered the traditional growth drivers ineffective, becoming a major constraint on economic vitality (IMF, 2024). Against this backdrop, the digital economy, characterized by high added value, high growth potential, and strong penetration, has taken up a growing share in global GDP, becoming a key engine to fill the traditional growth gap and drive recovery and transformation. The global digital economy reached US$12.6 trillion in 2024 (Bureau of Economic Analysis, US Department of Commerce, 2025), with a growth rate much higher than the average global economic growth rate. Industrial digitalization has continued to advance. Digital transformation is an important driver of the digital economy. Its market size has continued to expand in recent years, with a compound annual growth rate of 28.5% (Grand View Research, 2024), driving digital and intelligent upgrading in areas such as finance, healthcare, manufacturing, retail, and transportation. New business forms such as the metaverse, low-altitude economy, smart cities, intelligent driving, and embodied intelligence are emerging rapidly and releasing a new round of growth potential. The global smart city market reached US$1.4 trillion in 2024 (Imarc, 2024). More than 500 cities adopted digital twin technology for climate adaptation, traffic management, and infrastructure planning (Nguyen, 2024). In the field of autonomous driving, C-V2X technology has enhanced decision-making collaboration, and L4-level pilot deployment is accelerating. Its global market size reached US$200 billion in 2024 (Precendence Research, 2025).

8.2.2 Digital intelligence helps open up new paths for sustainable development

Digital and intelligent technologies can facilitate green and low-carbon transition. In the three emission-intensive fields of energy, transportation, and construction, digital intelligence technologies such as AI are deeply embedded in all aspects of the supply and demand sides, significantly improving resource allocation efficiency and carbon emission reduction capabilities through intelligent perception, prediction optimization, and system collaboration. In the energy field, AI enables more intelligent power grid dispatching and improves renewable energy integration efficiency. For example, China Southern Power Grid is using AI-based reinforcement learning to optimize the coordinated management of its hydropower, wind and solar resources. In 2024, the Anshun region added more than 2.09 million kilowatt-hours of wind and solar power to the grid, equivalent to a reduction of 1,540 tonnes[1] of carbon dioxide emissions. In the field of transportation, China's first zero-carbon highway – the Jinan-Hefei Highway – opened to traffic in December 2024. It uses distributed PV, wind, and geothermal systems and an intelligent operation and maintenance platform to reduce emissions (PV Magazine, 2024). In the field of construction, AI-enabled intelligent operation and maintenance and energy consumption monitoring systems are becoming increasingly popular. It is estimated that smart building systems can dynamically optimize energy-use scenarios such as air conditioning and lighting, with an average energy saving rate of 10-20% (Transforma Insights, 2022).

Technology empowerment has expanded the coverage of traditional services and promoted societal inclusiveness. Digital technology is breaking down the geographical, economic and capacity barriers of the traditional service system and extending public service to remote areas and vulnerable groups. In the financial sector, mobile payment systems are providing basic financial services to a large number of people who previously lacked access to banks. By the end of 2024, the number of registered mobile payment accounts in SSA reached 1.1 billion, with 283 million active accounts and an annual transaction value of US$1.1 trillion (GSMA, 2025). Compared to the starting point of 100 million accounts a decade ago (GSMA, 2014), this surge marks a significant improvement in financial accessibility. Through platforms such as M-PESA and Airtel Money, farmers and small and micro enterprises can easily access payment, credit and insurance services, which eases their financing difficulties and market barriers and helps diversify income and alleviate poverty. In education, digital platforms are reshaping the way knowledge is acquired. Ubongo, a social enterprise based in Dar es Salaam, Tanzania, has been devising fun educational resources – edutainment – for 42 million children in 23 countries (Ubongo, 2025) via television, radio and mobile devices, thanks to the localization of its language content. Studies have shown a significant improvement in the literacy and basic cognitive abilities of the children who participated in Ubongo learning, especially among girls and children from low-income families. In the medical field, digital health technology is improving primary-level medical services. AI-driven remote diagnosis and treatment and image recognition systems have been widely applied at the grassroots level in Kenya, Nigeria and other countries, significantly improving the level of diagnosis and disease monitoring (CEIMIA, 2024). In the meteorological field, AI-driven high-precision

[1] At 0.737 kilograms/kWh. Source: "Anshun Power Bureau: AI-driven renewable integration", *People's Daily*, March 28, 2025

meteorological models have significantly enhanced disaster warning capabilities and thus are widely used in national and global early warning systems, improving the accuracy and timeliness of warning and reducing the loss caused by meteorological disasters (Kuglitsch et al., 2024) (Box 8-2). In public service, the popularization of digital technology has improved the transparency, fairness and responsiveness of government services. In health, social security, and people's livelihood, public resources for vulnerable groups have increased significantly, promoting social equity and inclusion (UNDESA, 2024).

Box 8-2 Pangu Meteorological Big Model empowers global climate prediction and disaster reduction

With the frequent occurrence of extreme climate events around the world, climate prediction and disaster prevention and mitigation capabilities have become key support for the resilient development of various countries. The Pangu Meteorological Big Model, an AI-powered weather forecasting system developed by China's Huawei, has seen large-scale deployment and practical application in many countries around the world. With its technological breakthroughs in 3D modeling, time-domain aggregation, and multimodal data fusion, the model has significantly boosted the accuracy and efficiency of short- and medium-range weather forecasts, demonstrating considerable potential to drive a paradigm shift in global climate governance.

In Africa, the Pangu Big Model has become a bridge connecting high-tech and low-threshold disaster prevention needs. In early 2024, Pangu cooperated with MITAO Forecast of Madagascar to deploy a typhoon early warning system in the island nation. The 10-day forecast data was displayed on the village bulletin board, using red, yellow and green icons to explain the severity of the situation, helping local fishermen successfully avoid danger. In the Asia-Pacific, the Pangu Big Model team cooperated with the Meteorological Bureau in Thailand to develop a typhoon path prediction system, shortening the prediction time from five hours to 10 seconds. This allowed time for adjustments in agricultural planting and tourist management, and helped to reduce economic losses. The system also used Thai large language models to support local disaster response. The European Centre for Medium-Range Weather Forecasts (ECMWF) found that Pangu performed as well as traditional numerical models in predicting key meteorological elements, and outperformed them in predicting the path of tropical cyclones.

Pangu's global open source interface has been widely used by meteorological agencies in many countries for disaster monitoring and forecasting. This AI climate prediction revolution, led by digital intelligence technology, is reshaping the global disaster reduction cooperation model and provides a replicable "AI + governance" paradigm for the Global South to cope with climate risks.

Source: Compiled by the authors based on publicly available information

8.2.3 Developing economies are likely to gain new opportunities for development

Technological progress is reshaping the global development landscape, offering new possibilities for developing countries to overtake others. The rapid convergence of the internet and AI has not only broken down the barriers of time and space but also lowered the threshold for cross-border transactions and services, giving rise to new forms of business such as cross-border e-commerce, digital outsourcing, and remote services. It has become a key driver for industrial upgrading and job creation in developing economies. In 2024, the African e-commerce market reached US$317 billion, and its compound annual growth rate is expected to reach 13.8% during 2025-2033 (Imarc, 2025). The internet economies in Southeast Asia, Latin America, and India have also entered a stage of rapid growth. This growth trend has led to the prosperity of supporting services, such as digital marketing, warehousing and logistics, and online payment, creating tens of millions of jobs. It is particularly important for small and medium-sized businesses and young entrepreneurs. In Nigeria, Indonesia and other places, e-commerce platforms have become an important channel for women to start businesses and generate income in rural areas. At the same time, AI-assisted language translation systems are widely embedded in international platforms. Studies have shown that the deployment of such systems can promote export trade volume by 17.5% and significantly enhance the ability of enterprises in developing countries to integrate into the global market (Brynjolfsson et al., 2018).

Another key pillar is digital outsourcing, which saw a global market size of nearly US$770 billion in 2024, dominated by information technology outsourcing (ITO) and business process outsourcing (BPO). Countries such as India, the Philippines, Brazil, Mexico and Viet Nam, for example, have become major global digital service suppliers, thanks to their local advantages (Doit Software, 2024). The BPO industry in the Philippines now accounts for nearly 8% of the country's GDP, employs more than 1.5 million people, and attracts a large amount of offshore investment (IMF, 2025). In addition, the data cleaning and annotation market is also expanding rapidly at an annual compound growth rate of over 25%, becoming an important new area of technical services and employment in developing countries (Verified Market Research, 2025).

The proliferation of emerging digital technologies is helping developing countries catch up in technology. Open-source models are reducing technology costs, accelerating the development and application of new technologies in developing countries, and enhancing their digital skills and innovation capabilities, thus creating favorable conditions for them to catch up in the digital transformation process. In Indonesia, India and other countries, EdTech firms have developed local multilingual teaching platforms based on the DeepSeek open-source model, benefiting students in remote areas. In Viet Nam, enterprises and research institutions have applied DeepSeek and other open-source models in education, healthcare, finance, and many other fields, enhancing their service efficiency. In 2024, the number of developers from developing countries increased significantly. The number of developers from the Philippines, India, Brazil, Nigeria and Indonesia increased by as much as 23% to 29%. Contributions from developing countries to generative AI projects also saw high growth. Ethiopia's contribution to generative AI projects increased by 242%; Costa Rica's by 171%; and Viet Nam's by 143% (GitHub Octoverse, 2024). These numbers indicate that technological and productive capabilities are spreading from traditional centers such as Europe and North America to emerging markets, and emerging economies are shifting from "technology users" to "technology developers".

8.3 Risks and challenges in the process of digital transformation

8.3.1 Technological security risks

The rapid iteration of technology poses cybersecurity threats and data security risks. There were 6,670 data leakage incidents in 2024, leading to the exposure of nearly 1.68 billion records (Infosecurity, 2025). A ransomware attack on the US company Change Healthcare led to the theft of a large amount of sensitive data and the leakage of information of one-third of Americans (TopInfo, 2024). The second risk is public safety concerns and a trust crisis caused by the abuse of technology such as deepfakes, privacy breaches, and public opinion manipulation. The use of deepfake technology for fraud, privacy violations, and election manipulation has risen sharply. In 2024, businesses lost an average of nearly US$500,000 each due to deepfake-related fraud, with large businesses losing an average of US$680,000 (Eftsure, 2025). Third, autonomous weapons developed with new technologies could be devastating if they get out of control. Anduril, a US defense technology company, has unveiled AI-powered compact lethal drones. They can carry out attacks even when they are out of contact with their operators, raising concerns about an "Oppenheimer Moment" of large-scale deployment of autonomous weapons.

8.3.2 Job reshuffling and re-skilling

The rapid application of AI poses certain challenges to the labor market. At present, jobs in manufacturing, warehousing, accounting, auditing, writing and translation have been affected. HR database creator Revelio Labs analyzed that global jobs involving AI-doable tasks have dropped by 19% in the last three years[1]. Jobs in high AI-exposure occupations, such as database management and IT in the US, have dropped by 31% since ChatGPT was launched (Business Insider, 2025b). Employment in developing countries has also been hit. It is estimated that as many as 300,000 BPO jobs may be replaced by AI in the coming five years (Suroy, 2024). According to a report by the International

[1] This figure represents the global average. The survey sample includes developed economies such as the US, Canada, EU member states (such as Germany and France), Japan, and Australia; emerging economies such as China, India, Brazil, and Mexico; and some low-income economies in Africa and Southeast Asia.

Labour Organization (ILO), while the long-term impact of AI on the job market remains uncertain, its short-term effects are already evident. Currently, nearly a quarter of jobs have been significantly impacted by generative AI (ILO, 2025). Medium-skill occupations are the most affected, at 38.1%; high-skill occupations follow at 35.3%; while low-skill occupations are the least affected, with 99.2% of low-skill workers having had little or no exposure to related technologies (Figure 8-2). Generative AI can automate most tasks, and if its application becomes overly concentrated, it could trigger large-scale structural unemployment in the short term. This requires urgent attention and timely response.

8.3.3 Widening gap in digital infrastructure and skills

The imbalance in the development of digital infrastructure is worsening. The gap in the investment growth in computing infrastructure between developed and developing countries continues to widen, severely hindering the development and application of advanced technologies such as AI in developing countries. Data center capacity and cloud region deployments are concentrated in North America, Western Europe, and East Asia, limiting the ability of many emerging markets to convert local data into value (Figure 8-3). Over the past five years, the ratio of digital infrastructure investment growth between technology frontrunners and adopters was 18:3. Data center investment growth in frontrunners was 13 times higher than that in adopters (IDC et al., 2024).

Insufficient energy supply constrains the deployment of computing power in developing countries. The demand for energy from digital infrastructure continues to surge. In 2024, global data centers consumed approximately 415

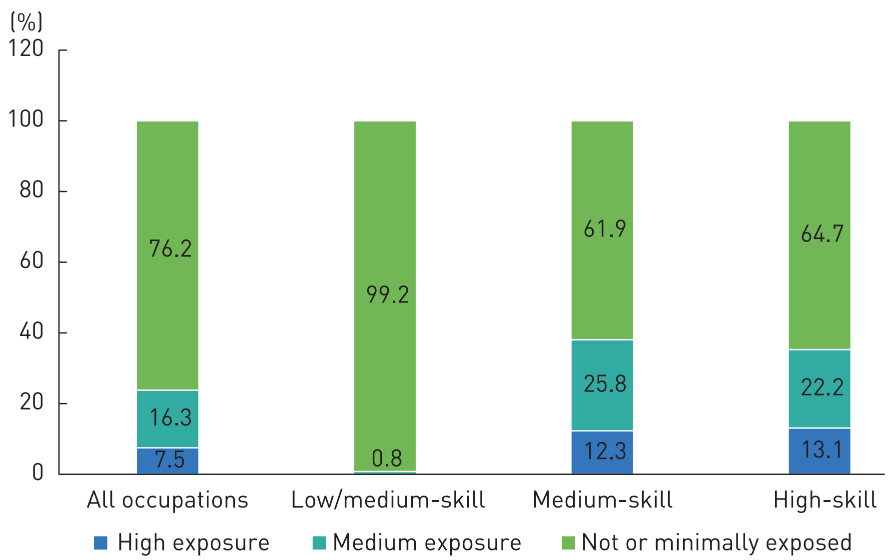

Figure 8-2 The impact of AI on jobs at different skill levels

Source: ILO

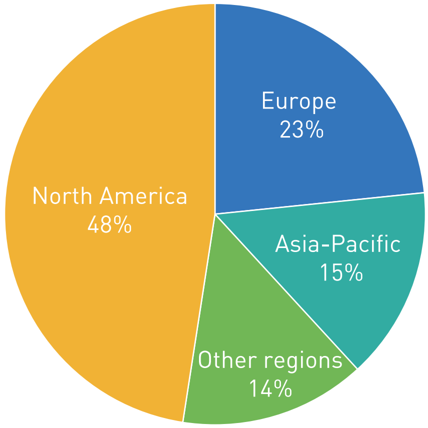

Figure 8-3 Data center distribution in 2024

Source: Visual Capitalist

TWh of electricity, accounting for 1.5% of total global consumption. This is projected to rise to 945 TWh by 2030, representing approximately 3% of total global consumption (IEA, 2024a). Among these, a single hyperscale AI data center can consume up to 100 MWh of electricity (IEA, 2024b). However, the energy supply systems in developing countries remain too weak to support their computing power deployment. Statistics show that over 600 million people in SSA still lack access to electricity, accounting for 60% of the region's total population. The region's share of global energy investments is less than 1% (IEA, 2024c). As global computing infrastructure expands rapidly, insufficient energy supply is emerging as a significant barrier to developing countries' intelligent transformation.

Insufficient digital talent is hindering the development and application of advanced technologies in developing countries. Although the proportion of STEM (science, technology, engineering, and mathematics) graduates in technology frontrunners is close to that in other countries, 95% of STEM graduates in frontrunners are able to find employment in ICT-related fields, whereas this proportion is only 50% and 15% in technology adopters and starters respectively (IDC et al., 2024). Insufficient digital infrastructure and industrial ecosystems limit the ability of developing countries to absorb STEM graduates locally, resulting in low employment conversion rates and severe brain drain. Additionally, weak infrastructure and poor talent conversion force developing countries to rely heavily on external computing power and solutions, further increasing operational and delivery costs and restricting the localization and large-scale application of advanced technologies such as AI (Kamanzi, 2025; Satariano et al., 2025).

8.3.4 Intensified geopolitical competition

In recent years, a handful of developed economies, out of strategic competition considerations, have generalized security concepts and strengthened export controls on semiconductors, AI chips, supporting software/technology, and military-civilian dual-use items, and taken new entity list measures on single-country AI and semiconductor capacity (Georgi et al., 2025). They have put quantum, cryogenic, and emerging semiconductor tools under export control (Lovells, 2024), prohibiting companies from selling AI chips to specific countries and restricting the use of AI chips produced by specific companies. These measures have increased the burden of compliance and hindered global technological cooperation and innovation. In terms of standards, the Open RAN architecture clashes with the 3GPP vendor ecosystem, increasing market fragmentation and deployment cost. On the supply chain side, the global semiconductor supply chain is gradually diverging, putting companies into decision-making dilemmas. It is expected that by 2030, the global semiconductor sector will likely be shaped by an incompatible dual-track industrial chain (Merle, 2024), which will exacerbate trade barriers and market fragmentation and reduce global technological coordination and resource allocation efficiency, raising the institutional costs and strategic risks of developing countries in technological choice and standard application. In terms of data, in 2024, the US, India, Brazil, and Russia set up stricter data transfer regulations, while global regulation over cross-border data flows was strengthened, making global data sharing and cross-border flows more difficult (Deloitte, 2024).

8.4 Expanding and sharing the dividends of global development in the digital age

In the face of profound changes brought about by the digital and intelligent revolution, all countries should uphold openness, inclusiveness, and collective progress in development, strengthen multilateral cooperation mechanisms, promote open source and sharing of technologies, and break down institutional and resource barriers. They should bridge the gap in digital capabilities and access, systematically expand local talent reserves, and improve and upgrade the future-oriented technology governance system. At the same time, it is imperative to minimize the structural impact of the intelligent wave, reduce the geopolitical uncertainties, and turn the innovative impetus in the digital age into a source of certainty for shared development.

8.4.1 Deepening the openness and sharing of digital and intelligent technologies

Supporting open-source R&D and joint innovation. Open-source collaboration and joint innovation are key pathways to promote technological inclusiveness and capacity building. Special funding programs should be established on the basis of platforms such as the UN Technology Facilitation Mechanism (TFM) and the UNESCO Open Science Framework to encourage universities, research institutions, and enterprises in developing countries to participate in the R&D of open-source frameworks, such as basic models, deployment tools, and regional collaboration models, as well as their local adaptation. It is important to promote joint research projects, pilot demonstrations, and data sharing among research institutions, enterprises, and international organizations centered around global issues such as climate change, public health, food security, and disaster warning, to build a multilingual, cross-regional open collaboration network. With stronger copyright protection and technology transfer mechanisms, the dissemination of advanced technologies to developing countries can be promoted while incentivizing the integration of local innovation outcomes into the global innovation chain.

Strengthening the adaptation of basic technologies to improve people's livelihood. The lack of core technology capabilities in developing countries is a constraint on the popularization and application of smart technologies, especially in the face of challenges such as unstable power supply and limited computing power resources. To overcome these difficulties, it is important to prioritize the R&D of key basic technologies, such as low-power AI chips, green algorithms, and fault-tolerant computing architecture that can adapt to low power supply and low-bandwidth environments, and promote the integration of software and hardware and the localization of the industrial chain. It is crucial to focus on key areas of people's livelihood, such as intelligent diagnosis in agriculture, telemedicine, educational equity, environmental monitoring, and water resource management, to drive the development of lightweight models and low-cost AI solutions and make intelligent technologies more practical and inclusive.

8.4.2 Accelerating efforts to fill the digital intelligence divide

Jointly investing in infrastructure. Digital infrastructure is the "first mile" in digital and intelligent development. Underinvestment and imbalanced construction are the main causes of the development gap. Joint investment can reduce construction costs and improve connectivity. Based on platforms such as the World Bank and the AIIB, a joint investment platform for digital infrastructure should be built to promote the construction of 5G networks, submarine cables, data centers, and satellite communication systems, with priority given to LDCs and landlocked developing countries with weak infrastructure. Simultaneously, efforts should be made to promote interoperability standards and cross-regional maintenance collaboration to improve infrastructure sustainability and coverage.

Developing low-cost, cross-regional computing power infrastructure. Computing power is the new infrastructure of the intelligent age, and its highly centralized and costly nature is exacerbating technological inequality. Under cooperation mechanisms such as the African Union, ASEAN, and BRICS, transnational supercomputing centers, GPU resource pools, and edge computing power nodes should be established, along with a regional computing power mutual assistance mechanism, to achieve load balance and resource sharing (Box 8-3). The development of local task scheduling systems

Box 8-3 Computing power hubs contribute to technological innovation in the Global South

Computing centers are an integral part of digital infrastructure and a core driving force for modernization, technological autonomy, and economic transformation in the digital intelligence age. In recent years, developing countries have been deploying computing power hubs and exploring the joint construction of regional supercomputing centers through multilateral cooperation. This is significant for achieving local technological innovation and scientific advances, developing the digital industry, strengthening digital sovereignty and security capabilities, and narrowing the global intelligence gap.

In 2024, Algeria established its first high-performance AI supercomputing center, which supports precision agriculture and climate modeling with high computing power, provides technical support for the country's sustainable development, boosts local AI R&D and industrial incubation, and enhances the country's digital sovereignty and independent innovation capabilities. In the same year, Zimbabwe expanded its national high-performance computing center in Harare, adding an HPC cloud platform and data center to support key applications, such as electronic health records, environmental monitoring, and mineral exploration, strengthening local processing capabilities, promoting smart transportation planning and digital transformation of urban infrastructure, and accelerating innovation and entrepreneurship as well as local talent cultivation.

In recent years, due to the difficulty and high technical threshold of single-country investment, developing countries have been working together to build regional supercomputing centers and shared GPU clusters through multilateral cooperation. For instance, Latin America and Africa have both established organizations for regional computing power networks. In the future, computing power cooperation in the form of regional alliances will become mainstream and will be rapidly integrated with green computing power and sustainable technologies, serving as a digital engine for developing countries as they move towards an intelligent age.

Source: Compiled by the authors based on publicly available information

and resource management platforms should be supported to enhance the efficiency, autonomy, and green operation capabilities of computing infrastructure.

Alleviating energy shortage in developing countries. Energy shortages are a major bottleneck in the deployment of digital infrastructure in developing countries. Systematic, multi-level, and multi-stakeholder collaborative measures are needed to address them. Efforts should be made to establish regional green energy cooperation mechanisms, promote grid interconnectivity and cross-border clean energy dispatch, and enhance power supply stability and resilience. Additionally, green financing mechanisms should be integrated into existing multilateral development institutions to guide capital flows towards renewable energy and low-carbon data center construction. In particular, edge computing facilities should be prioritized in regions with abundant solar and wind resources for integrated development of green energy and computing power.

8.4.3 Promoting human capital upgrading in developing countries

Formulating educational strategies and reforms for the intelligent age. The modernization of education systems is key to cultivating human capital for the digital age. Under the UNESCO Education 2030 Framework for Action and the G20's digital education cooperation mechanism, countries should be assisted in incorporating programming, algorithmic thinking, and data literacy, ethics and safety into basic and vocational education curricula so that a universal competency system for the intelligent age can be established. Pilot projects for intelligent education reform should be launched through regional organizations to promote curriculum updates, teachers' training, and the development of digital education platforms, thereby fostering institutional innovation and experience sharing.

Strengthening resource sharing and promoting digital literacy for all. Access to knowledge is the foundation for achieving educational equity and talent development. Building on the UNESCO Open Educational Resources platform and the UNICEF Digital Learning Initiative, a community of digital skills learning in the Global South should be promoted to provide open-source textbooks, instructional videos, and practical tools. Platform companies in developed countries should be encouraged to contribute knowledge support, donate educational courses, and offer cloud service resources. It is also necessary to implement a national digital literacy enhancement plan, establish a global standards framework, and provide vocational transition support for groups impacted by intelligent technologies.

Strengthening the cultivation of local technical talent and international cooperation. Technological competition is about talent competition. Both local cultivation and cross-border exchanges should be promoted in a coordinated manner. To strengthen talent cultivation cooperation in the intelligent age, enterprises and universities should be encouraged to jointly establish applied technology colleges and virtual skill training platforms, so as to meet the needs in key areas such as AI, clean energy, cybersecurity, and intelligent manufacturing. Students from developing countries should be supported to participate in internships and exchange programs at leading overseas institutions. A talent return model that combines online degrees, short-term training, and home-country engagement could be explored. Cross-border flows of high-level technical talent should be encouraged through international scholarships, remote mentorship programs, and the introduction of "digital talent green cards".

8.4.4 Strengthening global cooperation in digital governance

Establishing an international regulatory framework for digital intelligence technologies. Outdated regulation hinders technological progress and can even lead to uncontrollable risks. Establishing institutional guardrails is therefore a prerequisite for ensuring global technological cooperation. A cooperative mechanism for AI governance should be established to promote joint formulation of global AI governance rules, clarify the red lines for high-risk technologies and ethical bottom lines for development, and prevent any algorithmic arms race or technological abuse that could trigger humanitarian crises. At the same time, a collaborative AI ethics working group under the UN framework could be established to take the lead in drafting ethical audit guidelines and data collection norms, and establishing cross-border risk control mechanisms. A risk response mechanism should also be created to enhance response to emergencies such as model runaway or deepfake incidents.

Promoting an AI equity system. The development of AI should not solidify inequality but serve as a means to achieve greater equity. AI equity should become an important consensus in global digital governance, aiming to ensure that different countries, groups, and individuals enjoy equal rights and fair treatment in data collection, algorithmic decision-making, and platform application. It is important to promote data sharing and create international rules for data usage, prohibiting algorithms from using group characteristics such as race, gender, and income for implicit discrimination. It is also essential to enhance algorithm transparency. Major global AI platforms should be encouraged to establish algorithm auditing systems to ensure a clear and traceable basis for decision-making in highly sensitive areas, such as recruitment, finance, and law enforcement, so that algorithms cannot cause systemic injustice to certain groups. Furthermore, technological inclusiveness should be promoted by advancing a barrier-free design for smart products and ensuring equal access to AI devices for the elderly, people with disabilities, and other groups. Access to AI-enabled public services, such as healthcare and education, should be expanded in remote and underdeveloped areas.

Enhancing the voice and institutional supply capacity of the Global South. Global digital governance must be more inclusive, collaborative, and equitable. The current governance structure, dominated by developed countries and large technology companies, is unable to address the diverse needs of the developing world. More Global South countries should be encouraged to participate in mechanisms such as the G20 Digital Economy Working Group, the Global Partnership on Artificial Intelligence (GPAI), and the OECD Global Forum on Technology. A "Global South observer seat" or a mechanism of priorities for emerging economies should be established to incorporate issues of concern to developing economies, such as data sovereignty, platform responsibility, and algorithmic bias, into the global agenda. Regional platforms such as the African Union, BRICS, ASEAN, and the Arab League should be supported to establish a Global South digital governance cooperation network to jointly propose rules in areas such as AI ethics, cross-border data flows, and platform regulation, thereby enhancing the institutional influence of developing countries in global digital governance.

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Chapter IX

Enhancing Development Cooperation within the Global South

The collective rise of the Global South is a distinct feature of the remarkable transformation across the world. Despite the increasing instability and uncertainty within the current international landscape, the Global South holds promising development prospects, with huge potential for cooperation in trade and investment, technological progress and application, and other fields. Global South countries should harness their collective strength to jointly advance the GDI. They need to deepen cooperation in priority areas such as agriculture, industrialization, green industries, and the digital economy, strengthen financial safeguards, and build an endogenous development momentum and resilience in their joint efforts to bring stability and momentum to global development.

9.1 The collective rise of the Global South

In recent years, Global South countries, with growing awareness of independent development, have seen their economic strength and position in global value chains steadily rise. They are playing an increasingly important role in the international order, becoming a source of certainty in today's world.

9.1.1 Emergence of the Global South as an important engine of global economic growth

The Global South has outperformed developed economies in economic growth for many years. Since 2000, the group has consistently outpaced developed economies, with an average growth of 4.03% between 2015 and 2024, exceeding the 1.95% growth of developed economies. In 2024, the economic growth of the Global South stood at 4.28%, far higher than the 1.80% growth of developed countries. It is projected to be around 3.70% in 2025, notably higher than the 1.38% growth of developed economies (Figure 9-1) (IMF, 2024).

The Global South's contribution to the global economy has increased dramatically. In nominal dollar terms, the Global South accounted for approximately 41% of global GDP in 2024 from about 25% in the 1980s. According to analyses by various international organizations, the group's contribution to global economic growth has leapt from less than 40% in the 1980s to around 80% in recent years. In particular, BRICS has gained prominence following its expansion and will serve as a constructive and stabilizing force in global economic growth (Table 9-1). It is anticipated that by 2050, three of the world's four largest economies will be from the BRICS countries, namely China, India, and Indonesia, indicating a continued "southward" shift in the center of gravity of the world economy.

The innovation capacity of the Global South has increased. In recent years, many Global South countries have made sustained efforts to invest in education and science and technology, cultivate domestic talent, and improve national innovation systems, which has strengthened their innovation capacity and empowered their economic development. From the perspective of innovation input, data from UNESCO and other institutions show that from 2000 to 2022, the total R&D expenditure in developing

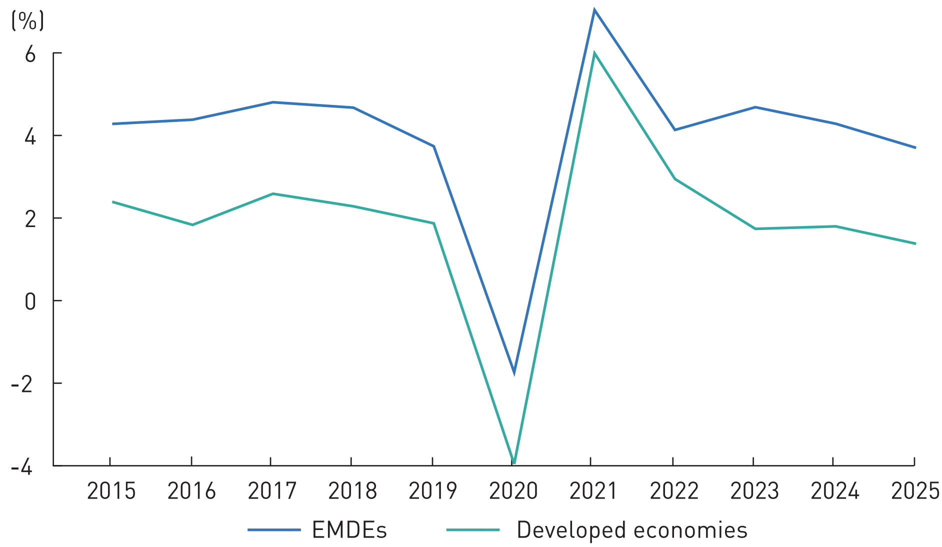

Figure 9-1 Growth of EMDEs and developed economies, 2015-2025

Note: According to the IMF statistical definition, this refers to EMDEs. In this chapter, the Global South is also considered a collective of EMDEs. The data for 2025 are projections.
Source: IMF

Table 9-1 GDP, rankings and growth of BRICS countries in 2024

BRICS countries	Nominal GDP (US$ billion)	Global GDP ranking	GDP growth (%)
Brazil	2,170	10	3.4
Russia	2,160	11	4.1
India	3,910	5	6.5
China	18,750	2	5.0
South Africa	400.2	41	0.6
Saudi Arabia	1,090	17	1.3
Egypt	383.1	43	2.4
UAE	537.1	29	3.8
Iran	401.4	40	3.5
Ethiopia	143.1	60	8.1

Source: IMF

economies surged from approximately US$140 billion to about US$1.2 trillion, a more than sevenfold increase. Regarding innovation output, according to the World Intellectual Property Organization (WIPO), patent applications from developing economies grew from around 250,000 in 2000 to over 2.3 million in 2023, representing an eightfold rise. Several Global South countries have been steadily climbing in their innovation rankings. According to the Global Innovation Index published by the WIPO, between 2013 and 2024, China leapt from 35th to 11th in the global rankings, while Türkiye climbed from 68th to 37th, India from 66th to 39th, and Brazil from 64th to 50th.

9.1.2 Elevated position of the Global South in global value chains

Historically, the Global South countries overall were confined to the lower tiers of value chains, mainly undertaking raw material supply, primary product processing, and labor-intensive production. This led to a high reliance on external market demand for economic growth, low technological capacity, and insufficient endogenous momentum for development. Through years of efforts, some countries of the Global South have risen to become pivotal hubs in global supply chains and sharpened their competitive edge in some emerging industries.

The comparative advantage of some Global South countries is shifting from traditional labor-intensive sectors to knowledge- and skill-intensive ones (Box 9-1). Developing economies have steadily increased their share of global services exports, reaching 30% by 2024. Among these, the top 10 developing economies accounted for 21% of global services exports in 2023, a 5-percentage-point increase from 2010 (UNCTAD, 2025). For example, in the knowledge-intensive "other business services"[1], the top five developing economies saw their export share rise from 46% in 2010 to 65% in 2024 (UNCTAD, 2024). In particular, China and India doubled their shares of global business services exports between 2005 and 2022.

The Global South's manufacturing exports have become increasingly technologically sophisticated. In 2023, the Global South accounted for 54.3% of global manufactured exports, with its share in medium- and high-tech manufactures showing steady growth (WTO, 2024a). For instance, China maintained leadership in technological innovation and industrial distribution across new energy vehicles (NEVs), EV batteries, and PVs, accelerating the global green transition (IEA, 2024). India has emerged as a critical hub in the global pharmaceutical supply chain, leveraging its production and R&D capabilities to supply over 60% of global vaccines while playing a pivotal role in complex generics (IBEF, 2023; WTO, 2024b).

The quality of FDI attracted by the Global South has continuously improved. FDI inflows

[1] "Other business services" typically encompass a range of commercial service activities not explicitly listed under other major categories, covering areas such as intellectual property, R&D, leasing, consulting, technical support, legal services, accounting, auditing, advertising, market research, and management consulting.

Box 9-1 The evolving role of some Global South countries in global value chains

Some Global South countries have become deeply integrated into the global division of labor system, assuming critical roles in major industrial chains based on their distinctive advantages.

In specific, China occupies an important position in the green energy sectors such as solar PV power, wind power, and power batteries. India has built some competitiveness in global pharmaceutical R&D and production, and software and information technology outsourcing. In the resource sector, Brazil is well positioned as a global supplier of agricultural and mineral resources, while Indonesia and Chile are major suppliers to the global industrial chains of electric vehicles (EVs) and energy storage batteries, owing to their abundance of critical minerals. The role of South Africa is multi-faceted. It not only functions as the traditional center for the mining industrial chain, but has also grown into a regional integration hub for the automotive supply chain across the African continent. In addition, Southeast and South Asian countries, exemplified by Viet Nam and Bangladesh, have effectively undertaken industrial transfer and become vital production bases of global labor-intensive industrial chains.

These developments underscore the evolving role of the Global South countries in global value chains. They are not merely the world's "factories" and "mines", but are gradually transforming into the "engines" and "innovation centers" of specific emerging industries.

Source: Compiled by the authors based on publicly available information

have been shifting from traditional resource extraction and low-end manufacturing towards high-value-added industries such as renewable energy, EVs, biopharmaceuticals, and the digital economy (UNCTAD, 2023a). This transformation is particularly pronounced in the digital sector. Despite an overall decline in global FDI during 2024, developing economies saw digital economy-related FDI grow by 14% against the trend, primarily driven by high-value segments like ICT manufacturing, digital services, and semiconductors (UNCTAD, 2025). This contrasts sharply with the historical dominance of resource- and labor-intensive investments, signaling a fundamental shift in perceptions of the Global South's economic potential.

9.1.3 Heightened awareness of independent development in the Global South

The Global South has recognized the imperative of exploring development pathways tailored to national contexts. Drawing on their developmental experience and pragmatic considerations, Global South countries increasingly emphasize maintaining autonomy and taking the initiative in their development processes. After World War II, the successful practices and remarkable achievements of some Global South nations inspired their peers with renewed hope and alternative choices. These countries came to understand that by mechanically copying foreign development models, they would fail to address their fundamental challenges, prompting greater emphasis on exploring pathways rooted in local historical and cultural contexts while aligned with today's realities. In recent years, amid rising unilateralism, protectionism, and growing uncertainty, many Global South nations have further recognized the critical importance of pursuing country-specific development strategies and strengthening self-driven development capacities.

Global South countries have consolidated the conditions and basis for independent development. Recently, several of them have leveraged fundamental economic principles like comparative advantage and scale economies to attract foreign investment through improved business environments, tax incentives, and streamlined administrative procedures. They have also accelerated infrastructure development, including ports, power grids, and telecommunications, to secure financial and logistical support for priority industries. Upon reaching certain levels in capital accumulation, these nations harness digitalization and green transition opportunities to develop modern agriculture, advanced manufacturing, the digital economy, and green industries. This is driving economic diversification and reducing overreliance on single-commodity exports or external markets, thereby strengthening self-sustaining economic foundations. For example, by establishing free industrial zones and offering tax incentives, Malaysia attracted a large amount of foreign investment and transformed from an exporter of primary products such as rubber and tin into a global semiconductor assembly, testing, and packaging hub and electronics manufacturing powerhouse, with a diversified, competitive economic structure. Gulf nations like the UAE and Saudi Arabia are developing world-class ports, aviation hubs, and financial centers while investing in tourism and high-tech industries to reduce oil dependence and build diversified economic pillars.

9.1.4 The Global South's emergence as an active participant in reforming and improving the global governance system

Despite differences in development levels and cultural traditions, these countries have similar historical experiences and development tasks and objectives. They share concerns about the unfair and unreasonable arrangements in the existing global governance system and aspire to improve global governance.

Global South countries actively participate in the reform of the global governance system. On economic governance, from 2023 to 2025, the BRICS countries sequentially assumed the G20 presidency, steering the agenda and calling for enhanced macroeconomic policy coordination, with the aim to foster an open, inclusive, and non-discriminatory environment for international economic cooperation. Thanks to robust support from China, India, South Africa and other countries, the AU was admitted to the G20 in 2023, the second regional organization to join the G20 after the EU, to amplify the voice of Africa on the G20 platform. On financial governance, the Global South countries emphasize the necessity of amplifying the voice and representation of developing countries, and advance the shareholding review of the World Bank and the quota adjustment of the IMF. On trade, they oppose unilateralism and protectionism and push forward WTO reform to enhance the authority, effectiveness and relevance of the multilateral trading system. On ecology and the environment, through mechanisms such as the Group of 77 (G77), the Global South countries have underscored the principle of common but differentiated responsibilities on important occasions, such as the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC). They have called for full and effective implementation of the Paris Agreement and urged developed countries to provide the necessary financial, technological and capacity-building support to developing countries.

Global South countries have established new multilateral platforms. In terms of strategic communication, the BRICS cooperation mechanism has evolved into a vital platform for dialogue and collaboration within the Global South since its inaugural leaders' summit in 2009. In 2024, BRICS achieved a historic expansion by incorporating representative Global South nations, noticeably amplifying its collective voice and injecting new momentum into reforming and improving the global governance system. On trade and economic cooperation, the Global South is advancing the BRI, the African Continental Free Trade Area (AfCFTA), China-ASEAN Free Trade Area (CAFTA), China-GCC Countries Forum, and the Southern Common Market (MERCOSUR), among other cooperation frameworks, to offer more inclusive options for global and regional economic and trade cooperation. On development financing, the NDB plays an increasingly important role in supporting the development and modernization of the Global South, delivering high-quality, low-cost, and sustainable infrastructure financing to help developing countries bridge the digital divide and accelerate green, low-carbon transition.

9.2 Great potential and broad prospects for development cooperation within the Global South

The collective rise of the Global South not only signifies enhanced comprehensive strength but also solidifies the foundation and creates opportunities for further mutual development cooperation. Looking ahead, the Global South's positive trajectory in facilitating trade and investment flows, advancing technological progress and application, and expanding consumer markets will further manifest itself, holding significant promise for the future.

9.2.1 Complementary industrial structures have driven steady growth in South-South trade

The industrial complementarity among Global South countries has fueled consistent expansion in trade volumes. Influenced by resource endowments, historical development trajectories, and the global division of labor, distinct national roles have emerged. Resource suppliers leverage reserves and production advantages in natural resources; agricultural producers hold comparative advantages in agriculture and primary processed goods; industrial leaders demonstrate a competitive edge in exporting chemicals, machinery and transport equipment, and other manufactured goods and intermediates. These differentiated comparative advantages have propelled the growth of South-South merchandise trade. Between 2005 and 2024, the value of South-South goods trade surged from US$1.5 trillion to US$6.1 trillion, an increase of approximately 307% (Figure 9-2), way outpacing global trade growth during the same period (UNCTAD, 2023b).

The value chain upgrading of emerging economies, exemplified by BRICS countries, is poised to inject sustained momentum into long-term South-South trade growth. Leading emerging economies, particularly BRICS members, are transitioning from low-value-added industries towards medium- and high-value sectors such as advanced manufacturing, green energy, information technology, and biotechnology, offering high-quality and cost-effective equipment and intermediate goods for the industrialization of other Global South countries in a complementary industrial ecosystem. In 2022, the BRICS countries accounted for approximately 40% or more of global output values in medium- and high-tech industries, including electrical equipment, chemicals, computers, and machinery (UNIDO, 2024). For example, in the NEV

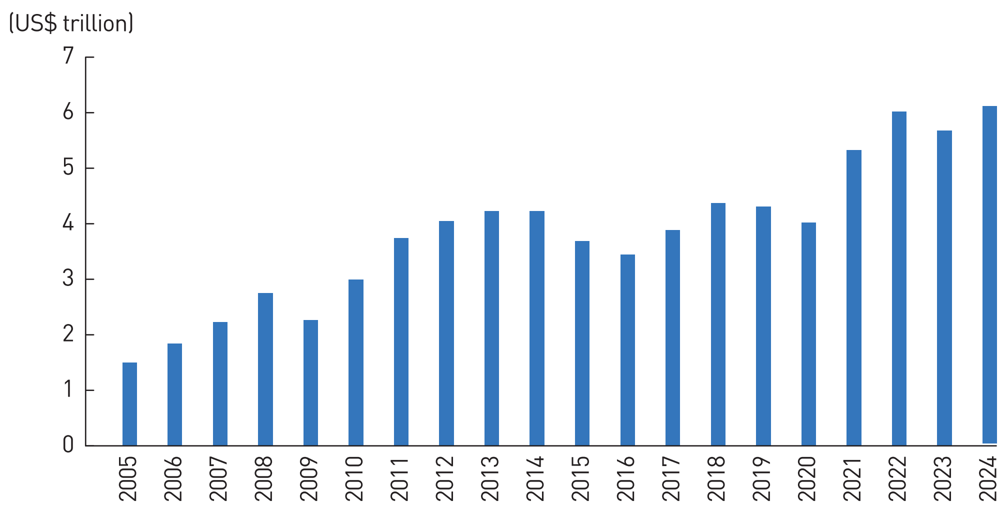

Figure 9-2 South-South merchandise trade volume, 2005-2024

Source: UNCTAD

sector, Indonesia's abundant nickel resources are being integrated with China's mature battery manufacturing and refining technologies to foster a regional hub for the industry. Projections indicate that by 2030, South-South trade will constitute 27% of global trade volume, with an annual growth rate of 7.4%, remarkably outpacing the 4.5% average global trade expansion (Standard Chartered, 2023).

9.2.2 Multiple factors have enabled further investment cooperation in the Global South

Global South countries are increasingly becoming a major destination for FDI. Compared with advanced economies, the sustained expansion of their economic scale and consistently higher growth rates over the years provide multinational enterprises with vast platforms for scaled production and investment. Consequently, this has attracted substantial FDI seeking to share in their growth dividends. Over the past two decades, the Global South's share of global FDI inflows rose from approximately 34% in 2005 to about 60% in 2024 (Figure 9-3). In recent years, FDI flows to the Global South have stabilized, increasing modestly from US$865 billion in 2023 to US$867 billion in 2024. By contrast, FDI inflows to advanced economies declined sharply from US$807 billion to US$626 billion during the same period (UNCTAD, 2025). Global green and digital transitions are fueling demand for critical resources like lithium and copper. This has spurred capital-intensive projects, redirecting investment flows towards resource-rich regions such as Africa and Latin America.

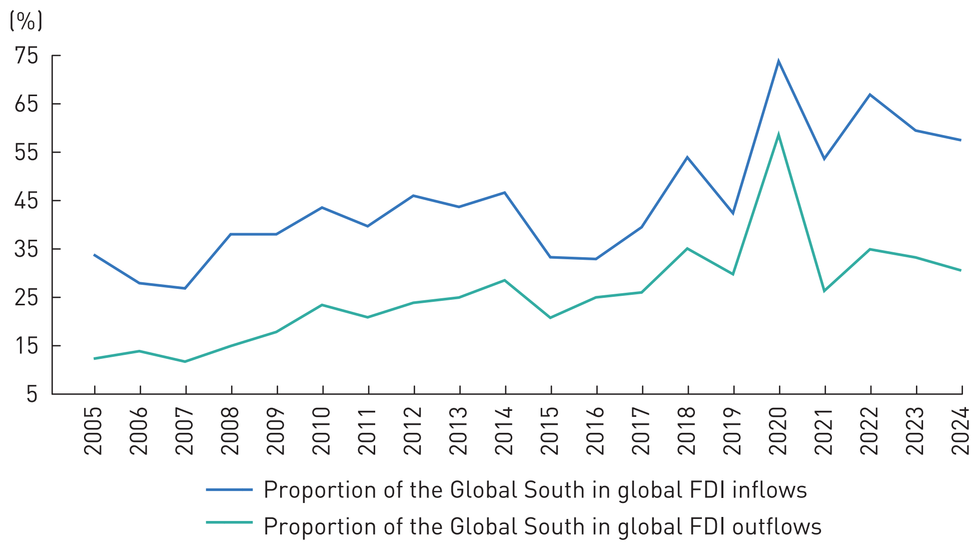

Figure 9-3 Proportion of the Global South in global FDI inflows and outflows, 2005-2024

Source: UNCTAD

Global South countries have emerged as significant sources of outward foreign direct investment (OFDI). Over the past two decades, their share of global OFDI surged from approximately 12.3% in 2005 to 30.5% in 2024 (Figure 9-3). Although total OFDI from the Global South countries declined by 5% year on year in 2024, their position as major capital exporters will remain robust in the long term due to enhanced endogenous momentum, the external "push" factor, and the "pull" factor of the South market. The investment impetus continues to strengthen as the Global South has developed numerous capital-rich, technologically advanced multinational companies that intrinsically need global expansion, economies of scale, and value chain upgrading, making OFDI an essential pathway to enhance their global competitiveness. Second, rising trade protectionism in some developed economies, manifested through increased tariff and non-tariff barriers, has compelled Global South companies to localize production via OFDI to mitigate risks and stabilize market share. Third, the Global South's vast growth potential, industrial complementarity among members, and more adaptable technologies and business models have collectively generated a powerful "pull", expanding opportunities for South-South investment.

9.2.3 Diffusion of adaptable technologies and knowledge has powered leapfrog development in the Global South

The technological solutions originating from the Global South offer distinct advantages – proximity to localized application contexts and lower costs – with a sharper focus on solving practical development challenges.

Green technology diffusion has accelerated. Leveraging its super-large market and comprehensive industrial capabilities, China has achieved mass production and adoption of renewable technologies like PV, becoming a pivotal force in driving dramatic cost reductions. For instance, global PV power generation costs plummeted by over 80% in the past decade, making clean energy more economically viable than fossil fuels in more countries. Looking ahead, declining costs will expedite the transition towards a clean, low-carbon energy mix across the Global South, providing stable and affordable energy for development.

The trend towards universal and open-source technologies has created opportunities for latecomer economies to achieve leapfrog development. The rapid application of digital technologies, exemplified by high-performance, low-cost AI models, has significantly lowered innovation barriers and digital transformation costs. By enabling deep integration of digital tools in critical domains like education, healthcare, inclusive finance, and industrial manufacturing, these advances have effectively bridged the digital divide while igniting new economic dynamism. This provides new pathways for Global South nations to narrow development gaps with advanced economies and enhance their global competitiveness.

Technical and knowledge cooperation has strengthened the foundations of independent development. Effective technology diffusion and application hinge critically on capacity building. While disseminating tools is the first step, cultivating local talent capable of mastering, applying, and innovating with these technologies remains paramount. Technical collaboration among Global South countries is expanding, including joint establishment of digital skills training centers and co-development of green technology vocational curricula. These initiatives prioritize nurturing skilled local workforces, ensuring that technology transfer goes beyond mere equipment provision to build internal, deeply rooted capabilities in development and innovation (Box 9-2).

Box 9-2 South-South technology and knowledge cooperation

South-South cooperation continues evolving with heightened emphasis on technical collaboration and knowledge sharing. This is extending beyond hardware transfers to encompass exchanges of development experience, adaptable technologies, and innovative models. Particularly in green energy and the digital economy, Global South nations are collectively exploring context-appropriate development pathways through sharing practices.

Green Energy Cooperation: Brazil is sharing its world-leading biofuel technology and expertise with other Southern nations. It is promoting ethanol production technology cooperation using sugarcane feedstock – for instance, by collaborating with African countries like Mozambique to plan sugarcane plantations and construct ethanol refineries. This initiative aims to transfer Brazil's proven success in developing clean energy and reducing dependence on imported oil.

Digital Economy Cooperation: ASEAN is advancing the Digital Economy Framework Agreement (DEFA), whose negotiations were formally launched in September 2023. Through consultations, rules on digital trade, cross-border data flows, and payment systems are being aligned, promoting regional technology and knowledge sharing.

In Africa, the China-Africa Digital Innovation Partnership is facilitating collaborative digital technology projects. Under this program, some Chinese enterprises are disseminating advanced telecommunications expertise and training local engineers while constructing data centers and 5G networks in Kenya and Ethiopia; other Chinese companies are building the electronic World Trade Platform (eWTP) with Rwanda to introduce mature digital business models and operational knowledge, empowering local SMEs with practical e-commerce skills for deeper integration into digital trade.

Source: Compiled by the authors based on publicly available information

9.2.4 The expanding consumer market unleashes new growth potential in the Global South

The Global South's consumer market will further expand. Driven by economic growth, demographic dividends, and urbanization, its vast consumer potential is being unlocked. By 2030, the global middle class is projected to exceed 5.4 billion people, with annual consumption reaching approximately US$64 trillion – most of the growth will originate from the Global South. In particular, approximately 80% of the new entrants into the global middle class are projected to come from Asia, and the Asia-Pacific region is expected to account for 57% of global consumption growth (Brookings Institution, 2023). Leapfrog development in mobile internet and widespread adoption of digital payments have accelerated e-commerce penetration across Latin America, Southeast Asia, and Africa, reaching increasingly broader consumer segments. According to leading consumer research firm NIQ, urbanization in the Global South will power the highest spending growth in history. Emerging markets are projected to add US$30 trillion in annual consumer spending by 2025 (NIQ, 2024).

9.3 Pathways of enhancing development cooperation within the Global South

The development of the Global South countries is hampered by a range of internal and external factors. Internally, deficiencies in political stability, state governance capacity, infrastructure, fiscal stability, and education and skills training have created growth bottlenecks in some nations, impeding the momentum for structural transformation and upgrading. Externally, along with the rise of counter-globalization and trade protectionism, the significant disruptions to the global governance system and multilateral rules and the decline in the availability of global development resources and public goods have created adverse effects. Facing complex internal and external challenges, it is imperative for Global South countries to strengthen their capacity for collective action, step up pragmatic cooperation, and mobilize development funds through diverse channels for better development and risk resilience, while adding more stability and certainties to global development.

9.3.1 Strengthening Global South cooperation platforms to pool their collective strength for action

Steadily enhancing the cohesion of the BRICS cooperation mechanism. The BRICS leaders' summit needs to be leveraged to provide critical guidance for facilitating informal meetings before major forums like the UN and G20 in order to coordinate the member countries' positions on pivotal global issues. Second, effective integration of new members needs to be accelerated by aligning them with framework documents such as the Strategy for BRICS Economic Partnership 2025, while their engagement in the existing working groups and mechanisms should be deepened to foster collective identity. Third, institutional development in priority areas needs to be promoted. In priority fields such as finance and trade, the NDB can be supported to expand local currency financing, while discussions on the BRICS cross-border payment initiative need to continue, with a roadmap formulated.

Strengthening coordination between BRICS and other Global South cooperation mechanisms. BRICS needs to strengthen dialogue with traditional mechanisms such as the G77 and the Non-Aligned Movement (NAM), as well as major regional organizations including the AU, ASEAN, and MERCOSUR. Discussions should center on key issues of high consensus and urgency, such as the reform of the international financial architecture, the responsibility for climate financing, and the establishment of digital governance rules. This approach aims to harmonize positions, clarify priorities, and translate broad political consensus into tangible influence on platforms such as the UN, thereby augmenting the Global South's collective action capacity. More efforts need to be made in business matching in trade, investment, and project landing, with the focus on priority areas such as food security, industrialization, and green investment.

Leveraging the coordinative functions of regional platforms. The ASEAN's economic integration needs to be deepened through jointly advancing high-quality implementation of the Regional Comprehensive Economic Partnership and synergizing the ASEAN Community Vision 2045 with national development strategies to strengthen physical infrastructure connectivity ("hard connectivity") and regulatory harmonization ("soft connectivity"). Second, African continental integration needs to be promoted in a coordinated manner. More support should be given to Africa's integration under the guidance of the AU Agenda 2063. The construction of the AfCFTA also needs to be supported, particularly in cultivating cross-border value chains in pharmaceuticals and agro-processing, to enhance independent development capacities. Multi-tiered Latin American and Caribbean coordination and cooperation need to be endorsed. On the sub-regional level, the MERCOSUR, Pacific Alliance and other mechanisms should be encouraged to deepen economic convergence and industrial policy coordination. On a broader level, the Community of Latin American and Caribbean States (CELAC) can serve as a premier political dialogue platform to jointly address climate change and improve the public health system, thereby amplifying collective influence in global affairs.

9.3.2 Advancing cooperation in key areas to promote sustainable economic development

Improving comprehensive agricultural production capacity. Agriculture is the basic industry in most countries in the Global South. Increasing agricultural output is essential for alleviating poverty and achieving food security. Cooperation in advanced and applicable technologies should be strengthened. Joint comprehensive research needs to be conducted on suitable crop seed varieties through R&D and field trials, with more exchanges on water-saving irrigation and grain loss reduction technologies, for example, through dispatching agricultural experts to cultivate local professionals. Second, cooperation in agricultural infrastructure development should be enhanced. New financing mechanisms need to be found to mobilize multi-stakeholder participation, with emphasis on funding for grain-producing regions and disaster-prone areas, so as to elevate their capabilities in construction, operation, and management. Third, agricultural value chains should be expanded. Localized production of fertilizers, pesticides, and small-scale farm machinery needs to be promoted, and the value chain, including breeding, cultivation, processing, and storage, should be improved to boost agricultural productivity. Efforts need to be made to increase farm exports while safeguarding domestic food security and establish “green channels” for agricultural trade with streamlined inspection and quarantine procedures.

Accelerating the industrialization progress. Industrialization is the only road to accelerated development for most countries in the Global South. International production capacity cooperation needs to be deepened. Global South countries need to be encouraged to pursue industrialization paths that align with their respective resource endowments and national conditions. Using industrial parks as platforms, supporting facilities such as transport and power should be built, and industrial clusters with distinct advantages, as well as upstream and downstream complementary businesses, should be developed. Opportunities in industrial digitization need to be harnessed. Technologically advanced Global South countries can share applicable digital technologies and applications. Cooperation in vocational skills training should be intensified, best practices shared, and traditional industries such as textiles and mining in relevant countries empowered. Third, rules and standards need to be further aligned. Within existing frameworks such as the AfCFTA and ASEAN, Global South countries can promote the harmonization and mutual recognition of industrial standards, quality certification, and customs procedures to cut internal transaction costs and facilitate the flow of manufactured goods within the region.

Speeding up green transition. Green transition represents a major opportunity for Global South countries to realize leapfrog development. More channels need to be created to attract green investment. Multilateral development banks and regional cooperation platforms should be brought into better play to channel global public funds, sovereign wealth funds, and policy-based finance to green projects. Second, green project reserve mechanisms need to be improved. Effective realization of green investment rests on sufficient reserves of “investable” projects. The Global South countries, with their rich practical experience, can provide professional support to project host countries, covering pre-project planning, feasibility study, and technical program design to address the challenge of “abundant funds, yet scarce quality projects”. Third, green industries need to be further developed. Relying on their comparative advantages in green minerals (such as lithium, cobalt and nickel), renewable energy (such as PV and wind energy) and application markets, the Global South countries can work to establish regional mineral processing centers, new energy equipment manufacturing bases, and battery recycling networks.

Developing the digital economy. Global South countries need to work more closely in translating digital potential into growth drivers in a joint effort to narrow the digital divide. Efforts should be made to share technology universally. They should support the R&D of open-source frameworks and basic models, and conduct joint research around common challenges such as public health and food security, with an emphasis on developing low-cost and lightweight smart solutions, so that technological progress can serve more industries. Second, digital talent should be cultivated. Global South countries should incorporate data literacy and algorithmic thinking into national basic education. Multilingual open-source courses, research publications, and skills training platforms should be made available, with targeted training provided for professional and technical talent. Third, Global South countries should participate in formulating global digital rules. They should engage in communication and coordination on issues such as AI ethics, cross-border data flow, and platform responsibility through existing multilateral platforms. Equitable and inclusive international regulations should be established and digital hegemony opposed, so as to preserve the voice and representation of Global South countries in digital rulemaking.

9.3.3 Promoting innovative financing cooperation to break financing bottlenecks

Enhancing the capacity for domestic capital mobilization. Global South countries should continue to improve their tax administration and public financial management and explore and develop national bonds and capital markets to create conditions for converting domestic savings into long-term investments. Countries with practical experience as well as relevant international organizations can provide targeted capacity-building support and share best practices in public financial management, central bank operation, and financial regulation. These efforts will help other countries strengthen the capability to attract and effectively utilize capital.

Embracing the concept of "productive finance". Financing models that can be adapted to local contexts should be explored to stimulate internal investment and financing potential. In particular, national credit can be effectively utilized to mobilize capital and cultivate the market. National policy banks and other development financial institutions can be established or enhanced to direct capital investment to infrastructure and other productive sectors that feature long-term returns and high up-front risks.

Encouraging emerging multilateral development banks to invest in critical development sectors. The NDB and other banks like it should serve as exemplars by prioritizing investment in key areas such as green energy and digital infrastructure and providing long-term, low-cost capital to projects that meet financing requirements. Blended finance and risk guarantees can be harnessed to bolster investor confidence and attract and mobilize investment from well-capitalized Middle Eastern sovereign wealth funds and long-term institutional investors.

Building a more resilient South-South financial cooperation architecture focused on local currency settlement (LCS) and financial innovation. Global South countries can enhance coordination to steadily expand the use of local currency settlements in bilateral and regional trade, advance currency swap cooperation, and mitigate exchange rate risks and foreign exchange shortages. Financial institutions should be encouraged to prudently innovate financial products tailored to the trade, investment and financing needs of Global South nations, diversify risk management instruments, and strengthen the resilience of financial systems.

Deepening development knowledge sharing and capacity building. Building on the existing cooperation frameworks, the Global South countries should carry out experience exchanges in areas such as productive finance practice, public asset-liability management, and external debt sustainability analysis. By sharing development practices, they can enhance their capabilities to plan, access and manage development resources effectively, ensuring that limited funds are accurately directed towards key development areas, thereby providing a robust guarantee for realizing their development objectives.

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Chapter X

Jointly Safeguarding the International System with the UN at Its Core

The UN[1] was born in 1945 as a major outcome of the victory of the World Anti-Fascist War, marking a new era of the pursuit of peace and development and a fresh chapter of international organizations uniting to meet common challenges. As the most universal, representative and authoritative intergovernmental organization, the UN has played an important role in maintaining world peace and security, promoting economic and social development, and conducting global governance. Today, with international rules and the international order being severely impacted, the more chaotic the international situation becomes, the more important it is to uphold and safeguard the authority of the UN, and uphold the international system with the UN at its core, the international order underpinned by international law, and the basic norms of international relations based on the purposes and principles of the UN Charter. The international community should continue to promote an equal and orderly multipolar world as well as universally beneficial and inclusive economic globalization, so as to promote peace, justice, progress and development of human society.

10.1 The international system with the UN at its core has significantly promoted peace and development

The UN has established a series of institutions and mechanisms (Table 10-1), thus effectively promoting global peace and stability and rapid development and progress of civilization.

Table 10-1 UN milestones in promoting world peace and development

Time	Milestone event	Significance
1945	Establishment of the UN and ratification of the UN Charter	Stipulating the UN's purpose, principles, structure and functions
1948	Adoption of the Universal Declaration of Human Rights	Confirming the basic human rights and freedom of all people
1948	Establishment of the UN Truce Supervision Organization, the first UN peacekeeping mission	Initiating UN peacekeeping efforts
1956	Establishment of the first UN Peacekeeping Force	A turning point in the UN's role in international conflict resolution
1961	Adoption of the Resolution on the First Development Decade (the 1960s)	Setting specific goals for promoting development and emphasizing resolving development problems through economic growth
1966	Adoption of the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights	A remarkably significant act for promoting the concept of human rights and the progress of global human rights protection

[1] This chapter discusses the UN in a broad sense, referring to a system comprising six major agencies, namely the General Assembly, Security Council, Economic and Social Council, International Court of Justice, the Secretariat, and the Trusteeship Council (currently suspended) and their subsidiary organs, and specialized agencies and related bodies.

Time	Milestone event	Significance
1970, 1980, 1990	Adoption of Resolutions on the Second (the 1970s), Third (the 1980s) and Fourth (the 1990s) Development Decade	Gradually deepening the understanding of development issues and forming a comprehensive development concept of economy, society and environment
1986	Adoption of the Declaration on the Right to Development	Confirming that the right to development is an inalienable human right
1992	Convening of the UN Conference on Environment and Development (also known as the Earth Summit)	A historic moment in global environmental governance and diplomacy
1992	Creation of the Department of Humanitarian Affairs (reorganized and renamed the Office for the Coordination of Humanitarian Affairs in 1998)	Strengthening the coordination of humanitarian assistance
2000	Adoption of the UN Millennium Development Goals	Representing a unified international effort to reduce poverty, improve health and education, promote gender equality, and ensure environmental sustainability
2005	Establishment of the UN Peacebuilding Commission	Dedicated body to coordinate post-conflict peacebuilding efforts and support sustainable peace
2006	Establishment of the Human Rights Council	Responsible for promoting and protecting human rights around the world
2015	Adoption of the Paris Agreement	A landmark international treaty to address climate change and its negative impacts
2015	Adoption of the UN 2030 Agenda for Sustainable Development	Putting forward a unified framework and vision to promote common and sustainable global development
2018	Reform of the UN Development System (Resolution 72/279)	Reforming the Resident Coordinator system to enhance UN coherence and efficiency at the country level
2020	Issuance of the UN 75 Declaration	Calling for more inclusive, networked and effective multilateralism, laying the groundwork for the Summit of the Future
2024	Adoption of the UN Pact for the Future	Outlining a renewed vision for multilateral cooperation, including global governance reform, digital cooperation, youth engagement, and a more sustainable financing model

Source: Compiled by the authors based on http://www.understandingtheun.org/

10.1.1 Maintaining overall world peace and stability

Safeguarding international peace and security. The UN was founded against the background of protracted war and suffering. Its founding purpose and primary goal is to maintain international peace and security. The UN Charter, adopted in 1945 as the basic law of the UN, clearly laid down the principles of sovereign equality, fulfillment of obligations in good faith, peaceful settlement of international disputes, prohibition of threat or use of force, non-interference in internal affairs, and international cooperation, establishing the basic norms of contemporary international relations. The UN also established a collective security mechanism centered on the Security Council, and has effectively safeguarded international peace and security through peacekeeping operations, mediation by the Secretary-General, and the settlement of disputes by the International Court of Justice. So far, the UN Security Council has deployed 71 peacekeeping operations. At present, about 69,000 peacekeepers are engaged in 11 peacekeeping operations[1]. UN peacekeeping forces have played an important role in preventing conflicts from escalating, protecting civilians from war, and creating conditions for restoring peace.

Carrying out humanitarian assistance. The UN Office for the Coordination of Humanitarian Affairs (OCHA) organizes responses to humanitarian crises caused by conflicts, natural disasters, public health emergencies, and food insecurity. In 2024, the Central Emergency Response Fund (CERF) managed by OCHA allocated about US$575 million to 12 UN agencies, providing assistance to 35 million people in 45 countries. To break it down, US$356 million was used for conflict-related humanitarian assistance, providing assistance to 22.6 million people in 20 countries; US$206 million was used to respond to natural disasters and assist 10.8 million people in 22 countries; and US$7 million was used to respond to public health incidents, benefiting 1.4 million people in 4 countries (UNOCHA, 2024).

10.1.2 Promoting common and sustainable development globally

Proposing and working for the implementation of common development frameworks. Starting from the 1960s, the UN formulated four Development Decade programs. In 2000, it adopted the Millennium Development Goals to address development problems such as poverty and hunger, education, gender equality, health, and environmental sustainability. In 2015, the UN 2030 Agenda for Sustainable Development (2030 Agenda) set comprehensive goals and targets around “5 Ps” – people, planet, prosperity, peace, and partnership, which became a blueprint for international development cooperation. Although the 2030 Agenda is not progressing well, in the longer term, it has presented a common vision for global development and promoted the economic and social development of all countries, especially developing countries, by mobilizing resources and strengthening technical assistance and international cooperation.

Providing financial, technical and capacity-building support to developing countries. The UN system, which includes a series of UN funds, programs, and specialized agencies, has provided strong support for promoting global

[1] Source: https://peacekeeping.un.org/en/data

development, especially in developing countries. For example, since 2022, the UN Development Programme (UNDP) has helped 160 million people to access necessary health, education, water and other services and delivered renewable energy to 50.7 million people; and it has leveraged US$481.5 billion of public sector funds and US$385.5 billion of private sector investment to achieve the SDGs[1]. From 1998 to 2018, the World Food Programme (WFP) provided assistance to more than 70 million people every year; the number of beneficiaries reached 160 million in 2022; and in 2023, there were 152 million beneficiaries, of whom 57% were children (WFP, 2024). Specialized agencies such as the Food and Agriculture Organization (FAO), the WHO, and the UN Industrial Development Organization (UNIDO) provide financial, material, technical and capacity-building support to developing countries in related fields.

Formulating development standards and norms. First, advocating a people-oriented development outlook. In the 1990s, the UNDP began to issue the Human Development Report, which developed and gradually improved the human development index that reflects the three dimensions of health, education and income of a country or region. This shifted the development outlook from overemphasis on economic growth to a more comprehensive and balanced direction. Second, setting standards for development assistance. In 1970, the 25th UN General Assembly set the target for official development assistance (ODA), requiring Western developed countries to allocate 0.7% of their GNI[2] to ODA. In 2009, a goal was set for developed countries to jointly mobilize US$100 billion for climate finance every year. COP29 raised the climate finance target from US$100 billion to US$300 billion per year, and set the overall climate finance target at a minimum US$1.3 trillion per year by 2035. Although many Western developed countries are yet to fully fulfill their ODA and climate finance commitments, setting common standards still has positive significance. Third, shaping the norms of international development cooperation. Since 2008, the UN Economic and Social Council (UN ECOSOC) has been holding the Development Cooperation Forum every two years to provide a platform for different actors to explore effective ways for carrying out foreign aid and international development cooperation. It advocates and emphasizes the autonomy and demand-driven approaches in recipient countries, and pays attention to results, transparency and accountability among other development cooperation norms. It studies and updates the norms in response to the new situation and challenges of global development to enhance the quality, effectiveness and impact of international development cooperation (UN ECOSOC, 2025).

10.1.3 Promoting and protecting human rights

Advocating the principles and concepts of

[1] Source: UNDP

[2] Before 1993, the gross national income (GNI) was called gross national product (GNP). The UN 1993 International Standards of National Accounts (1993 SNA) changed GNP to GNI.

promoting and protecting human rights. The UN Charter clearly defined the principles of human rights for the first time, which formed the basis of a series of international human rights instruments subsequently formulated by the UN. The Universal Declaration of Human Rights clearly defined the connotation of human rights. Since then, a series of rights reflecting the wishes and demands of developing countries have been gradually recognized by the international community. Since 2017, the UN Human Rights Council has adopted five resolutions on "the contribution of development to the enjoyment of all human rights" proposed by China and introduced the concept of development promoting human rights into the international human rights system, reflecting the general aspirations of developing countries and further enriching the concept of international human rights.

Establishing international rules and mechanisms for the protection of human rights. The International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights, together with the International Convention on the Elimination of All Forms of Racial Discrimination, the Convention on the Elimination of All Forms of Discrimination against Women, and the Convention on the Rights of the Child constitute a rich system of international human rights law. All UN member countries have acceded to at least one core international human rights treaty, while more than 80% have acceded to four or more. The UN Human Rights Council is the top UN human rights body. The treaty-based organizations are responsible for monitoring the implementation of core treaties, while the UN High Commissioner for Human Rights (UNHCR) is the UN official primarily responsible for the UN's human rights activities.

10.1.4 Helping improve human wellbeing in many aspects

Contributing to the advancement of human development. Since the 1990s, the UN-centered international system has enabled rapid development and progress in human poverty reduction, health, education, gender equality, and environmental protection. In terms of poverty reduction, the global population living in extreme poverty dropped from 2 billion in 1990 to 778 million in 2015, and then to 692 million in 2024. The incidence of extreme poverty decreased from 37.9% in 1990 to 10.5% in 2015 and 8.5% in 2024. In terms of health, the global mortality rate of children under five dropped from 93.6 deaths per 1,000 live births in 1990 to 36.7 deaths in 2023; the infant mortality rate dropped from 36.7 deaths per 1,000 live births in 1990 to 17.3 deaths in 2023[1]. From 2000 to 2023, the maternal mortality rate[2] decreased by 40%[3]. As for education, the global primary education completion rate increased from 77.4% in 2000 to 88.1% in 2024. In terms of gender equality and women's development, the

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[1] Source: World Bank
[2] It refers to the number of maternal deaths per 100,000 live births.
[3] Source: World Health Organization

gender gap narrowed by 68.5% in 146 countries between 2006 and 2024, with the gender gap in 97% of the economies narrowing by more than 60%. The gender disparities in health and survival, and education narrowed by 96.0% and 94.9% respectively (WEF, 2024).

Coordinating responses to common global challenges. With the deepening of globalization, all kinds of risks and challenges are increasingly breaching national boundaries and require coordinated responses from all sectors and countries. The global governance framework and treaties promoted by the major agencies, specialized agencies, and subsidiary organs of the UN provide an important platform and rules for consensus building and collective action, leading all parties to successfully deal with a host of natural environmental risks, public health crises, and emergency humanitarian crises. In terms of eco-environmental management, in the 1980s, the UN coordinated the efforts of countries to repair the ozone hole with great success (Box 10-1). In 1992, the UN formulated the Framework Convention on Climate Change, which provided a programmatic document for global climate actions. In 2015, countries unanimously adopted the Paris Agreement and made emission reduction commitments to jointly address global warming. Although the current climate governance policies of certain countries have regressed, the agreement is still the key framework for most countries to carry out their actions. In terms of public health emergencies, the WHO showed different levels of cohesion during the SARS and Ebola epidemics and the COVID-19 pandemic, effectively coordinating various actors to resolve the crises.

Box 10-1 Successful collective action to repair the ozone layer

To reduce the threat to the safety of life on earth due to the depletion of the ozone layer, commonly referred to as the ozone hole, 28 countries adopted and signed the Vienna Convention for the Protection of the Ozone Layer in March 1985. In September 1987, the Montreal Protocol on Substances that Deplete the Ozone Layer was adopted, which sought to protect the ozone layer, control the production and consumption of ozone-depleting substances, and eliminate these substances completely through the development of science and technology. In 2016, the Kigali Amendment to the Montreal Protocol, an additional agreement, called for gradual reduction of the production and consumption of hydrofluorocarbons (HFCs) to cope with global climate change.

The implementation of the Montreal Protocol has progressed smoothly all over the world, with most of the phase-out schedules observed and some completed ahead of schedule. In 2023, the Scientific Assessment Panel supported by the UN issued a report, confirming that the phasing out of nearly 99% of banned ozone-depleting substances had significantly restored the ozone layer in the upper stratosphere and reduced human exposure to harmful ultraviolet rays from the sun. If the current policy remains unchanged, it is expected that the ozone layer over the Antarctic, the Arctic, and other parts of the world will return to the 1980 level (before the ozone hole appeared) in 2066, 2045 and 2040 respectively; moreover, by 2100, the Kigali Amendment to the Montreal Protocol is expected to avoid a rise in global warming by 0.3°C-0.5°C (excluding the contribution from HFC-23 emissions).

Repairing the ozone layer is one of the most successful cases of human cooperative response to natural crises. The success of this action is mainly due to three factors: scientific research provided solid support; countries, especially major countries, had a strong political will and formulated effective reward and punishment measures to prevent free riding; and rapid technological progress made it possible to replace some harmful substances.

Source: Compiled by the authors based on publicly available information

10.2 The international system with the UN at its core is facing multiple challenges

The international system with the UN at its core still lacks equity and representation. Especially, it has failed to fully reflect and represent the position and interests of the rising Global South. At the same time, the authority of the UN has been repeatedly challenged by unilateralism and power politics.

10.2.1 Unilateralism impacts the foundation of the international system with the UN at its core

Multilateralism is the foundation of the UN, which emphasizes consultations on global issues in accordance with a common code of conduct to seek the greatest common ground and reach an optimal solution beneficial to all parties. In recent years, the pursuit of unilateralism, hegemony, and power politics by certain major country has weakened the authority and effectiveness of the UN system.

Unilateral behavior poses a challenge to multilateral international rules. Certain major country has violated multilateral international rules, and criticized, obstructed and withdrawn from a number of international organizations, weakening the authority of the UN and eroding the foundation for multilateral cooperation. On the economic and trade front, the principles of non-discrimination advocated by the WTO and the multilateral consultation mechanism have been violated. The volatility created by unstable tariff policies has resulted in great uncertainty vis-à-vis industrial and supply chains and the global economy and finance. In terms of climate change, the US announced that it would withdraw from the Paris Agreement and revive its traditional fossil energy plan, making it more difficult to meet greenhouse gas emission reduction targets and seriously frustrating the multilateral process to address climate change. In the field of public health, the US announced its withdrawal from the WHO and stopped communication between the Centers for Disease Control and Prevention and the WHO. As a result, the flow of key data and professional knowledge has been blocked and the global health technical cooperation and policy-making model threatened, weakening the ability of the international community to jointly respond to global public health crises. Besides, accusations and criticisms of the 2030 Agenda have further eroded the global consensus to advance sustainable development.

10.2.2 Developing countries have unequal representation and voice in global governance

The international balance of power has undergone profound shifts, with the Global South rising as a major grouping. According to the IMF, in 2024, the economic aggregate of EMDEs accounted for more than 40% of the global total, with their contribution to world economic growth reaching 80%. With their rising economic status, the agency of the Global South has been enhanced. However, the global governance structure has yet to reflect and adapt to these changes, which raises questions over the representation of the UN system and the effectiveness of its activities.

Developing countries' decision-making power in the UN needs to be enhanced. They do not have equal representation in the UN system, which challenges the fairness of UN agencies. For example, developing members account for about four-fifths of the total UN membership and 80% of the global population, but their representation in the UN Security Council is low. In recent years, the consensus in the international community on the necessity of UN institutional reform has deepened. However, due to different standpoints and values, there are major divergences in the direction and specific plans of UN reform, which makes it difficult to advance it. The efficiency of the UN system also needs to be improved.

Developing countries' ownership and lead in development cooperation projects need to be strengthened. Effective country-led coordination is the basis for ensuring that international development cooperation projects meet local priorities and needs. Although the UN has promoted a series of reforms in this regard in recent years, such as launching a new resident coordinator system and establishing a comprehensive policy review mechanism to assess whether its activities are consistent with national needs and priorities, there are still many challenges. For example, the representation of developing countries in the resident coordinator system and the ability of developing countries to lead and coordinate related cooperation programs need to be improved.

10.2.3 The UN development system has a widening funding gap and an imbalanced funding structure

The influence of the UN development system depends on the availability of funds and resources. In recent years, due to rising global risks and the weakening commitment of developed countries, the global funding gap for development has continued to widen. The global annual development funding gap is estimated to be US$4.2 trillion, which is higher than the figure before the COVID-19 pandemic, US$2.5 trillion (UNDESA, 2024).

The contributions of major developed countries to multilateral institutions such as the UN are low in percentage and show a downward trend. Since 2015, the percentage of multilateral contributions from OECD Development Assistance Committee (DAC) members in ODA rose slowly from 26.1% in 2015 to 29.6% in 2021, and then rapidly decreased to about 24% in 2022 and 2023 (Figure 10-1). DAC members' contributions to UN agencies account for a very low proportion, reaching only 5.2% at the peak in 2019, and continuously declining to 4.0% in 2023 (Figure 10-2). The closure of the US Agency for International Development (USAID) means a greater challenge to the financial situation and implementation capacity of the UN development system, especially the agencies that mainly rely on voluntary contributions and focus on humanitarian assistance (Baumann et al., 2025).

The funding structure of the UN development system is imbalanced. The structure of core and non-core resources of UN agencies has been imbalanced for a long time, with core resources making up a very low proportion[1]. In 2023, the shares of core contributions and non-core contributions were 19% and 81% respectively (Figure 10-3). In 2024, core contributions to UN development agencies accounted for only 16.5% of voluntary contributions, and even 12% for some agencies, far from the 30% target[2] promised in the Funding Compact[3]. The core funding as a share of total funding to UN operational activities for development of OECD DAC contributors is low. For some countries, this figure is below 10% (Dag Hammarskjöld Foundation et al., 2024).

10.2.4 The global governance deficit in key and emerging areas has become prominent

With rapid scientific and technological progress and deepening globalization, the common challenges, governance gaps, and gray areas faced by all countries have increased. The UN should have been the main channel and platform for governance in these areas, but it has not played

[1] The funding structure varies among the different agencies within the UN development system. Among them, the major funds and programs such as the UNICEF, UNDP, UNFPA, and WFP are funded exclusively by voluntary contributions, with the funding categorized into core and non-core contributions based on the flexibility of the contributions. Other UN programs such as the UNODC, UNHCR, UNEP, and WHO are funded from the regular budget, unearmarked voluntary contributions, and earmarked voluntary contributions, of which the first two are combined as core resources and the latter as non-core resources. Core resources are the most flexible funding modality, allowing the agencies concerned to adjust the allocation of resources to the challenges faced by the recipient countries in a manner consistent with national priorities. Non-core contributions are funds that are earmarked by donors for specific purposes and/or locations and are less flexible in their use.

[2] The Funding Compact sets out a flexible funding target to be achieved by 2027, i.e. 30% for core funding as a share of total voluntary funding (excluding assessed contributions) for the UN development system as a whole.

[3] Source: The UN Secretary-General's remarks to the 2025 ECOSOC Operational Activities for Development Segment

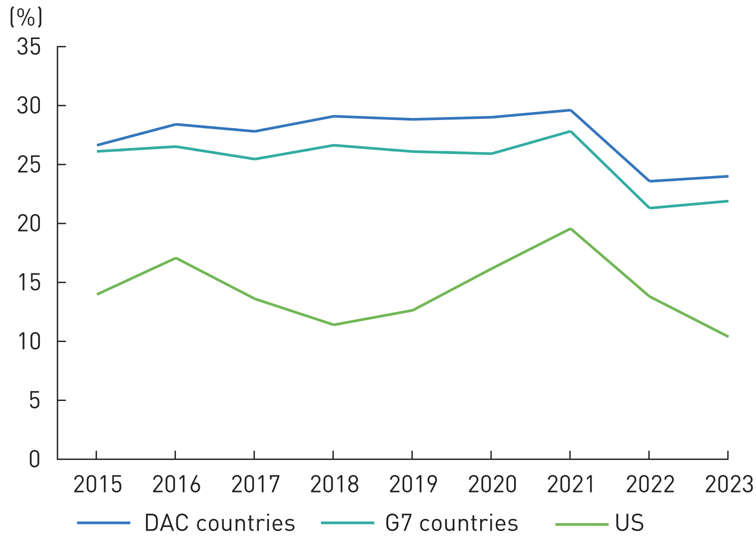

Figure 10-1 Percentage of major developed countries' multilateral contributions in ODA, 2015-2023

Source: OECD DAC

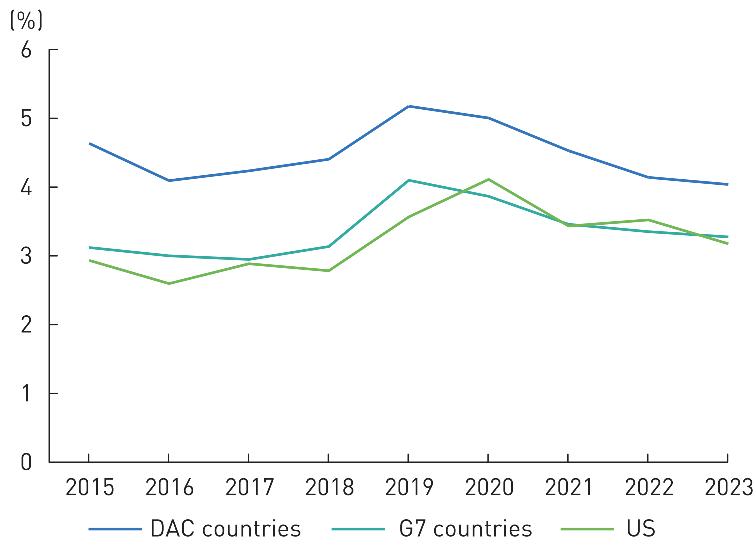

Figure 10-2 Percentage of major developed countries' contributions to UN agencies in ODA, 2015-2023

Source: OECD DAC

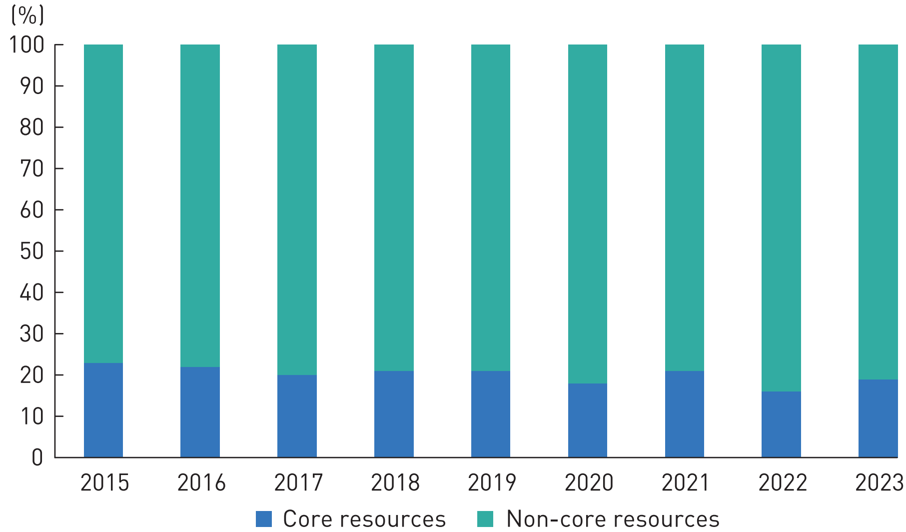

Figure 10-3 Changes in the structure of funding in the UN development system, 2015-2023

Source: UN Economic and Social Council

its due role due to divergent standpoints and shortages of governance tools and means.

Differences over governance in key areas have increased. The world is facing increasingly severe common challenges in climate change, biodiversity, public health, and AI. However, as concerns differ among various parties, it is difficult to reach a consensus on governance in key areas. The first is the environment. Developed and developing countries are divided over target setting and division of responsibilities in terms of environmental protection, resulting in a growing dilemma of collective action. The second is public health. The fraught negotiation process of the Pandemic Agreement shows that there are differences on key issues such as pathogen acquisition and benefit sharing, intellectual property rights and technology transfer in vaccine and drug production, and the financing mechanism. The third is AI governance. Developed and developing countries have significant differences on issues such as data localization, cross-border data flow, algorithm protection, and rules for personal information protection, leading to slow progress in multilateral negotiations.

There are governance gaps in new frontiers. With the accelerated development and use of the global commons of cyberspace, deep sea, space, and the poles, new governance issues are constantly emerging. The inadequate governance of new frontiers is becoming increasingly pronounced. On one hand, the concept of governance lags behind. Global commons are public, non-exclusive and non-competitive, and cannot be monopolized by any party. This requires all parties concerned to replace their individualistic and utilitarian tendencies with a more holistic and cosmological governance philosophy. On the other hand, the role of the UN as a global coordinator has not been effectively safeguarded. Some developed countries have formed small circles to compete for the global governance platform, which makes it difficult for the small number of global governance rules and consultation mechanisms to play a substantive role. For example, in terms of internet governance, developed countries advocate prioritizing the roles of the Internet Corporation for Assigned Names and Numbers (ICANN) and Internet Engineering Task Force (IETF), while downplaying the role of the UN. In outer space governance, developed countries support an approach centered on the Artemis Accords[1], diluting the basic role of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space (commonly known as Outer Space Treaty).

10.3 The UN should be supported to play a better central role in international affairs

The international system with the UN at its core bears the aspirations of people of all countries for peaceful development, with universality, representativeness and authority irreplaceable by any other mechanism. Although the UN is currently facing the dual pressure of internal reforms and external shocks, the vast majority of countries have internalized this set of norms into basic codes of conduct. They are still cooperating under the guiding principle of multilateralism, and still expect the UN to play a better role in maintaining world peace and stability. Dag Hammarskjöld, the second UN Secretary-General, once said, "The UN was not created in order to bring us heaven, but in order to save us from hell." To effectively address the common challenges, all countries should work for the improvement of the global governance system with a longer-term perspective, jointly safeguard the international system with the UN at its core and the international order underpinned by international law, and support and promote the reform of the UN to establish a more just and equitable global governance system.

10.3.1 Safeguarding the authority and central position of the UN

Practicing true multilateralism. The 80th anniversary of the founding of the UN should be taken as an important opportunity to form a consensus of multilateralism and reaffirm, support and strengthen the multilateral system with the UN at its core, while strengthening dialogue, coordination and cooperation on the UN platform.

Safeguarding the authority of the UN system. All countries should uphold the principles of

[1] Since its introduction in 2020, the Artemis Accords, a space cooperation agreement led by the National Aeronautics and Space Administration (NASA) of the US, has attracted more than 50 signatories, including Australia, Canada, Italy and Japan. The agreement has not been negotiated through any international multilateral organization, and its provisions on "safe zones" conflict with the UN Outer Space Treaty's principle of "not subject to national appropriation". This undermines the existing order of international multilateral negotiation and dilutes the foundational role of the Outer Space Treaty, which may intensify the space race focusing on lunar and celestial body development activities.

international law and the basic norms of international relations established by the UN Charter, and fulfill their international responsibilities and obligations in accordance with the statutes of relevant organizations (Box 10-2). Major countries should take the lead in advocating and defending the international rule of law, abide by and carry out the relevant resolutions and decisions of the UN in good faith, and oppose double standard, exceptionalism, and selective application.

Box 10-2 China firmly supports the global governance system with the UN at its core

China is one of the four sponsors of the 1945 San Francisco Conference, one of the founders of the UN, and the first country to sign the UN Charter. Since China's reform and opening up started in 1978, it has carried out broad cooperation with the UN development system, and has always strictly followed the basic norms set by the UN. It has actively participated in UN affairs and tried its best to provide global public goods to contribute to peace and development.

Actively participating in UN affairs. China has joined almost all universal intergovernmental international organizations and more than 600 international conventions, fully participated in the work of various UN agencies, faithfully fulfilled its international obligations, and strictly honored its international commitments.

Taking the lead in fulfilling the responsibility of a major country. China is the second largest contributor to the UN and to peacekeeping assessments, meeting its financial obligations to the UN. Among the permanent members of the Security Council, it has sent the largest number of peacekeeping troops, with 8,000 troops on standby. Since 1990, the Chinese army has sent more than 50,000 peacekeepers to carry out 26 peacekeeping operations in more than 20 countries and regions including hotspots like Lebanon and South Sudan, demonstrating its firm support for multilateralism and the UN Charter through concrete actions[1].

Providing global public goods as much as possible. China's voluntary contributions to UN agencies have steadily increased. In recent years, China has carried out more than 170 projects with more than 20 UN development agencies under the framework of the Global Development and South-South Cooperation Fund, covering more than 30 million people in over 60 countries[2]. The China-UN Peace and Development Fund has supported the UN in implementing more than 180 peace and development projects covering peacekeeping, counterterrorism, agriculture,

[1] Source: The State Council Information Office of the People's Republic of China
[2] Source: China International Development Cooperation Agency

infrastructure, health, education and more, which have benefited more than 100 countries. The Fund has been extended to 2030, which will vigorously promote the 2030 Agenda and help implement major UN peace and security initiatives[1]. Since 2009, China has contributed a total of US$130 million through three phases of the China-FAO South-South Cooperation Trust Fund to support food security and sustainable agricultural development in Global South countries.

In September 2025, China put forward the Global Governance Initiative. It emphasizes that China will leverage the platforms provided by the UN, relevant international organizations, and regional and subregional multilateral institutions to take active actions with all parties and contribute, with Chinese vision and commitment, to global governance reform and improvement. Priority will be given to areas where governance is in urgent need and scant supply, such as the reform of the international financial architecture, AI, cyberspace, climate change, trade, and outer space. Priority will also be given to upholding the authority and central role of the UN and supporting it in implementing the Pact for the Future. China would like to increase communication and cooperation in these areas to build consensus, identify deliverables, and bring about early harvests.

Source: Compiled by the authors based on publicly available information

Giving play to the role of the UN as the main channel for governance in key and emerging areas. All countries should respect the position of the UN as the main platform for governance consultations in key areas such as climate change, public health, and AI. UN centrality should be established in the global commons governance system, making global commons governance a new territory for cooperation among all parties based on the principles of peace, sovereignty, universal benefit, and common governance.

10.3.2 Strengthening communication and coordination between the UN and other multilateral mechanisms

Strengthening the complementarity between the UN and other multilateral mechanisms. Communication and collaboration between the G20, BRICS and the UN should be strengthened, especially in areas such as global economic governance, climate change and green transition, digital governance, and responses to health crisis and food security crisis through institutionalized communication and alignment of initiatives, so as to bring into full play their respective strengths and achieve an effective combination of flexibility and inclusiveness, and short-term actions and long-term goals.

Enhancing mutual support between regional international organizations and UN agencies. Regional international organizations such as the European Union, the African Union, ASEAN, and APEC should support and maintain the

[1] Source: Permanent Mission of the People's Republic of China to the UN

international system with the UN at its core. UN agencies should leverage the strengths of regional international organizations in promoting regional security and understanding regional needs, strengthen policy dialogue with one another, and carry out in-depth alignment of agendas and projects, data sharing, and joint evaluation.

Major multilateral financial institutions should increase support for the UN agenda. Multilateral financial institutions such as the IMF and the World Bank should provide support for realizing the SDGs. Dialogue and coordination mechanisms between major multilateral financial institutions and relevant UN agencies in crisis response, climate finance, debt sustainability assessment, and data sharing should be explored.

10.3.3 Increasing the representation and voice of developing countries

Carrying out necessary and reasonable reform of the Security Council. The representation of the Global South should be increased to allow more developing countries, especially small and medium-sized ones, to participate in the decision-making of the Security Council. Especially, the representation and voice of African countries should be enhanced. The UN General Assembly should be encouraged to hold intergovernmental negotiations on Security Council reform to promote consensus. The authority and efficiency of the Security Council should be improved to enhance its ability to respond to global threats and challenges and better perform the duties entrusted by the UN Charter.

Improving the representation of staff from developing countries within the UN. The geographical representation of the staff in the UN Secretariat and specialized agencies should receive more attention, with measures taken to further improve the geographical balance of UN staff distribution, effectively reflect the needs and interests of developing countries, and fully respond to the expectations of the international community.

10.3.4 Promoting the implementation of the 2030 Agenda

Following the vision of common development mapped out in the 2030 Agenda. Development should be brought back to the UN's core agenda as an important pillar. Following the common SDGs, all parties need to move faster to implement the UN Pact for the Future. The UN should be encouraged to increase its support for and cooperation with developing countries in areas including development financing, youth and future generations, and digital technology.

Improving the overall effectiveness of the UN development system. The integration and optimization of the UN development system should be promoted to strengthen strategic coordination among UN development agencies with system thinking, avoiding duplication and competition. Accountability should be strengthened to ensure that the use of resources by relevant development agencies is more consistent with their missions. The representation of developing countries in the resident coordinator system needs to be raised to enable the UN development system to better understand the needs of developing countries and enhance the relevance and effectiveness of cooperation.

Exploring the norms to encourage the provision of global public goods. In green industrial transformation and sustainable production and lifestyles, incentive and compensation mechanisms and rules for public goods need to be explored and created. Well-equipped countries should be encouraged to provide public goods that are beneficial to global common interests.

10.3.5 Improving the executive capacity and management efficiency of UN agencies

UN member states should actively fulfill their financial obligations. They should keep the promise of "fulfilling payment obligations in full, on time and unconditionally" under the UN Pact for the Future as soon as possible, and pay UN dues and peacekeeping assessments in full to provide stable and predictable funds for the UN's normal operation and effective performance.

Developed countries should adjust their contribution patterns. They should increase the core contributions and enhance the flexibility of non-core contributions to provide greater space for the UN in using resources and managing income fluctuations. The awareness of complementarity and cooperation should be enhanced to avoid repeated contributions and fragmentation caused by competitive thinking.

All parties should work together to improve the UN's operational efficiency. The UN system should be supported to enhance its flexibility, coordination and adaptability and improve its ability to cope with global challenges by optimizing processes and improving effectiveness, reviewing the implementation of mandated tasks, and carrying out structural reforms and program adjustments.

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Afterword

In June 2022, when Chinese President Xi Jinping chaired the High-level Dialogue on Global Development, he stated that China would issue the Global Development Report, and it was included in the list of major deliverables. The Center for International Knowledge on Development (CIKD) in Beijing undertook the task under the guidance of the Development Research Centre of the State Council (DRC).

The *Global Development Report 2025*, themed "Jointly Bringing Stability and Certainty to Global Development", analyzes the main destabilizing factors and uncertainties in today's world and proposes overarching principles and specific pathways for more inclusive, beneficial and resilient global development. The report examines the situations and challenges in key areas such as the global trade system, climate change, public health, food security and poverty reduction, industrialization in developing countries, and digital and intelligent technology, and makes targeted recommendations. It also discusses topics like development cooperation within the Global South and safeguarding the international system with the UN at its core.

The editorial board of the Report is headed by Lu Hao, Minister of DRC, President of CIKD, and Director of the board, who articulated the theme and framework of the Report and oversaw its central idea and message. Zhang Qi, Vice Minister of DRC and Chief Vice President of CIKD, provided extensive guidance as Deputy Director of the board, especially in the drafting and editing stages. Long Guoqiang, Cong Liang, and Zhang Shunxi, Vice Ministers of DRC and Deputy Directors of the board, gave valuable suggestions. Zhang Laiming, former Deputy Minister of DRC and former Chief Vice President of CIKD, provided extensive guidance and suggestions. Other members of the editorial board also contributed to the Report.

The editorial team is headed by Wang Jinzhao, Executive Vice President of CIKD. Wang Jinzhao and Zhou Taidong, Vice President of CIKD, edited the Report. Yu Lu participated in editing the Report. The following authors contributed to the Report: Zhou Yu (Chapter I); Zhang Youyi and Liu Chen (Chapter II); Hua Ruoyun and Zou Lei (Chapter III); Li Cangshu and Yu Min (Chapter IV); Dong Dandan (Chapter V); Liang Xiaomin and Han Yang (Chapter VI); Chen Xiao and Zhang Jin (Chapter VII); Ma Tianyue and Xiong Hongru (Chapter VIII); Liang Weitang (Chapter IX); Yu Lu and Zhou Taidong (Chapter X).

An advisory panel of renowned scholars and experts from different regions made detailed and insightful comments and suggestions during the theme identification, framework design, and the Report drafting. Under Lu Hao's direction, the authors studied the comments and suggestions and responded to them one by one. A number of international organizations provided great support and invaluable suggestions, including the United Nations Development Programme, the United Nations Trade and Development, the United Nations Children's Fund, the Joint United Nations Programme on HIV/AIDS, the World Bank Group, the World Health Organization, the World Food Programme, the South Centre, the International Fund for Agricultural Development, and the Global Vaccine Alliance.

It should be noted that the data referenced in this Report is mainly annual data for 2024, while some of the latest data is as of the end of July 2025.

We are grateful to all the organizations, think tanks, universities, scholars, and experts who have contributed to the Report.

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August 1, 2025

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