PIDS 2022–2023

ECONOMIC POLICY MONITOR

GREEN AND DIGITAL:

Managing the Twin Transition toward Sustainable Development

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1MDB	–	1Malaysia Development Berhad
4PH	–	*Pambansang Pabahay Para sa Pilipino* Housing Program
ADO	–	Asian Development Outlook
AI	–	artificial intelligence
AKSYON	–	*Agarang Kalinga at Saklolo para sa mga* OFWs *na Nangangailangan*
ALS	–	Alternative Learning System
AMRO	–	ASEAN+3 Macroeconomic Research Office
AMSC	–	average monthly salary credit
AONCR	–	areas outside National Capital Region
APEC	–	Asia-Pacific Economic Cooperation
ARBs	–	agrarian reform beneficiaries
ASEAN	–	Association of Southeast Asian Nations
ATS	–	Air Traffic Services
ANS	–	Air Navigation Services
AUV	–	autonomous underwater vehicle
AVCF	–	agricultural value chain finance
BALAI	–	Building Adequate, Livable, Affordable, and Inclusive Filipino Communities
BCG	–	bio-circular-green
BEDP	–	Basic Education Development Plan
BES	–	Business Expectations Survey
BFP	–	Bureau of Fire Protection
BIR	–	Bureau of Internal Revenue
BJMP	–	Bureau of Jail Management and Penology
BOC	–	Bureau of Customs
BOP	–	balance of payments
BP	–	bond spread
BPS	–	basis points
BSP	–	*Bangko Sentral ng Pilipinas*
BuCor	–	Bureau of Corrections
CAAP	–	Civil Aviation Authority of the Philippines
CAR	–	capital adequacy ratio
CARP	–	Comprehensive Agrarian Reform Program
CCC	–	Climate Change Commission
CDW	–	child development worker
CE	–	circular economy
CET	–	Common Equity Tier 1
CHED	–	Commission on Higher Education
CIS	–	Career Information System

CLOA	–	Certificate of Land Ownership Award
CNN	–	Cable News Network
CO	–	capital outlays
COC	–	Certificate of Compliance
COVID-19	–	coronavirus disease 2019
CPI	–	consumer price index
CREATE	–	Corporate Recovery and Tax Incentives for Enterprises
CYS	–	creditable years of service
DA	–	Department of Agriculture
DADS	–	Disability Assessment and Determination System
DBCC	–	Development Budget Coordination Committee
DBM	–	Department of Budget and Management
DBP	–	Development Bank of the Philippines
DC	–	Department Circular
DENR	–	Department of Environment and Natural Resources
DER	–	distributed energy resources
DFA	–	Department of Foreign Affairs
DICT	–	Department of Information and Communications Technology
DILEEP	–	DOLE Integrated Livelihood and Emergency Program
DILG	–	Department of the Interior and Local Government
DILP	–	DOLE Integrated Livelihood Program
DMW	–	Department of Migrant Workers
DO	–	Department Order
DOE	–	Department of Energy
DOF	–	Department of Finance
DOH	–	Department of Health
DOLE	–	Department of Labor and Employment
DOT	–	Department of Tourism
DOTr	–	Department of Transportation
DRRM	–	Disaster Risk Reduction and Management
DSS	–	decision support system
DSWD	–	Department of Social Welfare and Development
EAP	–	East Asia and Pacific
EBET	–	enterprise-based education and training
EBT	–	electronic benefit transfer
EBT	–	enterprise-based training
ECCD	–	early childhood care and development
EDC	–	Export Development Council
EDCOM II	–	Second Congressional Committee on Education
eGov PH	–	e-Government Philippines
EMDA	–	emerging and developing Asia
EMDE	–	emerging market and developing economies

EMDEs	–	emerging and developing economies
ENR	–	environment and natural resources
EO	–	Executive Order
EPEB	–	Environmental Protection and Enforcement Bureau
EPIRA	–	Electric Power Industry Reform Act
EPM	–	Economic Policy Monitor
EPR	–	extended producer responsibility
ERC	–	Energy Regulatory Commission
ESGP-PA	–	Expanded Student Grants-In-Aid Program for Poverty Alleviation
ETEEAP	–	Expanded Tertiary Education Equivalency and Accreditation Program
EU	–	European Union
EVOSS	–	Energy Virtual One-Stop Shop
f	–	forecast
FAO	–	Food and Agriculture Organization
FCI	–	financial conditions index
FDA	–	Food and Drug Administration
FDCP	–	Film Development Council of the Philippines
FDI	–	foreign direct investment
FIT	–	feed-in tariff
FSP	–	Food Stamp Program
FY	–	fiscal year
GAA	–	General Appropriations Act
GAIA	–	Global Alliance for Incinerator Alternatives
GAPP	–	generally accepted principles and practices
GDP	–	gross domestic product
GEAP	–	Green Energy Auction Program
GEAR	–	Green Energy Auction Reserve
GEP	–	Global Economic Prospects
GIDAs	–	geographically isolated and disadvantaged areas
GMO	–	genetically modified organism
GNI	–	gross national income
GSIS	–	Government Service Insurance System
GVA	–	gross value added
GVCs	–	global value chains
ha	–	hectare
HB	–	House Bill
HEIs	–	higher education institutions
HELP	–	Higher Education Loan Program
HFEP	–	Health Facilities Enhancement Program
HNRDA	–	Harmonized National Research and Development Agenda

HR	–	House Resolution
HRH	–	human resources for health
HSW	–	household service worker
i3S	–	Inclusive Innovation Industrial Strategy
ICFI	–	ICF International
ICT	–	information and communications technology
IDTC	–	Industrial Digital Transformation Congress
ILO	–	International Labour Organization
ILTER	–	International Long-Term Ecological Research Network
IMF	–	International Monetary Fund
INA	–	Indonesia Investment Authority
IoT	–	Internet of Things
IPOPHL	–	Intellectual Property Office of the Philippines
IRENA	–	International Renewable Energy Agency
IRR	–	Implementing Rules and Regulations
ISFs	–	informal setter families
IT	–	information technology
IT-BPM	–	information technology and business process management
ITH	–	income tax holiday
ITIF	–	Information Technology and Innovation Foundation
ITS	–	Integrated Transport System
JO	–	job order
JR	–	Joint Resolution
kg	–	kilogram
KOICA	–	Korea International Cooperation Agency
LBP	–	Landbank of the Philippines
LCDI	–	Low Carbon Development Initiative
LFPR	–	labor force participation rate
LGU	–	local government unit
LHS	–	left-hand side
LTFRB	–	Land Transportation Franchising and Regulatory Board
MARINA	–	Maritime Industry Authority
mbps	–	megabits per second
MCH	–	maternal and child health
MGB	–	Mines and Geosciences Bureau
MIC	–	Maharlika Investment Corporation
MICC	–	Mining Industry Coordinating Council
MIF	–	Maharlika Investment Fund
MO	–	Memorandum Order
MOOE	–	maintenance and other operating expenses
MPUV	–	modern public utility vehicles

MRT	–	Metro Rail Transit
MSMEs	–	micro, small, and medium enterprises
MTFF	–	medium-term fiscal framework
MUP	–	military and uniformed personnel
MWh	–	megawatt hour
NAFMIP	–	National Agriculture and Fisheries Modernization and Industrialization Plan
NAIA	–	Ninoy Aquino International Airport
NAMRIA	–	National Mapping and Resources Information Authority
NAP	–	National Adaptation Plan
NAPC	–	National Anti-Poverty Commission
NAST	–	National Academy of Science and Technology
NBQBs	–	nonbank financial institutions with quasi-banking functions
NCCAP	–	National Climate Change Action Plan
NCDs	–	noncommunicable diseases
NCII	–	National Certificate II
NCRMF	–	National Climate Risk Management Framework
NDC	–	Nationally Determined Contribution
NDHS	–	National Demographic and Health Survey
NEDA	–	National Economic and Development Authority
NEON	–	National Ecological Observation Network
NG	–	national government
NGOs	–	nongovernment organizations
NHUDSP	–	National Housing and Urban Development Sector Plan
NIC	–	National Innovation Council
NIIF	–	India's National Investment and Infrastructure Fund
NNC	–	National Nutrition Council
NPC	–	National Privacy Commission
NSI	–	net sale index
NSWMC	–	National Solid Waste Management Commission
NTA	–	national tax allotment
NTESDP	–	National Technical Education and Skills Development Plan
O&M	–	operations and management
OECD	–	Organisation for Economic Co-operation and Development
OFWs	–	overseas Filipino workers
OOP	–	out-of-pocket
OPEC	–	Organization of the Petroleum Exporting Countries
OSEC	–	Office of the Secretary of Health
OTOP	–	One Town, One Product Philippines
OU	–	Office of the Undersecretary
OxCGRT	–	Oxford COVID-19 Government Response Tracker
PAFES	–	Province-led Agriculture and Fisheries Extension System

PCG	–	Philippine Coast Guard
PCID	–	Philippine Creative Industries Development
PCIDC	–	Philippine Creative Industries Development Council
PCPN	–	primary care provider network
PCW	–	Philippine Commission on Women
PDP	–	Philippine Development Plan
PDR	–	People's Democratic Republic
PEISS	–	Philippine Environmental Impact Statement System
PEP	–	Philippine Energy Plan
PES	–	Parent Effectiveness Services
PHC	–	primary health care
PhilHealth	–	Philippine Health Insurance Corporation
PHILPORTS	–	Philippine Ports Corporation
PHP	–	Philippine peso
PIDS	–	Philippine Institute for Development Studies
PMI	–	purchasing managers index
PMO	–	Privatization and Management Office
PNA	–	Philippine News Agency
PNP	–	Philippine National Police
PNS	–	Philippine National Standards
POEA	–	Philippine Overseas Employment Administration
PPA	–	Philippine Ports Authority
PPP	–	public-private partnerships
ppts	–	percentage points
PRESENT	–	Poverty Reduction through Social Entrepreneurship
PS	–	Personnel services
PSA	–	Philippine Statistics Authority
PSOC	–	Philippine Standard Occupation Codes
PUV	–	public utility vehicle
PV	–	photovoltaic
PVAO	–	Philippine Veterans Affairs Office
PWDs	–	Persons with disabilities
Q	–	quarter
R&D	–	research and development
RA	–	Republic Act
RAMC	–	revalued average monthly compensation
RCEP	–	Regional Comprehensive Economic Partnership
RCS	–	record of creditable service
RE	–	renewable energy
REC	–	renewable energy certificate
REDD+	–	Reducing Emissions from Deforestation and Forest Degradation

REM	–	renewable energy market
RHS	–	right-hand side
RIICs	–	Regional Inclusive Innovation Centers
RPS	–	renewable portfolio standards
RRP	–	reverse repurchase rate
SA	–	sustainable agriculture
SDGs	–	Sustainable Development Goals
SEPO	–	Senate Economic Planning Office
SFM	–	sustainable forest management
SHFC	–	Social Housing Finance Corporation
SIM	–	Subscriber Identity Module
SIPP	–	Strategic Investment Priority Plan
SLM	–	sustainable land management
SOGIESC	–	sexual orientation, gender identity or expression, and sex characteristics
SPEED	–	Strengthening Private Enterprise for the Digital Economy
SR	–	Senate Resolution
SRA	–	Sugar Regulatory Administration
SSF	–	Shared Service Facilities
SSS	–	Social Security System
STAR	–	System for TVET Accreditation and Recognition
STEM	–	science, technology, engineering, and math
STI	–	science, technology, and innovation
STPs	–	science and technology parks
STU	–	Special Takeover Unit
SUCs	–	state universities and colleges
SWFs	–	sovereign wealth funds
TEAM	–	Tropical Ecology Assessment and Monitoring
TESDA	–	Technical Education And Skills Development Authority
THE	–	total health expenditures
TOP	–	TESDA Online Program
TRs	–	training regulations
TTI	–	TESDA Technology Institution
TUPAD	–	*Tulong Panghanapbuhay sa Ating* Disadvantaged Workers
TVET	–	technical and vocational education and training
U/KBs	–	universal and commercial banks
U5MR	–	under-5 mortality rate
UAQTEA	–	Universal Access to Quality Tertiary Education Act
UHC	–	universal health coverage
UI	–	unemployment insurance
UN	–	United Nations
UNCTAD	–	United Nations Conference on Trade and Development

UNDP	–	United Nations Development Programme
UNESCAP	–	United Nations Economic and Social Commission for Asia and the Pacific
UNESCO	–	United Nations Educational, Scientific and Cultural Organization
UNICEF	–	United Nations Children's Fund
UP	–	University of the Philippines
USD	–	United States dollar
VAT	–	value-added tax
WEF	–	World Economic Forum
WEO	–	World Economic Outlook
WESM	–	wholesale electricity spot market
WRMO	–	Water Resources Management Office
WTO	–	World Trade Organization
YOY	–	year-on-year

Foreword

The convergence of green and digital transition presents a significant opportunity for the Philippines to cultivate a sustainable, technologically advanced future while fostering economic growth. Like other nations, the Philippines actively embraces these initiatives and stands ready to capitalize on the transformative potential of the twin transition. However, risks and challenges persist, impeding the country's seamless adoption of sustainable practices and advanced technologies. Challenges such as climate vulnerability, energy transition, infrastructure gaps, and the digital divide must be addressed for a comprehensive and inclusive transformation. This requires effective policies and concerted efforts among the government, private sector, and communities.

The Philippine Institute for Development Studies (PIDS) believes in the twin transition's potential as a strategy for attaining sustainable development, thus selecting it as the theme for the *2022–2023 Economic Policy Monitor (EPM)*. This EPM issue contains policy updates in key sectors, particularly poverty reduction and social protection; gender; health; education; labor and employment; housing; agriculture; trade and industry; services; science, technology, and innovation; land, air, and marine transport; energy; and the environment and natural resources. Moreover, the first chapter evaluates the country's macroeconomic performance in 2022 and 2023 and provides economic projections for 2024.

We aspire that this EPM issue will enlighten our policymakers and leaders about the twin transition's pivotal role in shaping a sustainable, inclusive, and prosperous future for all.

ANICETO C. ORBETA JR.
President

Acknowledgment

The *Economic Policy Monitor* (EPM) is an annual publication of the Philippine Institute for Development Studies (PIDS). This issue was made possible through the collaborative efforts of many individuals.

Chapter 1, penned by Margarita Debuque-Gonzales, Mark Gerald C. Ruiz, and Ramona Maria L. Miral, dives into the economic performance of the Philippines in 2022 and the first half of 2023. It presents economic prospects for 2024, outlines immediate and longer-term risks, and provides recommendations for the country's development.

Chapter 2 present policy updates and highlights persisting gaps in critical economic sectors. Contributions within this chapter are provided by various experts: Aubrey D. Tabuga and Madeleine Louise S. Baiño for poverty reduction and social protection; Connie Bayudan-Dacuycuy and Anna Rita P. Vargas for gender; Valerie Gilbert T. Ulep, Jhanna Uy, Therese Jules P. Tomas, Robert Hector G. Palomar, and Lyle Daryll D. Casas for health; Ma. Christina F. Epetia, John Joseph S. Ocbina, Kimberly R. Librero, and Leih Maruss V. Sinsay-Villanueva for education; Michael R.M. Abrigo for labor and employment; Marife M. Ballesteros, Tatum P. Ramos, and Jenica A. Ancheta for housing; Roehlano M. Briones for agriculture; Francis Mark A. Quimba, Neil Irwin S. Moreno, and Mark Anthony A. Barral for trade and industry; Ramonette B. Serafica and Queen Cel A. Oren for the services sector; Francis Mark A. Quimba and Jose Ramon G. Albert for science, technology, and innovation; Kris A. Francisco for air and marine transport; Adoracion M. Navarro and Jethro El L. Camara for land transport and energy; and Sonny N. Domingo for the environment and natural resources.

Chapter 3, the theme chapter of this issue titled "Green and Digital: Managing the Twin Transition toward Sustainable Development" was authored by Francis Mark A. Quimba, Ramonette B. Serafica, Connie Bayudan-Dacuycuy, Neil Irwin S. Moreno, and Abigail E. Andrada.

The Research Information Department, under the guidance of Sheila V. Siar and Sonny N. Domingo, carried out the various tasks involved in producing this yearly volume. Gizelle G. Manuel and Elshamae G. Robles copyedited the chapters and provided editorial support. Maryam P. Tubio and Wenilyn M. Asuncion did the layouting and design and assisted in proofreading.

Executive Summary

The world is witnessing two major shifts—a green transition and rapid digitalization—evidenced by countries' integration of renewable energy, reduced carbon emissions, and technological advancements. This convergence must not be seen as isolated factors but as interconnected elements critical for sustainable progress. Green strategies increasingly rely on digital technology for resource efficiency, while digitalization needs renewable energy use to mitigate energy consumption associated with digital infrastructure.

In response to climate change, nations committed to the Glasgow Climate Pact, dedicating 2020–2030 as a decade for collective climate action and aligning their policies with sustainability agendas. Renewable energy is also gaining traction owing to declining costs, with solar and wind power becoming competitive with fossil fuels. Policy support, including tax incentives and research and development (R&D) investment, has driven this transition.

Simultaneously, countries are rapidly embracing digital technology to enhance services, fight corruption, and boost economic growth. Prompted by the COVID-19 pandemic, a surge in digital service delivery and remote work has been observed, with smart manufacturing, fintech, e-health, and smart agriculture emerging as key sectors. In health care, 5G technology facilitates remote diagnosis and treatment, benefiting underdeveloped areas. Meanwhile, advancements in information and communications technology (ICT) have helped boost agricultural productivity, providing farmers with digital support networks, such as in the case of Wefarm. Moreover, the world is embracing advanced digital Industry 4.0 technologies like artificial intelligence (AI), Internet of Things, and blockchain, which are expected to yield substantial productivity gains.

These simultaneous transformations reshape global industrial systems and societies, and countries must balance mitigating climate change and embracing digital innovation to enhance economic, social, and environmental sustainability.

In this *Economic Policy Monitor* (EPM), PIDS researchers looked into the interconnectedness of these dual forces, exploring how investments; labor; science, technology, innovation (STI); and AI drive this transformation. Chapter 3 highlights pertinent initiatives and technology-related risks while offering recommendations to bridge gaps and remove barriers to maximize the potential of the twin transition. The chapter contextualizes the dual transition within the Philippine landscape, focusing on areas demanding attention to effectively navigate this shift, including trade and investment impacts, human capital readiness, and the role of science and technology, including AI.

The emergence of this twin transition signifies a new era in policy formulation, presenting policymakers with distinct challenges and prospects. Balancing technological advancement with environmental stewardship requires flexible, comprehensive policy frameworks, along with a holistic approach involving the active participation of government

agencies and local government units (LGUs). Governments must critically assess their current position in implementing twin transformations to reveal gaps and areas needing immediate attention. This will ensure that policies align with transformation goals and empower informed decisions and strategic resource allocation for innovation and environmental sustainability.

The policy implications highlight the importance of perceiving the twin transition as complementary rather than exclusive. Governments can refer to a diagnostic framework that outlines four stages of progress: fragmented, limited, realized, and transformed. This framework emphasizes fostering workforce skills, collaborative relationships between academic institutions and industry, and proactive engagement by firms and workers. Adopting AI and technologies requires addressing environmental impacts, promoting responsible governance, and interdisciplinary collaboration for ethical and sustainable technology adoption.

Chapter 2 of this EPM provides policy updates on key sectors. On social protection, estimates by the Philippine Statistics Authority showed that the country's poverty rate increased from 16.7 percent in 2018 to 18.1 percent in 2021. As the COVID-19 pandemic adversely affected jobs and the economy, thus leading to a reversal in the poverty trend, the government commits to aiding vulnerable groups through social, economic, and institutional transformation initiatives. These initiatives include increased budget allocation for the agricultural sector to enhance productivity and support for agrarian reform beneficiaries. Other measures focus on aiding low-income and food-poor households through the Food Stamp Program, providing financial assistance, conducting nutrition development classes, enhancing financial literacy, improving tertiary education, and implementing cash transfer programs for poor households.

While the Philippines leads in Asia in pursuing gender parity, the country confronts a persisting gender gap. Thus, legislation is proposed to empower women and tackle issues like paid leave for caregiving responsibilities and amendments to the Labor Code for enhanced protection. Family matters are contained in other proposed legislation, with SB 796 seeking to establish a National Family Commission and bills like SB 719, SB 1198, SB 1969, SB 147, SB 213, and HB 00078 addressing legal separation and divorce. Proposals to expand the Anti-Violence against Women and Children Act and antidiscrimination measures highlight the government's commitment to promoting gender inclusion and combating discrimination.

In 2022, the Philippines saw improvements in health indicators, with declines in excess mortality and COVID-19-related deaths. However, noncommunicable diseases remain a major concern, and government health expenditure, while increasing, remains low compared to the country's regional peers. Recent health policy reforms focus on improved primary health care access, while challenges include health personnel shortages and funds utilization issues in the Health Facility Enhancement Program. Devolution efforts intend to create a more efficient local health system.

Efforts in basic education are aimed at refining learning delivery modalities and enhancing teacher development. The Basic Education Development Plan 2030 focuses on access, equity, quality, and resiliency. Republic Act (RA) 11899 established the Second Congressional Committee on Education in 2022 to evaluate national education and propose transformative reforms. Initiatives in early childhood care and development (ECCD) include aligning efforts between the ECCD Council and the National Nutrition Council, institutionalizing the Parent Effectiveness Services program, and proposing amendments to the Early Years Act. For higher education, bills focus on quality improvement, flexible learning, and expanded student support. Technical and vocational education and training (TVET) initiatives promote enterprise-based education and training, trainee support, and the System for TVET Accreditation and Recognition.

The Philippines experienced a positive trend in the labor force in the first half of 2023. The labor force participation rate averaged 65.6 percent, surpassing pre-COVID-19 levels. The employment rate returned to pre-pandemic levels, while the underemployment rate decreased, indicating improved employment quality. The revised implementing rules and regulations of the Telecommuting Act has been issued. Other legislative proposals include increasing the paid service incentive leave, expanding protection against work-related sexual discrimination, and enhancing the national apprenticeship program—all aimed at improving workers' welfare.

The government launched the *Pambansang Pabahay Para sa Pilipino Housing* (4PH) Project, aiming to construct 1 million housing units annually for six years starting in January 2023. Circular 2022-004 of the Department of Human Settlements and Urban Development outlines the 4PH features, emphasizing innovative strategies for affordable and accessible housing. The project involves LGUs as primary proponents responsible for site selection, development, and beneficiary selection, with a focus on sustainable and inclusive settlements. However, the government's capacity to meet the 6 million housing unit target for 2023 to 2028 is questioned, considering the past administrations' unmet targets. Learning from the experience of past administrations, it must address issues like LGU accountability, insufficient support for households unable to pay amortization, and the importance of tailored housing options for the public's diverse needs.

After two years of economic contraction, the agriculture, fisheries, and forestry sectors experienced a modest growth of 0.5 percent in gross value added. Despite overall growth, the crops, livestock, and fishery sectors continued to contract by 1.1 percent, while poultry, eggs, and support services contributed to the sector's performance. The period witnessed a surge in food price inflation, reaching 9.2 percent in the first five months of 2023. This was attributed to global supply shocks, particularly affecting commodities like sugar, fish, and corn. Legislation in 2022 included RA 11901, which repeals the agri-agra law, and RA 11953, or the New Agrarian Emancipation Act, condoning debts related to the Comprehensive Agrarian Reform Program.

Several bills were filed to improve trade, increase market access, and support domestic industries, including creating online platforms for creative products, modernizing the Warehouse Receipts Law, revitalizing the agriculture and food industries, and institutionalizing the review of government products and services to conform to existing standards. The Philippine Creative Industries Development (PCID) Act aims to boost creative industries. Various bills support the digitalization and innovation of industries, particularly focusing on micro, small, and medium enterprises (MSMEs). Emphasis on digitalization and innovation is evident in the government's partnerships with the private sector and the Strengthening Private Enterprise for the Digital Economy program. To enhance local industries' competitiveness, collaborative efforts are seen through the Philippine Export Development Plan 2023–2028, which focuses on industry- and firm-level interventions. Other legislation passed in the past year aims to address regulatory issues, provide incentives, and foster public-private partnerships.

The Foreign Investment Act, Public Service Act, and Retail Trade Liberalization Act intend to boost the business environment and liberalize industries, including services. Opportunities in the services sector, particularly the digital economy and creative industry, are supported by laws like the PCID Act and the Digital Workforce Competitiveness Act. To sustain growth in the digital era, additional regulatory reforms are needed, including strengthening institutions, expanding internet connectivity, enhancing digital skills, improving competition, and ensuring consumer welfare. In sectors like e-commerce, the digital economy contributed 9.4 percent to the gross domestic value in 2022. Legislation and campaigns stress compliance for online businesses and promote digital payments. Proposed laws, such as the Internet Transactions Act, aim to regulate internet transactions, ensuring consumer protection and compliance for e-commerce platforms.

Recognizing the importance of STI for sustainable development, the country's 30-year STI Foresight and Strategic Plan called *Pagtanaw 2050* encompasses key clusters. Medium-term priorities outlined in the Philippine Development Plan 2023–2028 focus on advancing research and development, technology, and innovation, with strategic frameworks to guide efforts in priority areas like health, agriculture, industry, energy, and environment. The Innovative Startup Act supports startups and MSMEs through financial incentives, streamlined processes, and capacity-building assistance. Despite having STI policies, the country must increase its investments, as less than half of Philippine firms are currently innovation active.

The government implemented policies related to the public utility vehicle (PUV) modernization program, including an expanded equity subsidy scheme, agency-level guidelines, and other directives. Designed to enhance public transport's inclusivity, safety, and sustainability, the PUV modernization program involves regulatory reforms, route planning, fleet modernization, and industry consolidation. However, several issues in the sector have fueled opposition to the program. Policymakers are urged to revisit subsidy amounts, reduce modern PUV costs, ease cooperative formation expenses, engage extension workers, and investigate alleged irregularities to address challenges faced by drivers and operators.

Meanwhile, the conflicting roles of government agencies managing seaports and airports have hindered the growth of the water and air transport sectors. Thus, bills proposing the separation of regulatory and operational functions of these agencies have been introduced. The Philippine Ports Authority has initiated the privatization of port management since 2016 through the Port Terminal Management Framework, which encourages private sector participation through concession, operation and management contracts, and other partnership modalities aiming to improve port services. Two bills filed in 2022 target to address conflicting roles in aviation by proposing separate entities for planning, constructing, and operating airports. The Department of Transportation pursues public-private partnerships for infrastructure upgrades at the Ninoy Aquino International Airport and the Air Traffic Services-Air Navigation Services project.

The energy sector experienced policy changes in investment, regulation, renewable energy integration, feed-in tariffs, retail access, and nuclear energy. Developments include RA 11659, clarifying foreign investments in energy, and Department Circular 2022-11-034, removing nationality requirements for solar, wind, and hydropower businesses. New regulations covered microgrids, distributed energy resources, biomass waste-to-energy, and offshore wind technology, promoting democratized energy access.

The environment and natural resources landscape involves policy augmentation and the establishment of transitory bodies. The government has encouraged private sector participation, particularly in waste management. Notable policies include RA 11898, which promotes a circular economy for waste management, and Administrative Order 2023-01, which introduces a geospatial database for comprehensive resource information. Ongoing efforts toward sustainable forest management reflect a holistic approach to environmental conservation. Bills targeting plastic management align with environmental objectives, while other policies aim to address open pit mining, mineral land use, and disaster resilience.

As discussed in Chapter 1, growth in the Philippines reached 7.6 percent in 2022, driven by the economy's further reopening and influenced by inflation and other global factors. Amid sustained global risks, the country's GDP is expected to grow between 5.5 percent and 6 percent in 2024, with inflation projected to fall to 3 percent. However, a challenging macroeconomic climate awaits in 2024.

The year 2022 marked a return to workplaces and schools, along with the ongoing recovery of industries that were hit hard by the COVID-19 pandemic, such as recreation and tourism. Output increased by 5.5 percent in the first half of the year, but a downward trend appears. GDP expanded by 6.5 percent in the first quarter and by 4.3 percent in the second quarter. The latter slowdown can be attributed largely to a significant drop in government spending. Output is anticipated to grow by 5.3 percent this year, within the originally estimated range of 4.5 percent to 5.5 percent. However, inflation is expected to average outside the target range due to various supply-side surprises in the second half of the year.

The economy's reopening also supported economic activity in 2022, sustained through the first quarter of 2023. Consumption and investment propelled growth on the spending side in 2022 but started to soften in the first half of 2023.

Aligned with the economy's normalization, government spending growth decreased to 4.9 percent in 2022 from 7.2 percent in 2021 and slipped to 1.4 percent in the first half of 2023. The trade deficit in goods and services widened in 2022, as imports grew faster than exports during the recovery period, although this trend has started to reverse. Services fueled growth on the production side last year, with industry continuing to provide support despite its weaker growth.

Inflation rose in the early months of 2022 and peaked at 8.7 percent in January 2023. Price pressures in food mainly propelled headline inflation. Next to food, housing and utilities were the second-biggest contributors to headline inflation.

Government expenditure as a ratio of GDP dipped from 24.1 percent in 2021 to 23.4 percent in 2022. The economy's reopening contributed to higher tax revenues in 2022. Meanwhile, the country's fiscal deficit narrowed slightly from 8.6 percent of GDP in 2021 to 7.3 percent in 2022.

Debt sustainability analysis indicates that the debt-to-GDP ratio is expected to reach 64.2 percent in 2025. The differential between the Philippine and US key policy rates declined in 2022, settling within a limited but lower band beginning in the second half of 2022. Reserve requirement ratios against selected peso deposit and deposit substitute liabilities were cut by the BSP in June 2023.

The global economic recovery from the COVID-19 pandemic also persisted amid geopolitical and commodity price shocks. However, the macroeconomic outlook remains uncertain in 2023 and 2024, with inflation slowing globally but remaining high among emerging and developing economies, excluding Asia. The growth in trade is expected to experience a significant slowdown globally, although a recovery may be imminent. Developing Asian countries are likely to face limited fiscal space in the near term. Monetary policies in most developing Asian economies tightened during the year, but easing may be expected in 2024.

GDP growth is anticipated to decelerate to 5.3 percent in 2023, aligned with the forecast range for the year. GDP is projected to expand between 5.5 percent and 6 percent in 2024. Inflation is expected to average 6 percent in 2023 and then decrease to within the target range in 2024.

Under the current macroeconomic scenario, three potential sources of policy uncertainty must be highlighted. Firstly, there is a concern regarding possible mixed messaging and mistimed decisions in monetary policymaking. Secondly, there is a risk associated with stalled fiscal policy reforms. Lastly, there is the consideration of establishing a sovereign wealth fund. With the country's fiscal position still recovering from the pandemic crisis, economic managers must ensure that creating a sovereign fund does not deplete already scarce state funds.

CHAPTER 1

Macroeconomic Outlook of the Philippines in 2023–2024: Prospects and Perils

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Mark Gerald C. Ruiz
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Introduction

Fueled by the economy's wider reopening but tempered by inflationary and global pressures, growth in the Philippines for 2022 reached 7.6 percent. The year saw a return to workplaces and schools and the continued recovery of industries that had suffered during the COVID-19 pandemic, such as recreation and tourism.

In last year's *PIDS Economic Policy Monitor* (Debuque-Gonzales et al. 2022b), it was predicted that recovery from the pandemic in 2023 would involve "steering through global headwinds", including the risk of global stagflation, where high inflation combines with sluggish growth. With the Philippine economy's further reopening, output managed to grow by 5.5 percent in the first half of the year, although a downtrend seems imminent: gross domestic product (GDP) grew by 6.5 percent in the first quarter and by just 4.3 percent in the second quarter. This was largely due to a sharp decline in government spending with consumption growth slowing from 6.4 percent to 5.5 percent during the period. Thus, output is expected to grow by 5.3 percent this year, within the original estimated range of 4.5 percent to 5.5 percent. However, inflation is likely to average outside the target range at about 6 percent because of several supply-side surprises in the second half of the year.

A challenging macroeconomic climate is anticipated for 2024. Despite sustained global risks, the country's GDP is expected to grow between 5.5 percent and 6 percent next year, with inflation projected to fall to 3 percent. This chapter outlines the basis for these forecasts and highlights some immediate and longer-term risks. It discusses the trends in key macroeconomic indicators and provides fiscal and monetary policy updates. It presents the macroeconomic outlook, starting with a summary of global, regional, and domestic conditions and ending with the authors' growth and headline inflation projections. The chapter concludes with policy-related risks and useful insights and recommendations.

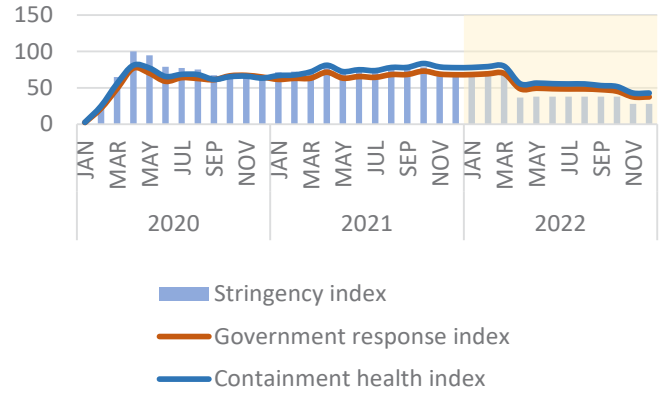
Macroeconomic performance in 2022 and January–June 2023

GDP growth

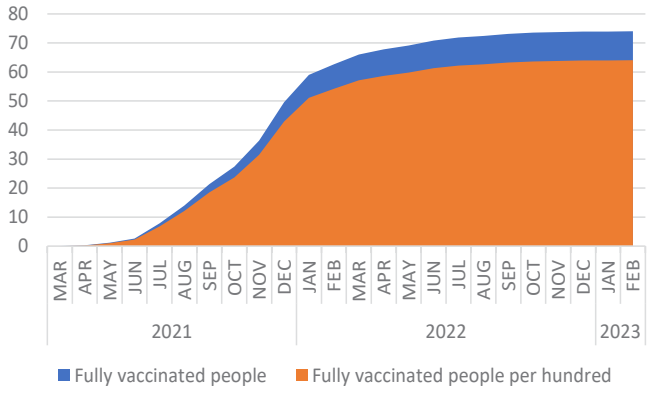
The economy's reopening supported economic activity in 2022, with some momentum maintained until the first quarter of 2023 (Figures 1.1 and 1.2). In 2022, GDP grew by 7.6 percent annually from 5.7 percent in 2021, as the government lifted mobility restrictions and the national elections in May boosted economic activity (Figure 1.2a). By March 2022, government offices operated at full workforce capacity, while businesses started issuing return-to-office orders. Schools in Metro Manila started shifting from online to face-to-face classes by August 2022. The country entered 2023 with some momentum from the economy's reopening. However, high inflation, peaking at 8.7 percent in January 2023, and interest rates, with average lending rates exceeding 6 percent by the third quarter of 2022—partly due to monetary tightening needed to control inflation—increasingly weighed down demand. In the first half of 2023, GDP grew by 5.3 percent annually, but the numbers reflected a decline from 6.4 percent growth in the first quarter to 4.3 percent in the second quarter because of a drop in public spending (Figure 1.2b).

Figure 1.1
Developments in 2022 and 2023

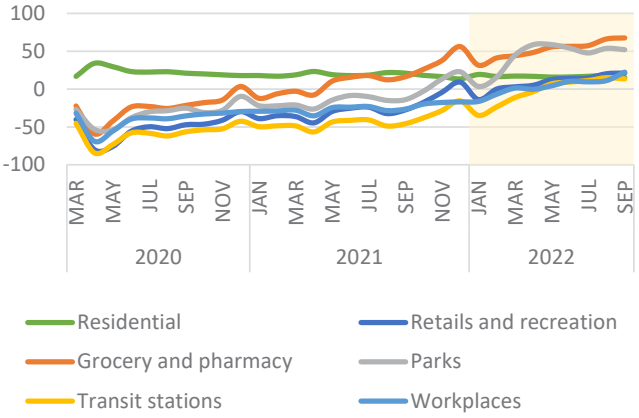
A. OxCGRT COVID-19 response indicators[1]



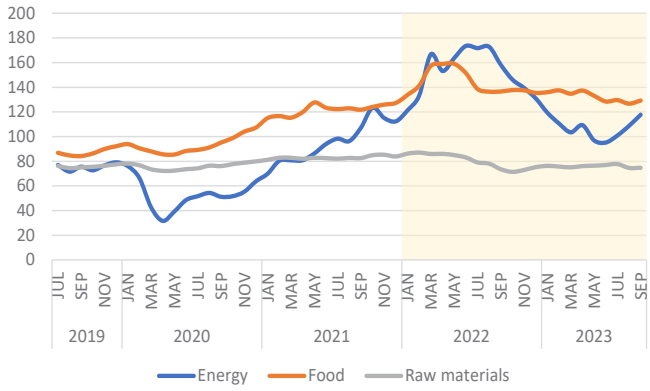
B. Vaccination rates



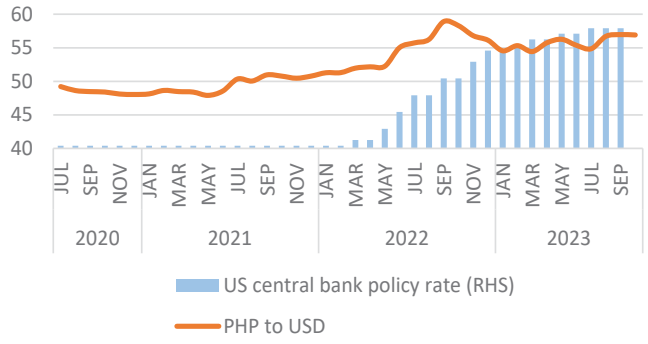
C. Google Mobility indicators[3]



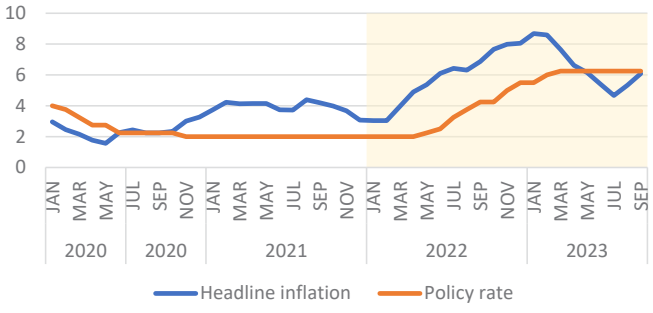
D. World Bank price indices



E. US policy rate and PHP/USD exchange rate



F. BSP policy rate and headline inflation (%)



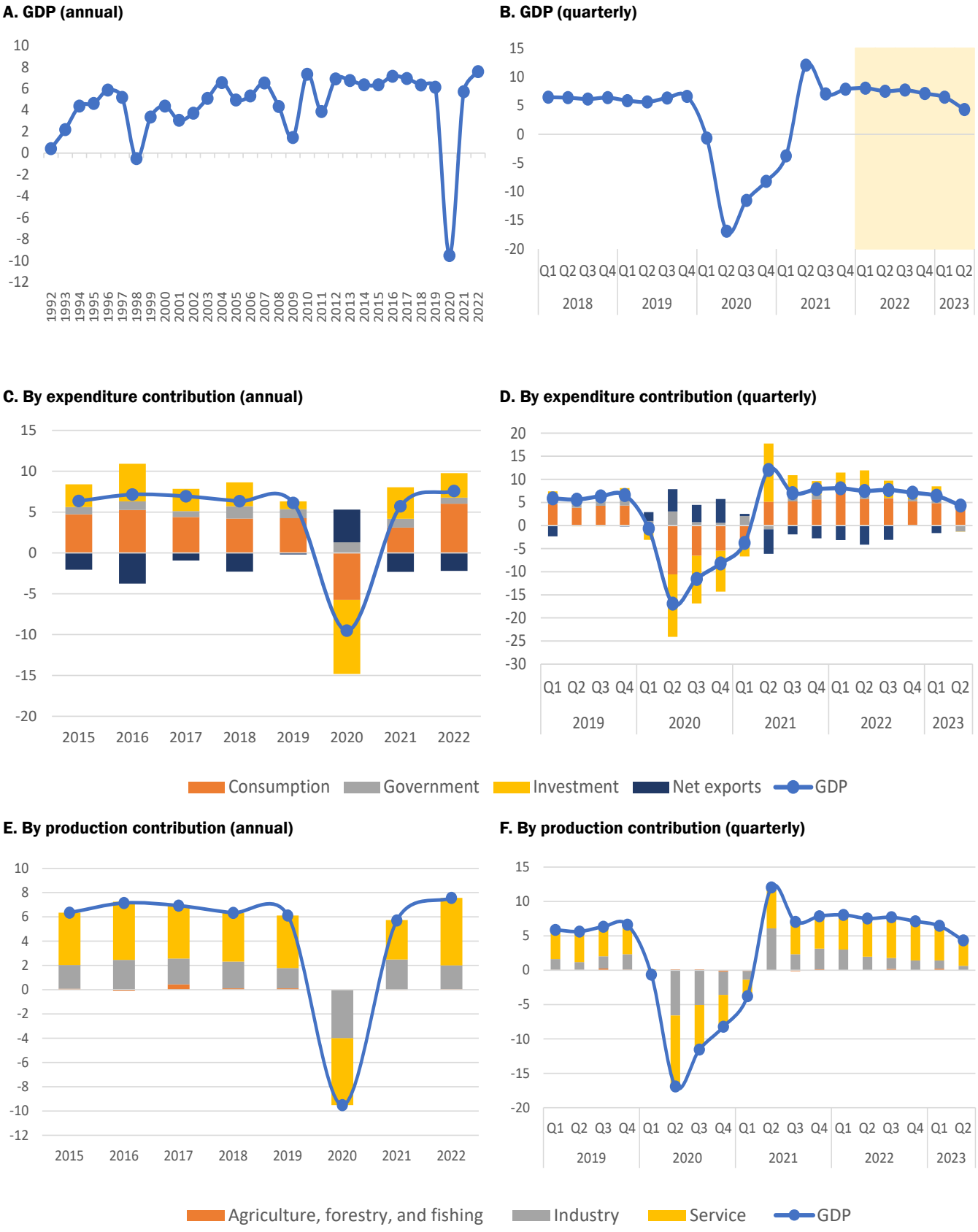
OxCGRT = Oxford COVID-19 Government Response Tracker; COVID-19 = coronavirus disease 2019; PHP = Philippine peso; USD = United States dollar; BSP = *Bangko Sentral ng Pilipinas*

[1] The Oxford COVID-19 Government Response Tracker summarizes the response of governments to the COVID-19 pandemic. The government response index is an overall measure. The containment health index keeps track of lockdown-style policies in combination with preventive response, such as testing and vaccination. Meanwhile, the stringency index focuses on lockdown-style policies.

[2] Google Mobility measures the change in footfall from a baseline date in March 2020. It is based on users' location data.

Source: CEIC Data (2022a, 2023b, 2023c, 2023j, 2023m, 2023u, 2023v, 2023ae)

Figure 1.2
GDP growth (in %)



GDP = gross domestic product; Q = quarter
Source: Authors' computations; PSA via CEIC Data (2023k)

Consumption and investment propelled growth on the spending side in 2022 but started to soften in the first half of 2023 (Figures 1.2c and 1.2d). Consumption, which grew by 8.3 percent in 2022 from 4.2 percent in 2021, was mainly driven by spending on food and nonalcoholic beverages (5.7%), restaurants and hotels (28.0%), and transport (16.6%). The latter two sectors, together with recreation, which rebounded by 25.6 percent, suffered the sharpest downturns during the pandemic. Consumer demand rose by 6 percent in the first half of 2023, although this corresponded to a decline from 6.4 percent in the first quarter to 5.5 percent in the second quarter. Investments managed to rise by 13.8 percent in 2022 from 20 percent in 2021. However, its growth declined to 5.4 percent in the first half of 2023 as the global and domestic outlook worsened. Among the major demand components, only capital spending, particularly on durable equipment and construction, has not fully recovered from the COVID-19-induced economic downturn and remains below pre-pandemic levels in real terms.

Government spending growth decreased to 4.9 percent in 2022 from 7.2 percent in 2021, in line with the economy's normalization, and slipped to negative territory (-1.4%) in the first half of 2023. A sharp reduction in public spending occurred in the second quarter of 2023 (-7.1%), pulling down overall growth. Finance and budget authorities partially attributed the decline to unreleased checks, particularly for the social and infrastructure programs.[1] In August 2023, budget authorities reported government underspending of about PHP 170.5 billion (about 0.8% of 2022 GDP), which they traced to "ongoing procurement and implementation of government programs, and right-of-way acquisition issues that cause significant delays in infrastructure spending" (DOF 2023b, par.12). This prompted the Department of Budget and Management (DBM) to issue a circular requiring government agencies to submit "catch-up" plans to facilitate budget execution for the remainder of the year.

The trade deficit in goods and services continued to widen in 2022, as imports grew faster than exports (13.9% versus 10.9%) during the recovery period, although this trend has started to reverse. The high import growth last year traced largely to global oil disruptions, especially with the escalation of the Russia-Ukraine conflict that began in late February. The fuel bill, which expanded by 23.9 percent in 2022, contributed to the rise in imports. Travel, transportation, and business spending drove the services side, rebounding by 69.8 percent, 44.0 percent, and 39.5 percent, respectively. While exports grew at a slower pace in the first quarter of 2023 than during the same period in 2022 (4.1% versus 4.9%, respectively), import growth further slowed during the same period (from 14.5% to 0.4%), as investment and global trade activity weakened. This served to narrow the trade gap.

Services powered growth on the production side last year, with industry continuing to provide support despite posting weaker growth (Figures 1.2e and 1.2f). Services grew 9.2 percent in 2022 from 5.4 percent in 2021, with wholesale and retail trade (which saw an 8.7%

[1] This was reportedly due to unfinished registration and validation of beneficiaries, apart from various procurement, implementation, and payment issues.

increase) contributing the most to the expansion. Post-2020 recovery was seen in accommodations and food (32.1%) and transportation and storage (23.9%). Industry output grew by 6.5 percent in 2022, down from 8.5 percent in 2021 but bolstered by a rise in construction (12.1%). Growth in agriculture, forestry, and fishery turned slightly positive during the year (increasing to 0.5% from -0.3% in 2021) despite the damage from typhoons, with recoveries seen in livestock and poultry. Livestock had come from a low base because of bouts with African swine fever, which troubled the pork industry in past years. Services and industry decelerated in the first half of 2023, while growth in agriculture remained flat.

Inflation

Inflation rose in the first months of 2022 and peaked at 8.7 percent in January 2023 (Figure 1.3). Core inflation increased faster than headline inflation in March 2023, suggesting a broader range of price increases. The headline rate declined to 5.4 percent in June 2023.

Price pressures in food mainly propelled headline inflation. In 2022, meat, fish, and cereal, which covers rice[2] and corn, pushed up inflation, growing by 7.6 percent, 6.6 percent, and 3.6 percent, respectively. Sugar prices increased by 38.8 percent but had a smaller impact on the consumer price index (CPI) because of its smaller weight in the consumer basket. The surge in sugar prices came after a drop in domestic output due to Typhoon Rai (locally known as Odette) and La Niña (cold phase) (SRA 2022). In the first half of 2023, the prices of vegetables, cereal, and fish drove inflation by 21.4 percent, 5.5 percent, and 7.4 percent, respectively.

Next to food, housing and utilities contributed the second biggest to headline inflation. Fees rose by 6.4 percent and 7.2 percent in 2022 and the first half of 2023. These rates were driven by electricity, gas, and other fuels, which grew by 15.9 percent and 10.4 percent in the same periods. Rental prices followed, registering rates of 2.4 percent and 5.4 percent. Meanwhile, transport inflation rose by 12.9 percent in 2022 on the back of gasoline and diesel prices (31.2% and 65.4%, respectively), as global energy prices increased due to the Ukraine-Russia conflict (Figure 1.4). Restaurants and accommodation businesses raised fees during the first half of 2023, pushing up inflation of related services to 8.2 percent.

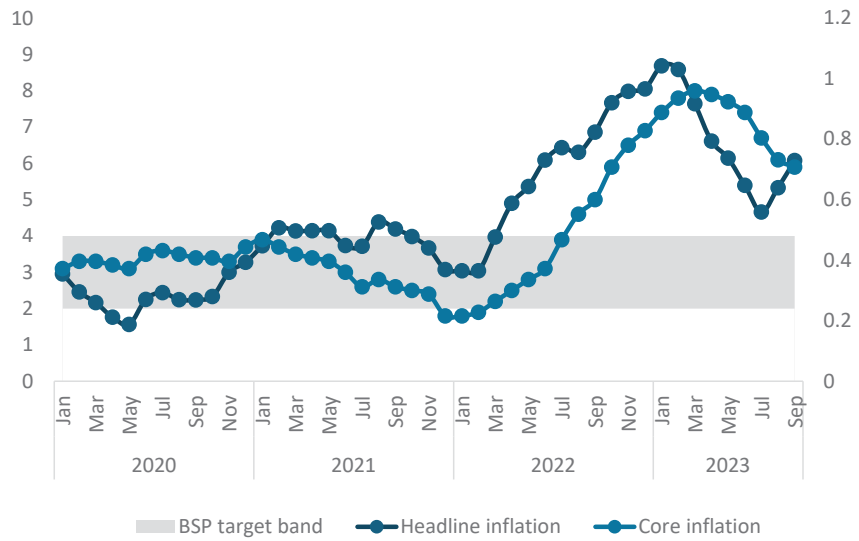
Employment

Based on quarter-end data, unemployment returned to pre-pandemic levels by the latter part of 2022 and remained below 5 percent in the first half of 2023 (Figure 1.6). Underemployment similarly eased in 2022 and registered an average of 14.2 percent. It rose to 15.9 percent in July 2023, reflecting an increase in the number of employed and unemployed seeking more working hours. Meanwhile, labor force participation grew to an average of 63.3 percent in 2022 before descending to 60.1 percent in July 2023, suggesting worker discouragement during the period.

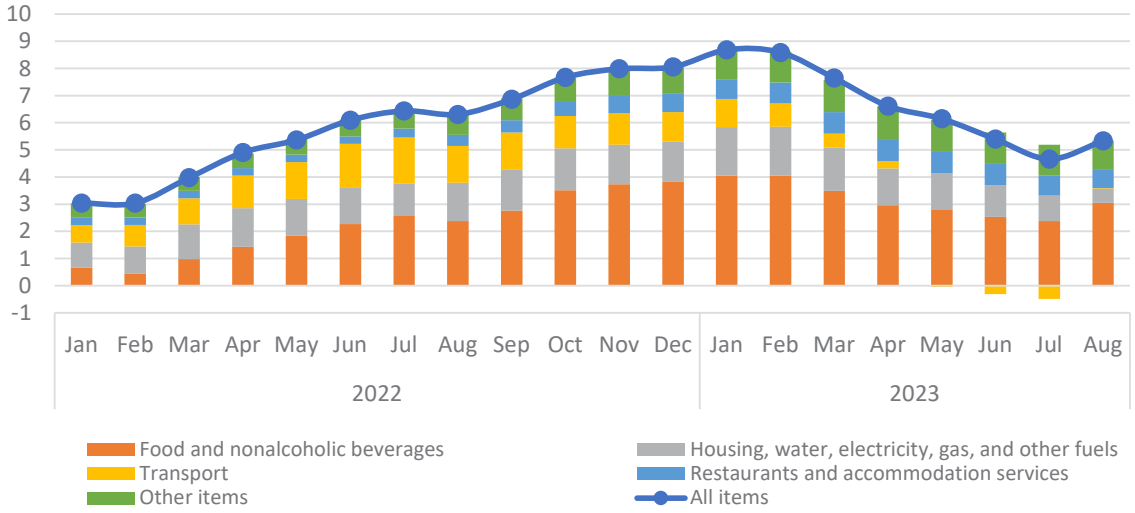
[2] Rice inflation became more prevalent in the latter part of the year (Figure 1.5 and macroeconomic outlook section).

Figure 1.3
Inflation (in %)

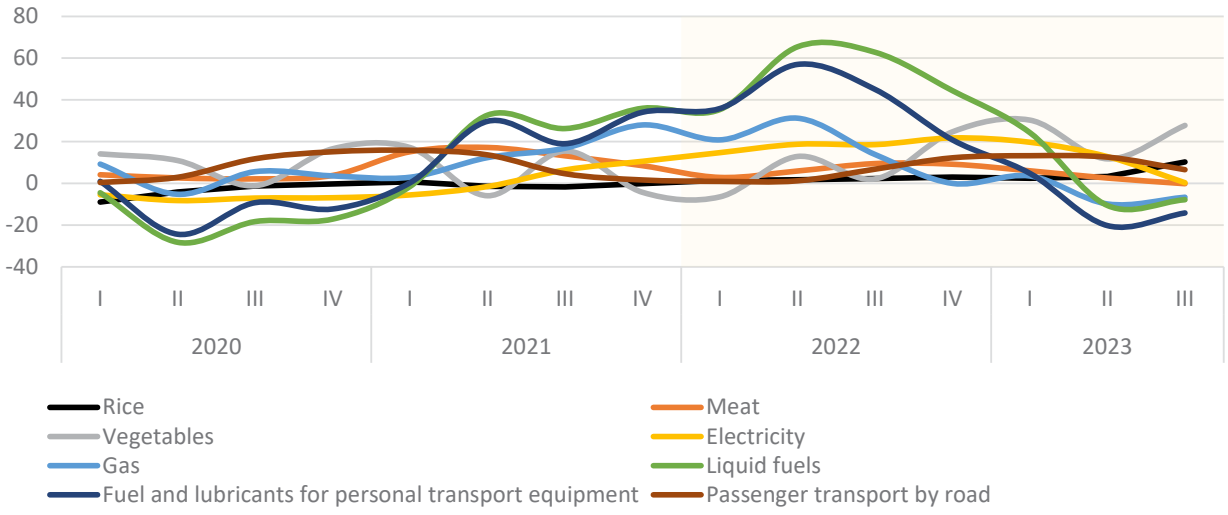
A. Headline and core inflation



B. Drivers of headline inflation



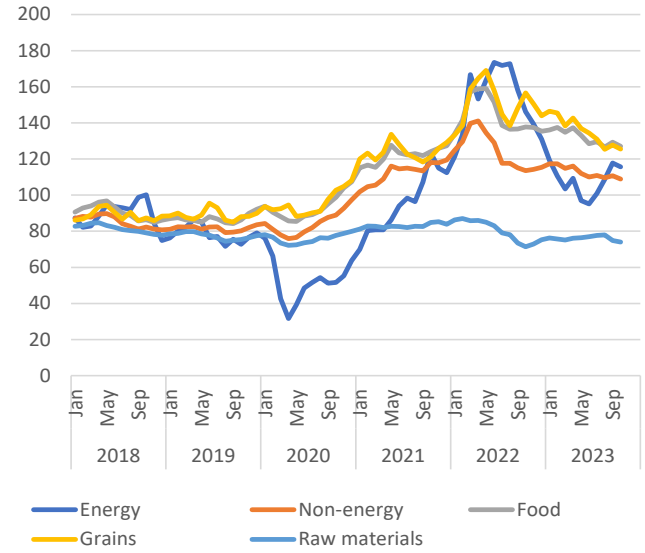
C. Inflation of key items



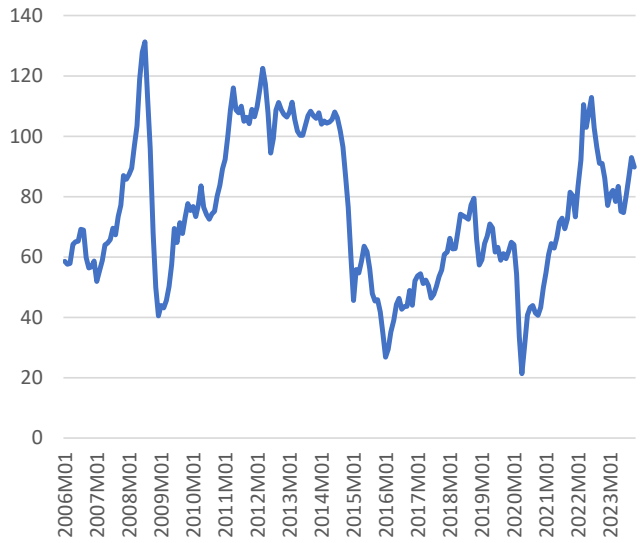
BSP = *Bangko Sentral ng Pilipinas*
Source: Authors' computations; PSA via CEIC Data (2023e, 2023f, 2023m, 2023o)

Figure 1.4
World inflation

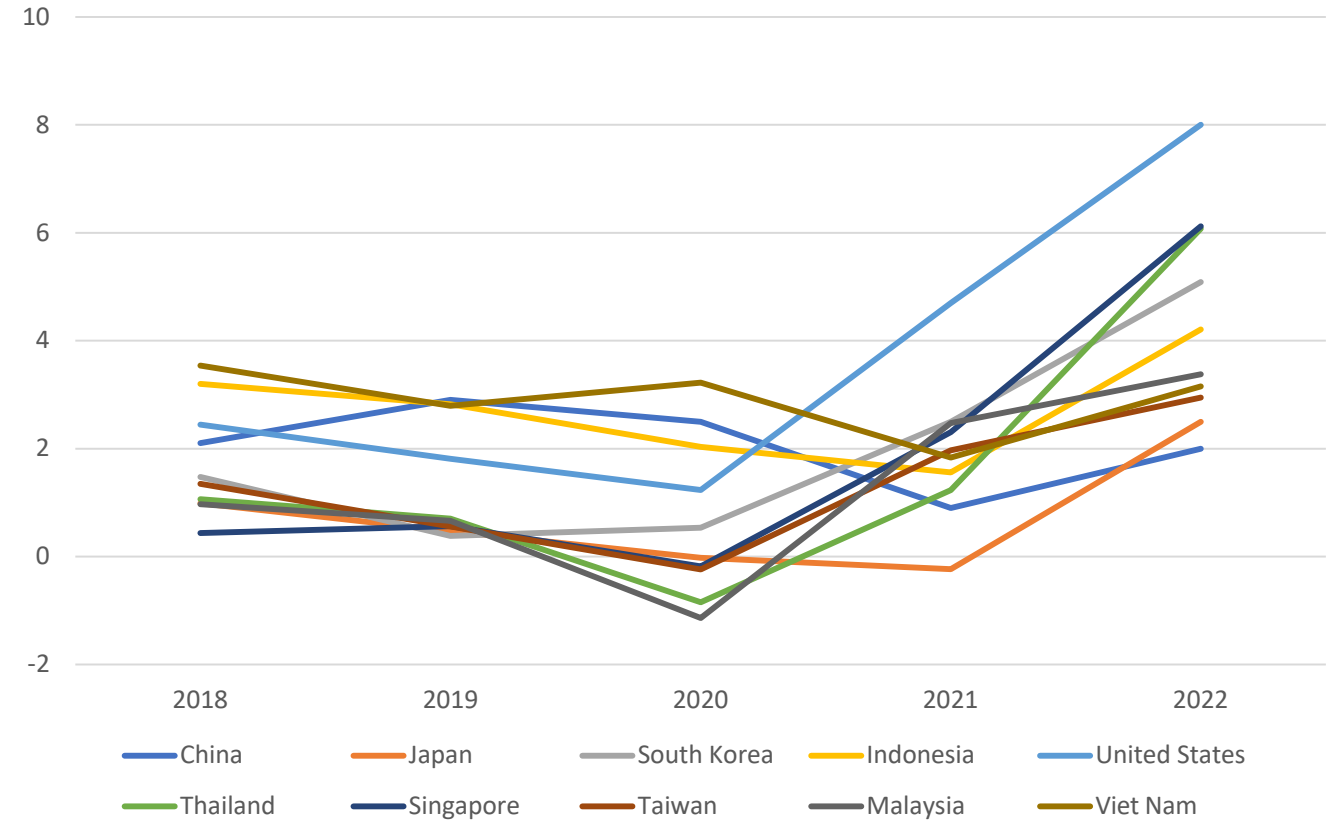
A. World Bank price indices



B. Dubai oil price (USD per barrel)



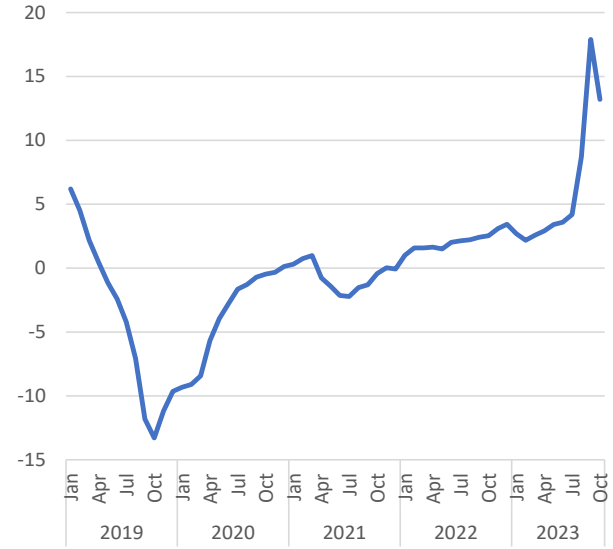
C. Inflation in top import sources (in %)



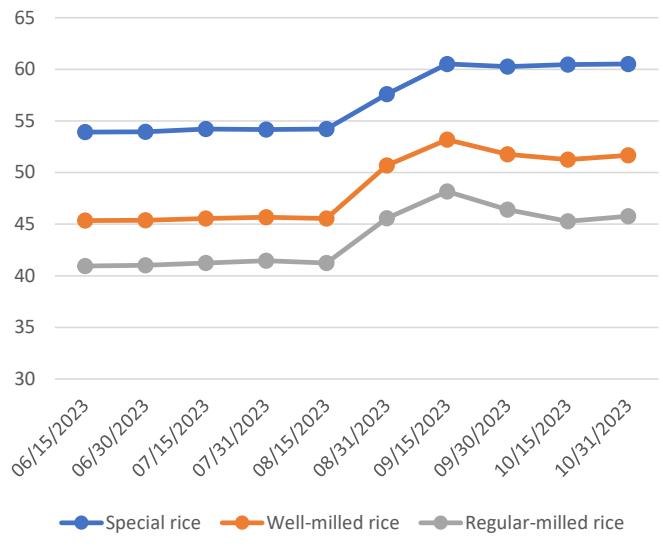
USD = United States dollar
Source: IMF and World Bank via CEIC Data (2023c, 2023g); CEIC Data (2023d)

Figure 1.5
Rice inflation

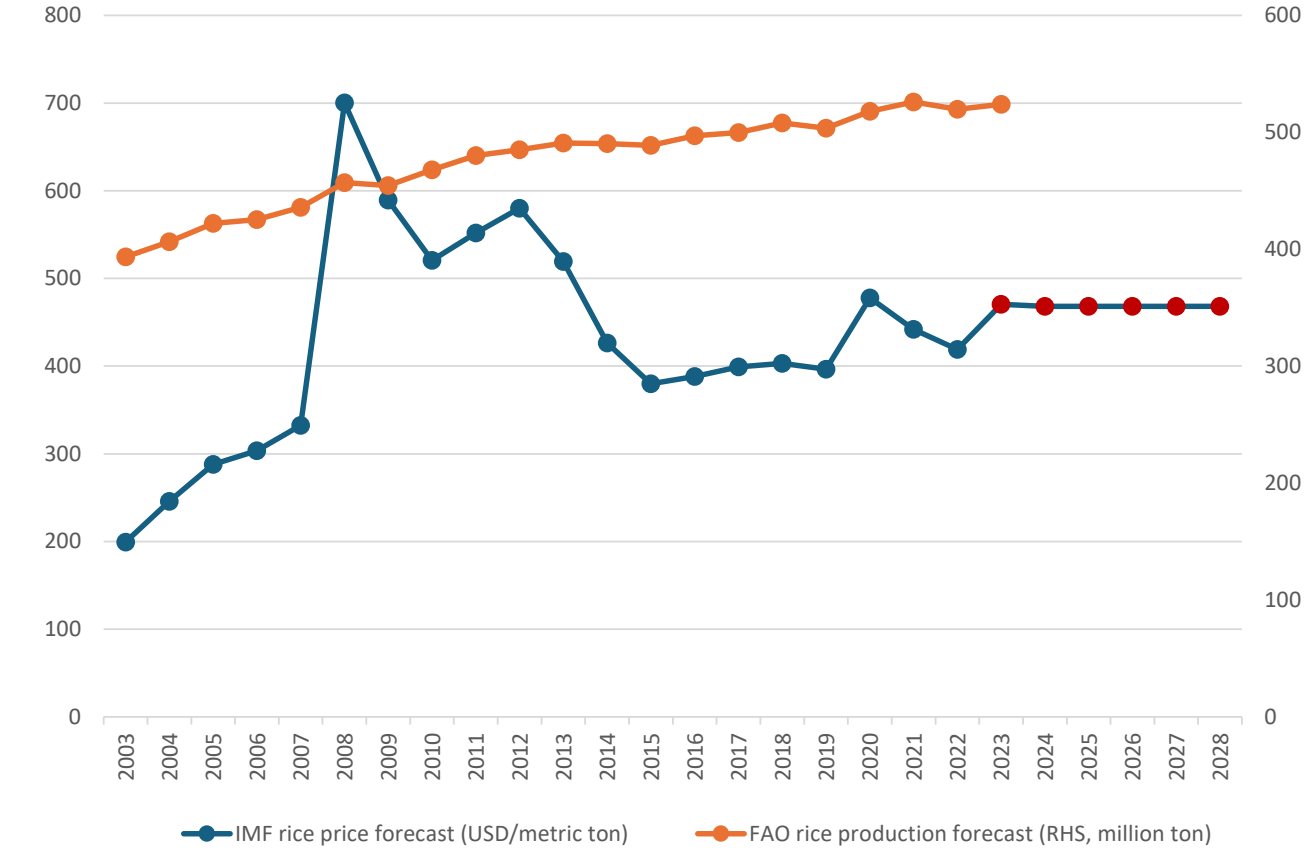
A. Rice inflation (in %)



B. Retail price of rice (in PHP/kg)



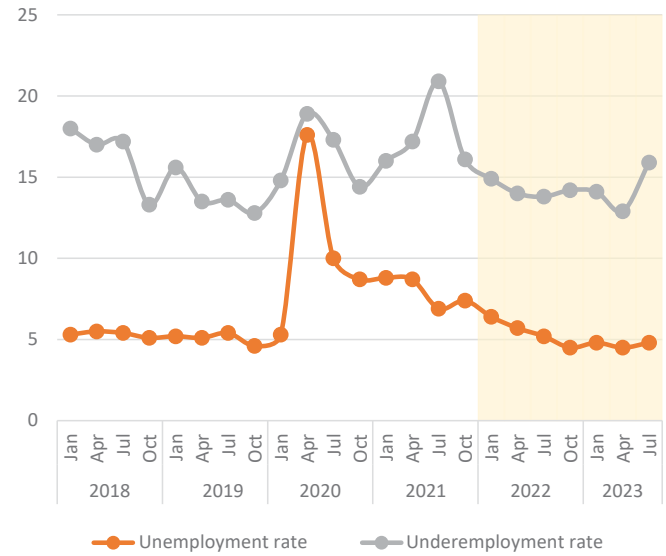
C. World rice price and production, including forecasts



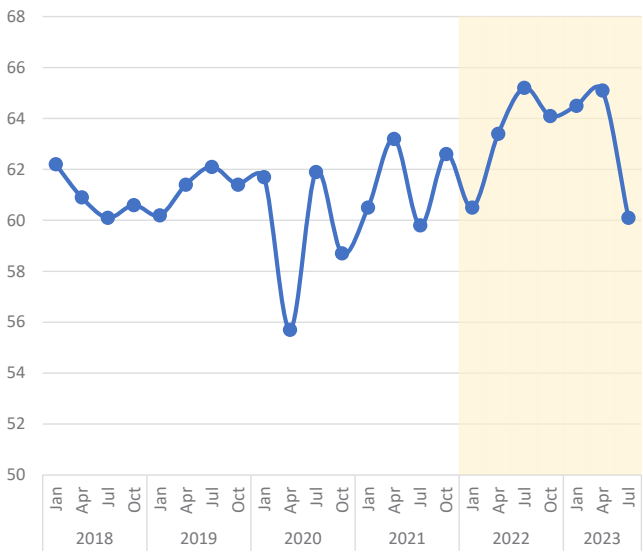
PHP = Philippine peso; kg = kilogram; IMF = International Monetary Fund; USD = United States dollar; FAO = Food and Agriculture Organization; RHS = right-hand side
Source: PSA, IMF, and FAO via CEIC Data (2023e, 2023y, 2023z, 2023aa)

Figure 1.6
Labor market situation (in %)

A. Unemployment and underemployment rate



B. Labor force participation rate



Source: PSA via CEIC Data (2023p, 2023ac, 2023ad)

Services continued driving overall employment, with the sector having a quarterly average of 26.9 million jobs in 2022 (Figure 1.7). Wholesale and retail trade regularly accounted for most service workers. Figures for employment in high-contact work, notably in accommodation and food services and transport and storage, had reverted to pre-pandemic levels. Meanwhile, employment in education improved beginning in July 2022, reflecting students' return to schools.

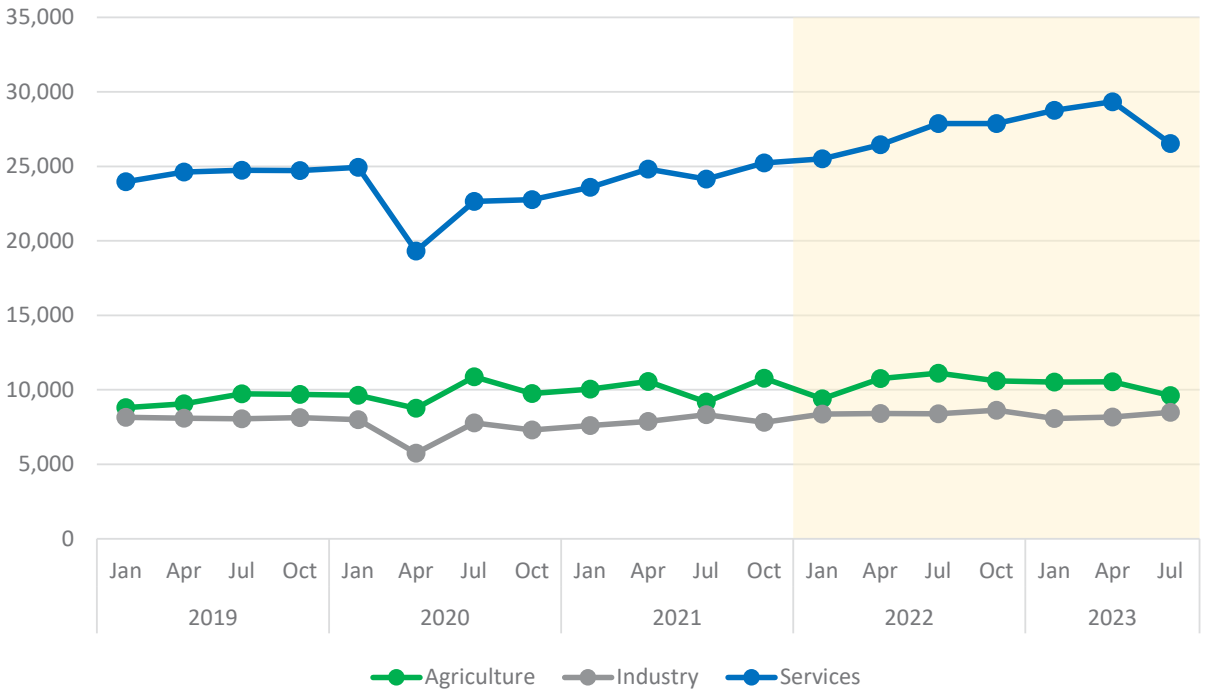
In 2023, employment in services rose from January to April but shrank in July.[3] The number of jobs in wholesale and retail trade, public administration and defense, accommodation and food services, and education, although rising in April, receded in July. Industry rose on the back of about 500,000 additional jobs in construction. Like services, agricultural employment declined in the first half of 2023.

There are signs that the quality of jobs has improved (Figure 1.8). The number of wage and salary workers, who account for the majority of the workforce, has mostly grown since 2022. It visibly edged up in July 2023, while the number of unpaid family workers and workers with their own accounts declined. The latter covers self-employed individuals and business owners who hire employees.

[3] Employment figures for services recovered by registering 28.7 million jobs.

Figure 1.7
Employment by class (in thousands)

A. Employment by sector



B. Employment in services

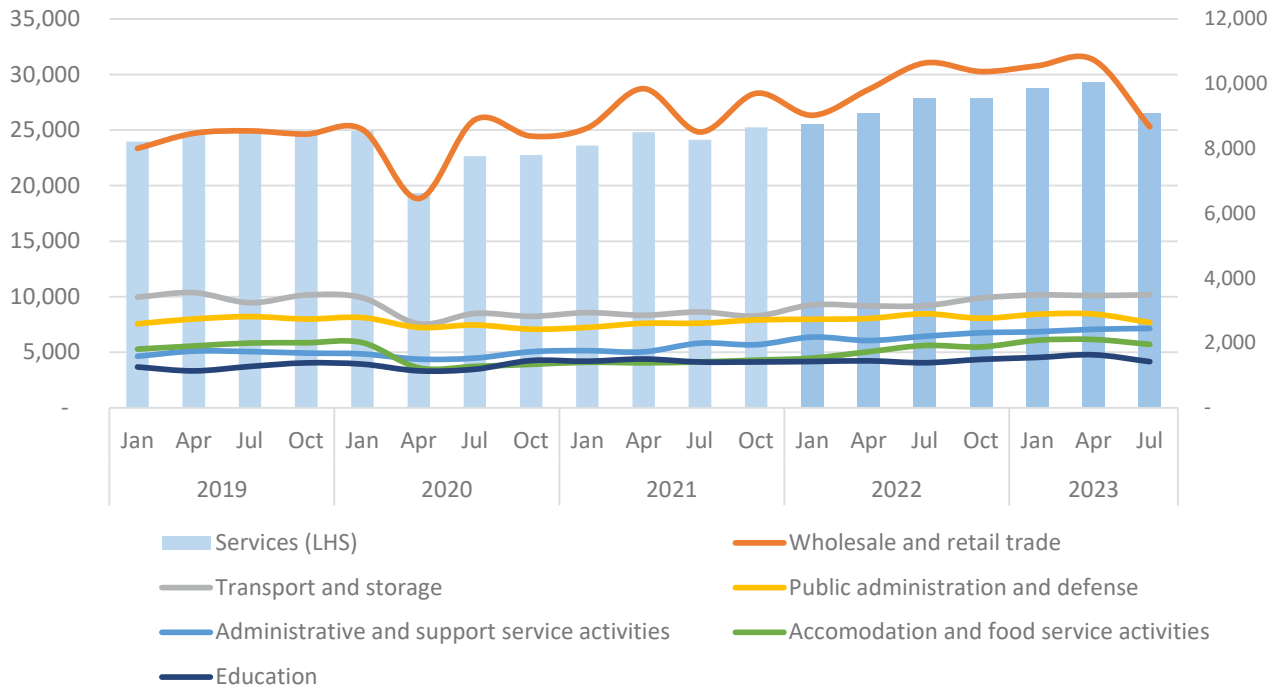
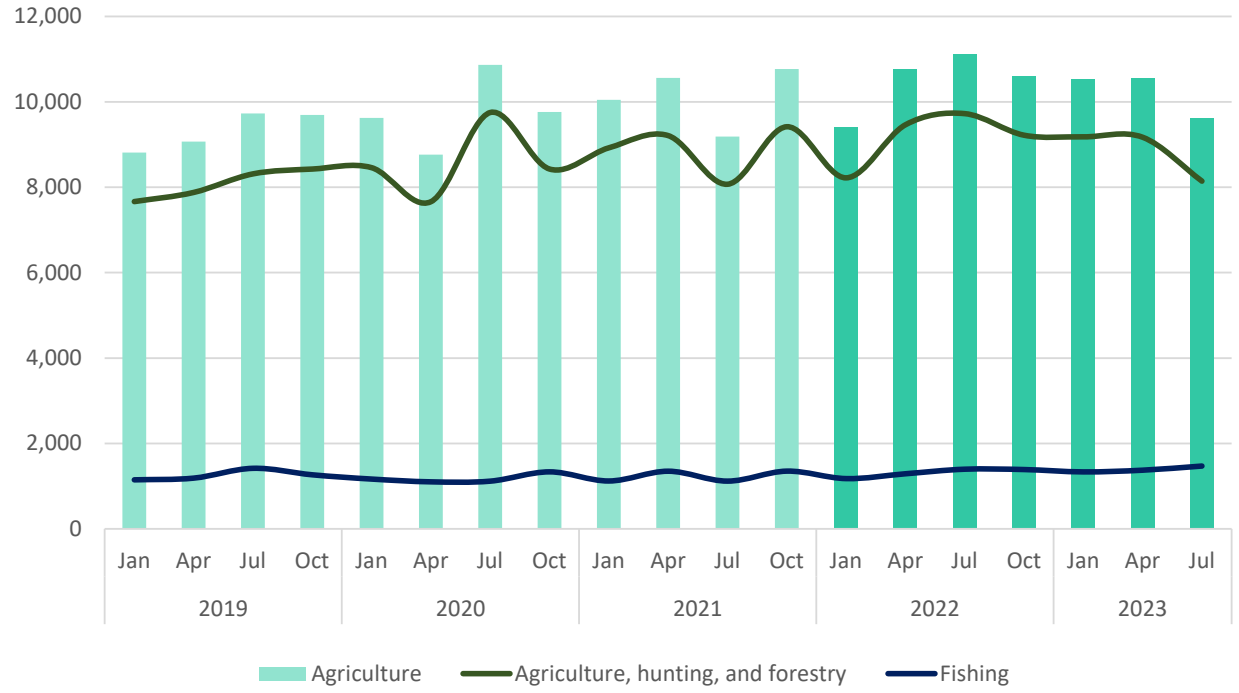
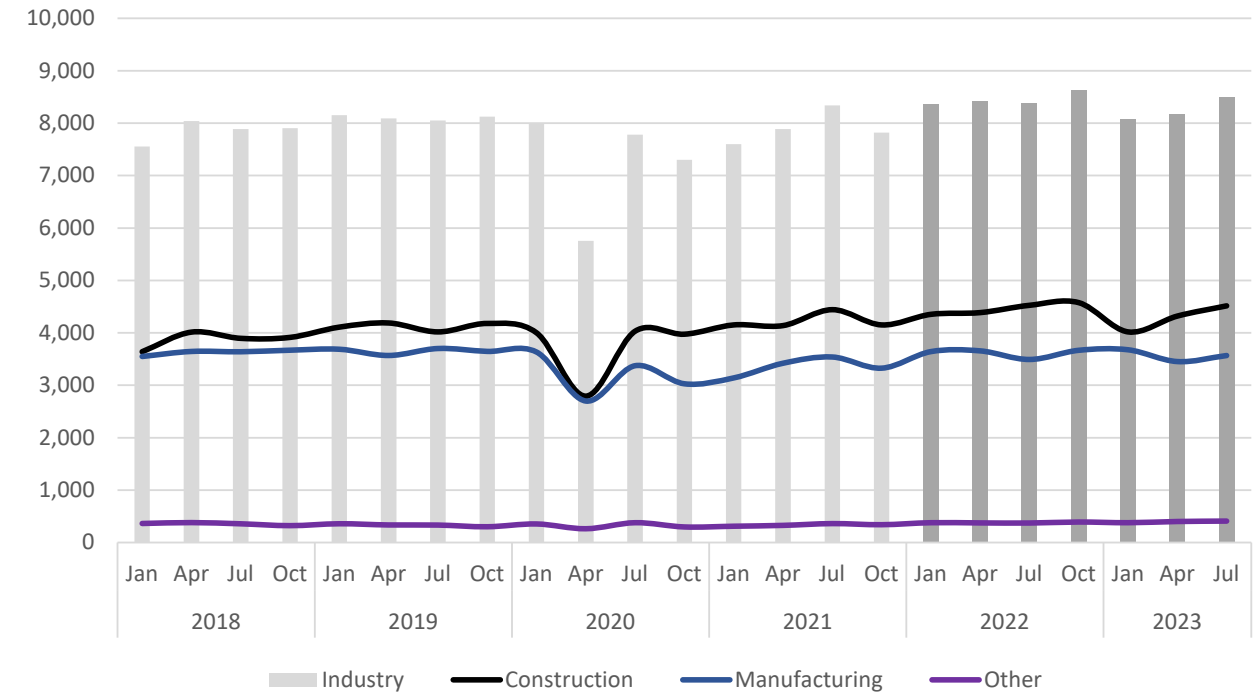


Figure 1.7 *(continued)*

C. Employment in agriculture

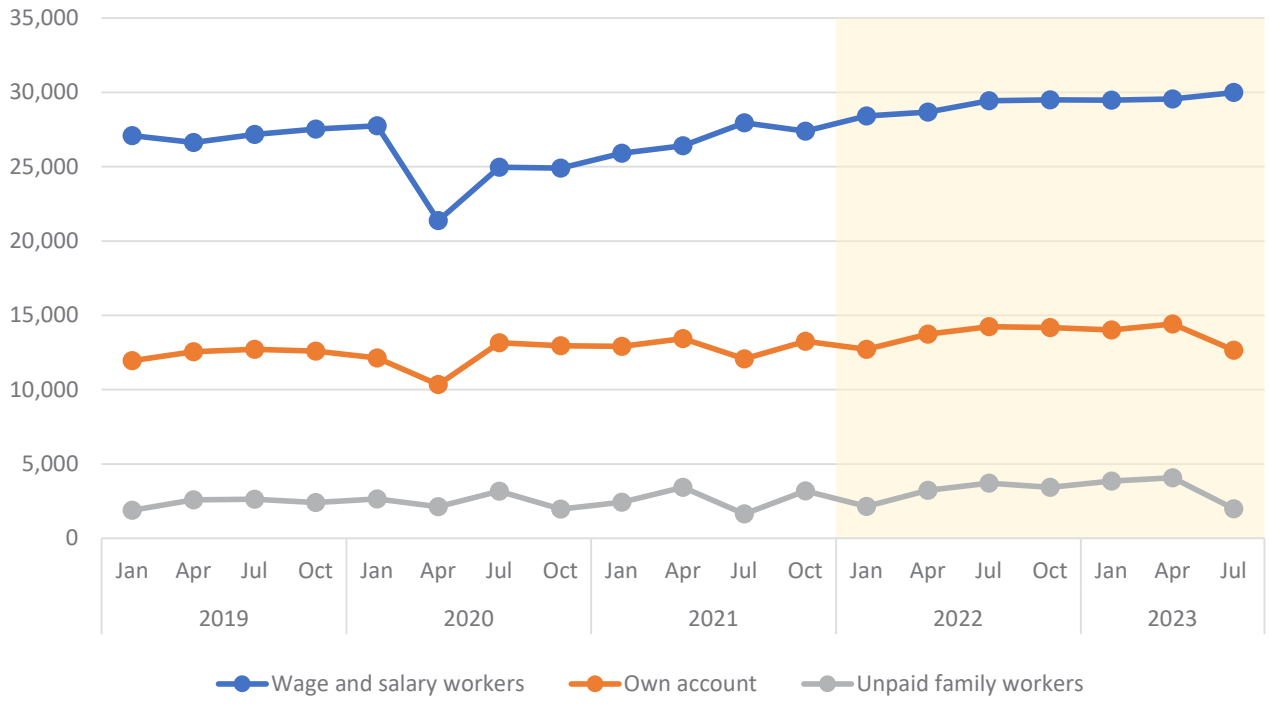


D. Employment in industry



LHS = left-hand side
Source: PSA via CEIC Data (2023i)

Figure 1.8
Employment by sectors (in thousands)



Source: PSA via CEIC Data (2023h)

Balance of payments

The current account deficit increased to USD 17.8 billion in 2022 from USD 5.9 billion in 2021, driven by a wider trade deficit (Figure 1.9a). The country's imports continued to grow at 20.3 percent, outpacing the growth of exports at 12.2 percent. This trend was driven largely by the economy's post-pandemic momentum, with people buying and spending more, compelling increased goods importation and a rise in world fuel prices. The strong numbers in services exports slightly encountered this. The current account position improved in the first half of 2023, with a lower deficit of USD 8.2 billion versus USD 12.1 billion during the same period in the previous year, owing largely to a lower trade deficit.

Moreover, primary income net receipts for 2022 increased from USD 3.3 billion to USD 5.2 billion, with receipts increasing by 11.1 percent, and payments declining by 6.9 percent. Secondary income rose, with remittances amounting to about USD 28 billion, although the latter's annual growth slowed from 5.6 percent in 2021 to 3.8 percent in 2022.

The Philippines' balance of payments (BOP) correspondingly turned from a surplus of USD 1.3 billion in 2021 to a USD 7.3-billion deficit in 2022 (Figure 1.9b). A higher deficit in goods trade outweighed the net receipts from service exports and remittances despite net inflows from direct and portfolio investments. The BOP for January–June 2023 was slightly better, amounting to

USD 2.3 billion in the first six months of 2023, compared to a USD 3.1-billion deficit during the same period in 2022. The Philippines was forecasted to attain a better external position in 2023 on account of a smaller current account deficit. The *Bangko Sentral ng Pilipinas* (BSP 2023a) sees a small surplus in the overall balance of payments for 2024, with the expectation of an improved financial account.

Gross international reserves settled at USD 96.1 billion by end-2022 at end-of-period (Figure 1.10). This presents an annual decline of 11.6 percent from end-2021. The country's foreign reserves slid to USD 93 billion in September 2022, but the amount has increased since. It rose to about USD 101.8 billion in April 2023 but dipped to USD 99.4 billion by end-June 2022. The peso sharply depreciated against the dollar beginning in 2021 and until October 2022, when it reached PHP 58.8 per USD. The peso appreciated in succeeding months on the back of higher remittances and a slightly better trade balance during the latter part of 2022. The peso-dollar exchange rate averaged at 55.9 in June 2023.

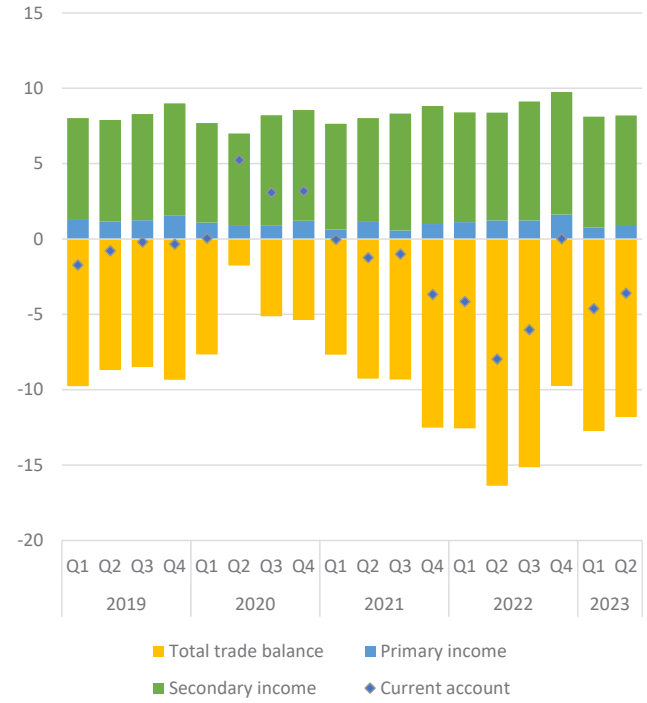
Fiscal developments

Government expenditure as a ratio of GDP dipped from 24.1 percent in 2021 to 23.4 percent in 2022 (Figure 1.11). The weak spending performance in the early part of 2022 was traced to delays in spending for infrastructure programs and restricted capital and maintenance spending because of the national elections. Infrastructure and other capital outlays (CO) grew by 14.2 percent annually in 2022, slower than the 31.4 percent growth in 2021. Personnel services (PS) grew by 7.1 percent, partly attributed to the implementation of the third tranche of the Salary Standardization Law of 2019. Moreover, following the utilization of the Department of Education and the Commission on Higher Education for scholarship programs and other subsidies, the maintenance and other operating expenses (MOOE) amounted to PHP 879.3 billion in 2022 but translated to a 0.4-percent annual decline (DBCC 2023b). Spending in 2022, the first year of the devolution transition,[4] included a higher allotment to local government units (LGUs) (up by PHP 157.6 billion) on account of their higher share in the national tax allotment (NTA). Government underspending was notable in the first half, significantly slowing down to 0.4 percent year-on-year (YOY) growth from 8.9 percent previously because of procurement-related difficulties and lower-than-programmed disbursements (DBCC 2023c). PS and MOOE from January to June 2023 slowed down to just 1.5 percent and 0.5 percent growth, respectively, while infrastructure and other CO grew by 6.2 percent with the implementation of the Department of Transportation and the Department of Public Works and Highways projects. Furthermore, allotment to LGUs in the first half of this year decreased by 14.4 percent compared to the first half of 2022, given their lower NTA for 2023.[5]

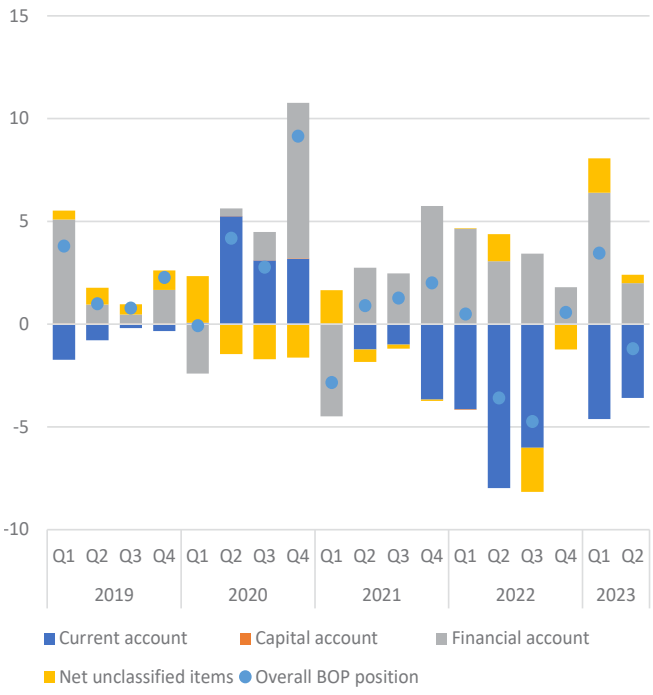
[4] The current administration postponed the implementation of Executive Order (EO) 138 (s. 2021), which mandates the full devolution of certain functions of the executive branch to LGUs amid the review for possible amendments.
[5] The NTA is based on the third preceding year, which for the case of fiscal year 2023 is 2020, when lockdown measures led to a drastic reduction in revenues.

Figure 1.9
Balance of payments and components (in USD billions)

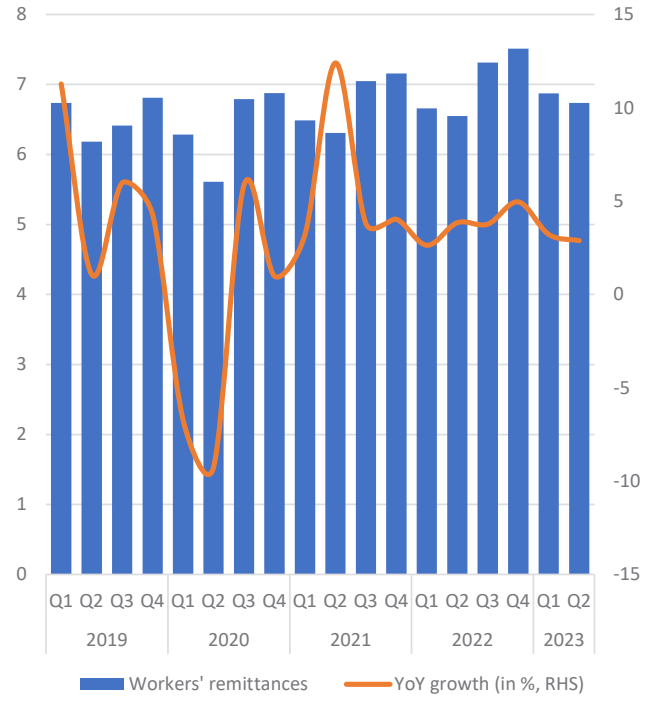
A. Current account



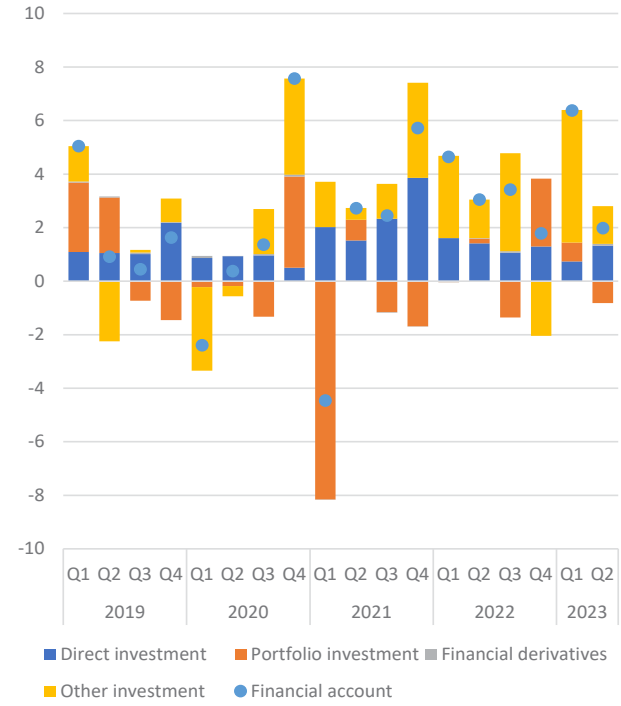
B. Balance of payments



C. Overseas workers' remittances



D. Financial account

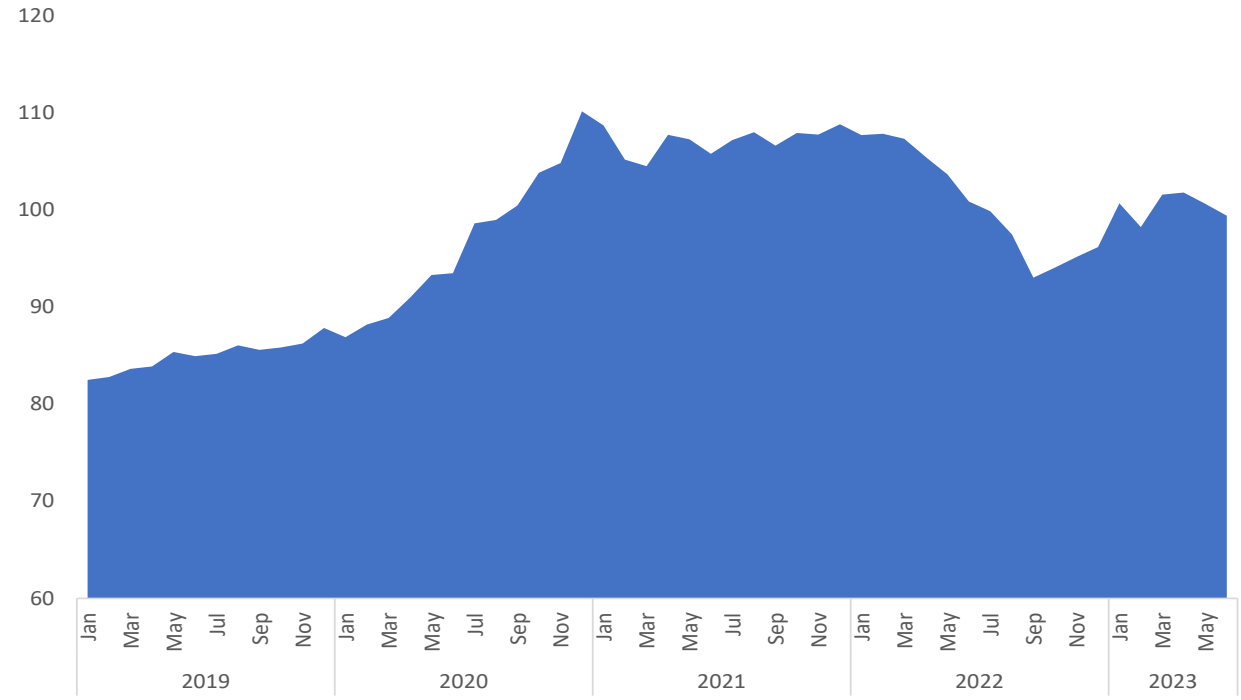


USD = United States dollar; Q = quarter; BOP = balance of payments; YoY = year-on-year; RHS = right-hand side
Source: BSP via CEIC Data (2023a)

Figure 1.10
Gross international reserves and exchange rate (PHP per USD monthly average)

A. PHP–USD exchange rate

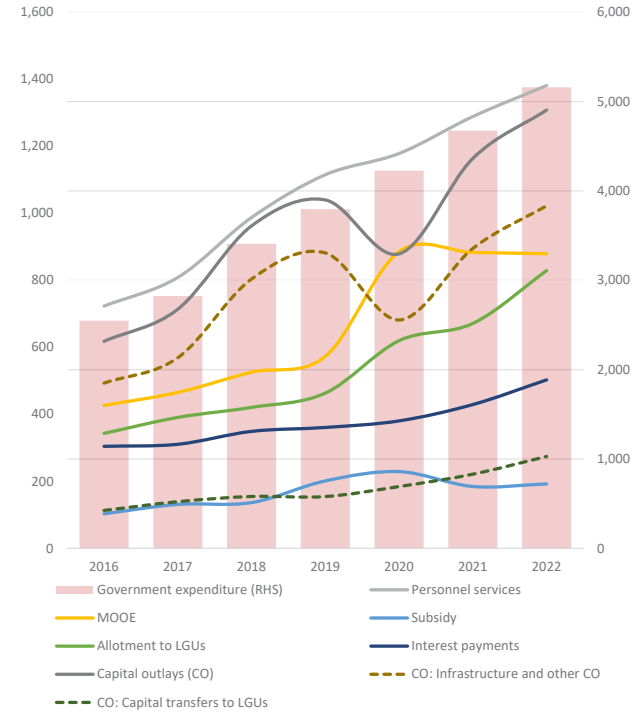
B. Gross international reserves (in USD billions)



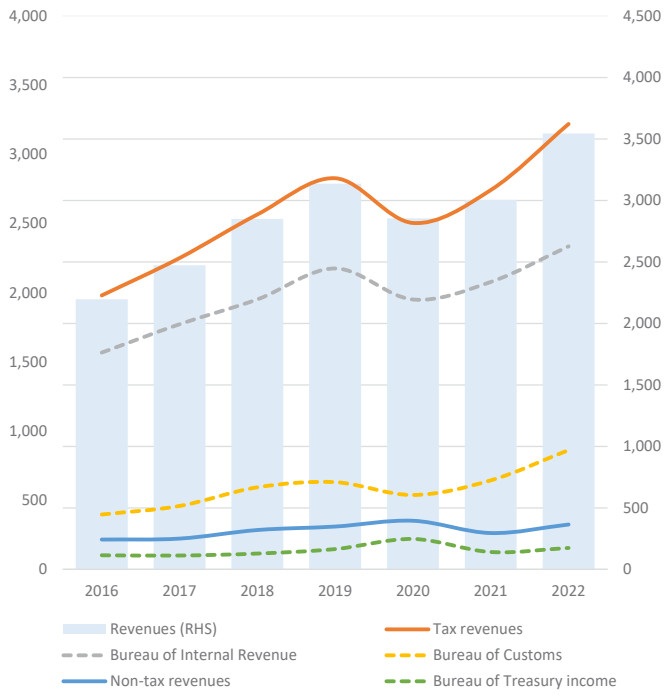
PHP = Philippine peso; USD = United States dollar
Source: BSP via CEIC Data (2023l, 2023u)

Figure 1.11
National government fiscal performance

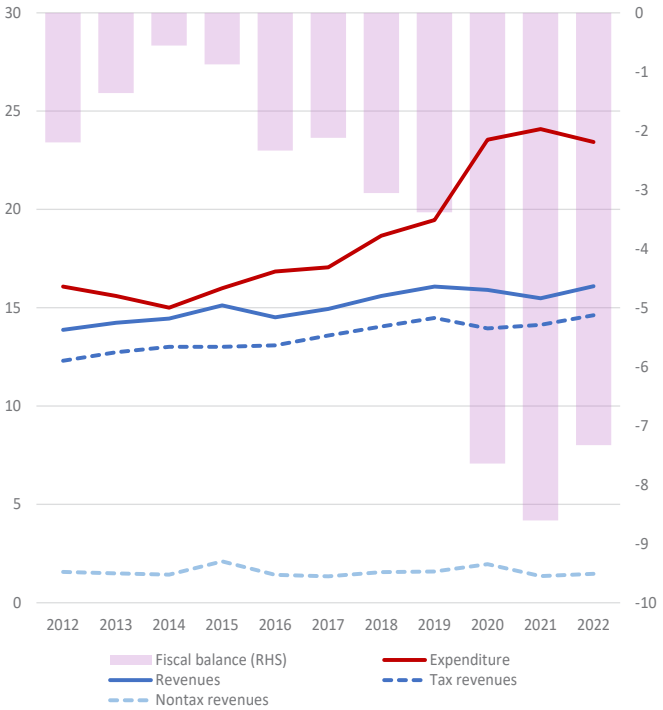
A.Expenditure (in PHP billions)



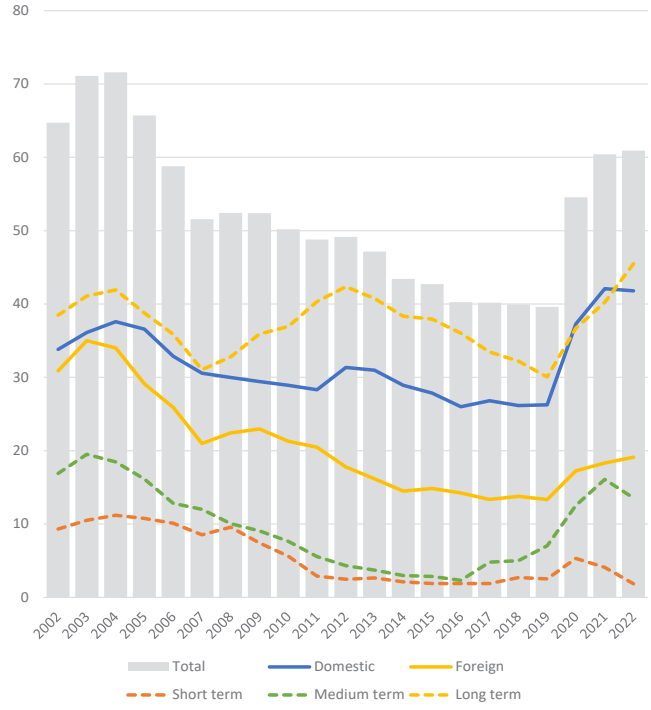
B. Revenues (in PHP billions)



C. Fiscal balance (% of GDP)



D. Outstanding debt (% of GDP)



PHP = Philippine peso; RHS = right-hand side; MOOE = maintenance and other operating expenses; LGUs = local government units; CO = capital outlays; GDP = gross domestic product
Source: BOT via CEIC Data (2023r, 2023s)

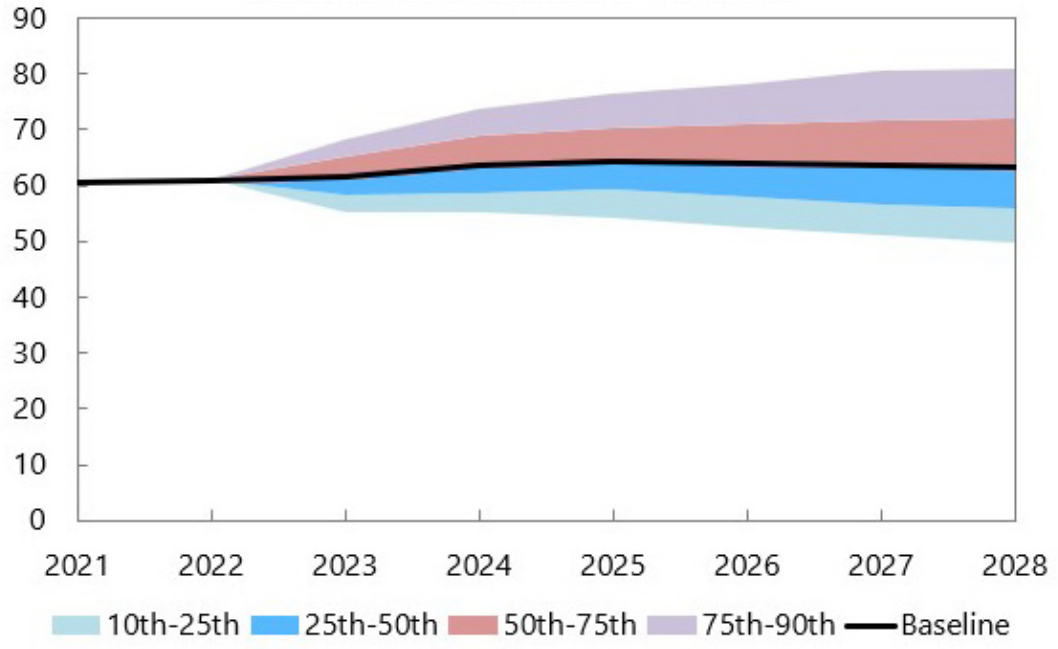
The reopening of the economy contributed to higher tax revenues in 2022. The increase in economic activity helped raise the total revenues in 2022 to about 16.1 percent of GDP, with a corresponding improvement in tax effort, with the ratio rising from 14.1 percent to 14.6 percent. Tax revenues in 2022 were higher by 17.4 percent compared to 2021 due to higher collections from net income and profits, sales taxes and licenses, and taxes on international trade and transactions. The Bureau of Internal Revenue (BIR) collected PHP 2.3 trillion, slightly lower than its target, while the Bureau of Customs (BOC) collected more than expected at PHP 862.4 billion because of higher oil prices and increased imports of sweetened beverages, tobacco, and rice. From January to June 2023, revenue grew by 7.7 percent YOY, a slower pace compared to the 15.9 percent growth during the same period last year. The BOC's improved tax administration and the BIR's increased collections from net income and profits were tempered by lower-than-anticipated revenues from value-added tax, excise taxes, and other domestic taxes. This resulted in tax revenue growing by 8.2 percent YOY for the first half of 2023, reflecting a slowdown compared to the 14.7 percent growth recorded last year.

The country's fiscal deficit narrowed slightly from 8.6 percent of GDP in 2021 to 7.3 percent in 2022. Expenditures as a ratio of GDP dipped from 24 percent in 2021 to 23.4 percent in 2022, while revenues stood at 16.1 percent in 2022 from 15.5 percent in 2021. In terms of financing, gross borrowings by the government amounted to PHP 2.16 trillion in 2022. The debt-to-GDP ratio saw an increase of 0.5 percentage points from 60.4 to 60.9. By end-2022, national government debt consisted largely of domestic issuances (about 68.6% of the total or about PHP 9.2 trillion). Moreover, most borrowings had long maturities (74.7% of the total outstanding debt). In the first six months of 2023, the fiscal deficit was recorded at 4.8 percent of GDP, lower than the 6.5 percent deficit in the same period last year, as revenue grew more (7.7%) compared to the meek growth in spending (0.4%). As the latter was mostly due to lower disbursements, the catch-up plan may spur spending in the latter half of the year across government agencies' projects and activities, including infrastructure (DBCC 2023e).

Debt sustainability analysis shows that the debt-to-GDP ratio will likely peak at 64.2 in 2025 (Figure 1.12a). This assumes the economy will grow by 5.3 percent in 2023 and post higher growth (about 6%) thereafter, with the primary deficit at normal levels. Excluding cash buffers from the fiscal program (Figure 1.12c), the trajectory follows a lower path that hovers near the 60 percent ratio and is projected to be well below this benchmark in the medium term. Furthermore, it can be noted from the Budget of Expenditures and Sources of Financing data for 2024 that the government expects relatively higher budgetary change in cash from its fiscal program in the coming years. It is projected at PHP 863.8 billion, PHP 794.9 billion, and PHP 913.7 billion for 2024, 2025, and 2026, respectively (DBM various years), representing liquidity that may be used to repay the debt.

Figure 1.12
Debt sustainability analysis

A. DSA fan chart, 2021–2028

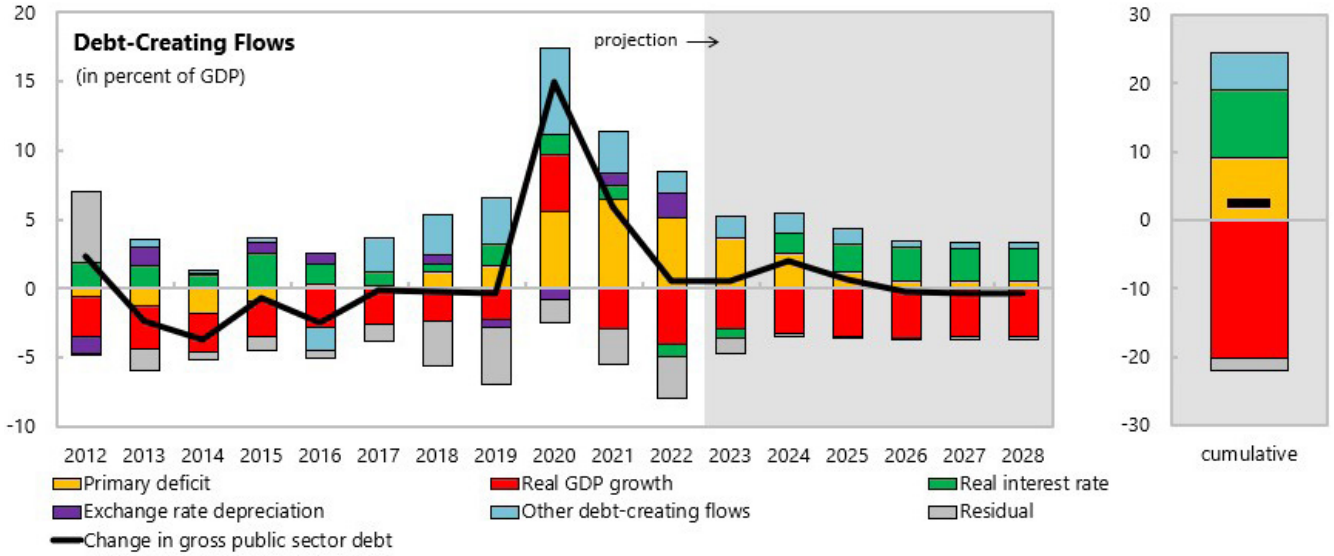


B. DSA baseline scenario: Debt, economic, and market indicators

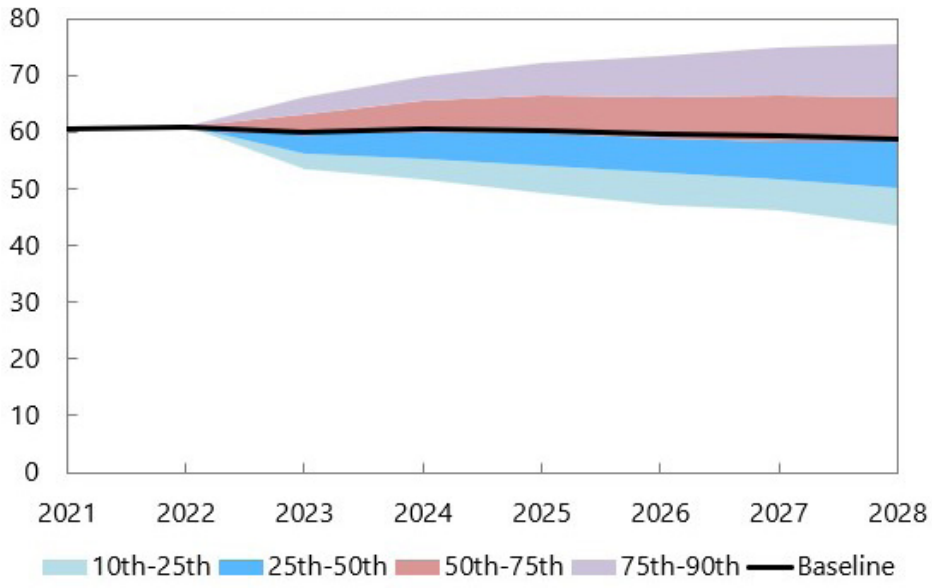
	Actual			Projections						As of July 1, 2023		
	2012–2020	2021	2022	2023	2024	2025	2026	2027	2028	Sovereign spreads		
Nominal gross public debt	44.1	60.4	60.9	61.5	63.6	64.2	64.0	63.7	63.4	Bond spread (bp)		94
Public gross financing needs	5.5	12.6	10.9	10.1	12.9	11.2	10.9	10.1	10.8	5Y CDS (bp)		77
Real GDP growth (in percent)	4.8	5.7	7.6	5.2	5.8	6.0	6.0	6.0	6.0	Ratings	Foreign	Local
Inflation (GDP deflator, in percent)	1.8	23	5.5	5.6	3.0	3.0	3.0	3.0	3.0	Moody's	Baa2	Baa2
Nominal GDP growth (in percent)	6.7	8.1	13.5	11.1	9.0	9.2	9.2	9.2	9.2	S&Ps	BBB+	BBB+
Effective interest rate (in percent)	5.4	4.4	4.3	4.7	5.7	6.8	7.2	7.1	7.2	Fitch	BBB	BBB

Figure 1.12 *(continued)*

C. Contribution to changes in public debt



D. DSA fan chart excluding the excess liquidity, 2021–2028



	2021	2022	2023	2024	2025	2026	2027	2028
NG debt/GDP	60.4	60.9	59.9	60.5	60.3	59.8	59.2	58.7

DSA = debt sustainability analysis; GDP = gross domestic product; CDS = credit default swap; NG = national government
Source: Authors' calculations using the IMF-DSA template

Monetary developments

After much tightening in 2022, key policy rates were held steady in the second quarter of 2023 as inflation slightly eased. In 2022, the central bank implemented a string of monetary policy increases as inflation accelerated. Table 1.1 shows that from 2 percent at the start of the year, the overnight reverse repurchase rate (RRP) increased by a total of 350 basis points (bps) by yearend (25 bps in May, 25 bps in June, 75 bps in July, 50 bps in August, 50 bps in September, 75 bps in November, and 50 bps in December). This continued until early 2023, when the monetary authority decided to raise the interest rate by 25 bps in February and again in March (Figure 1.13). The rate was then (temporarily) maintained at 6.25 percent due to inflation, showing a slight deceleration.

The differential between the Philippine and US key policy rates declined in 2022, settling within a limited but lower band beginning in the second half of 2022. It virtually matched policy rate hikes implemented by the US Federal Reserve during the period, even when the latter raised its target range by 75 bps in November 2022, and by another 50 bps a month after,[6] keeping the interest rate differential within 90–150 bps (compared to above 150 bps previously). The differential held steady at 117 bps by the end of the first half 2023.

Reserve requirement ratios (RRR) against selected peso deposit and deposit substitute liabilities were cut by the BSP in June 2023. This included a 200 bps reduction for universal and commercial banks (U/KBs); 200 bps for digital banks; and 100 bps for thrift banks, rural banks, and cooperative banks. RRRs for nonbank financial institutions with quasi-banking functions (NBQBs) against deposit substitutes were trimmed by 250 bps (BSP 2023b).[7] Coinciding with this policy was the removal of some pandemic relief measures, specifically with respect to banks counting the loans to micro, small, and medium enterprises and large enterprises as an alternative to comply with the reserve requirements. Removing the regulatory relief was aimed at restoring the reserve requirement as an instrument for managing liquidity in the financial sector (BSP 2023c).

Macroeconomic outlook

Macro conditions

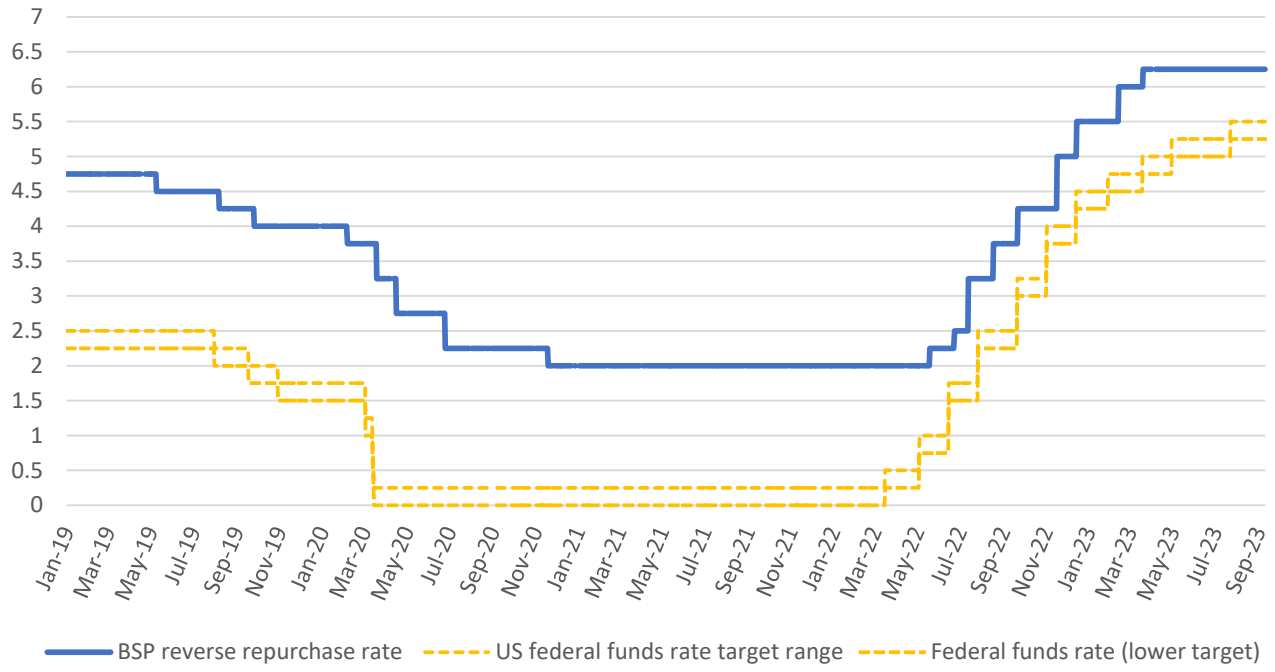
Global economic recovery from the COVID-19 pandemic continued despite geopolitical and commodity price shocks, but the macroeconomic outlook remains uncertain this year and the next year. GDP growth is generally expected to slow in 2023, especially with the lagged effects of monetary policy tightening materializing, and will continue to be unremarkable in 2024 (Table 1.2). Among the major economic partners of the Philippines, the US may perform better than anticipated this year, but growth may still weaken in the next couple of years (at below 2%).

[6] The US federal funds rate target range had been gradually rising since 2022 to temper the rapid inflation's effect. From a range of 0.0 percent to 0.25 percent, interest rates increased from March to end-2022 by a total of 4.25 percentage points (ppts) at the 4.25 percent to 4.5 percent range. In the first half of 2023, further tightening was seen, with hikes of 0.25 ppts in February, March, and May. The Federal Reserve remains hawkish, maintaining the 5.25 percent to 5.5 percent range since.

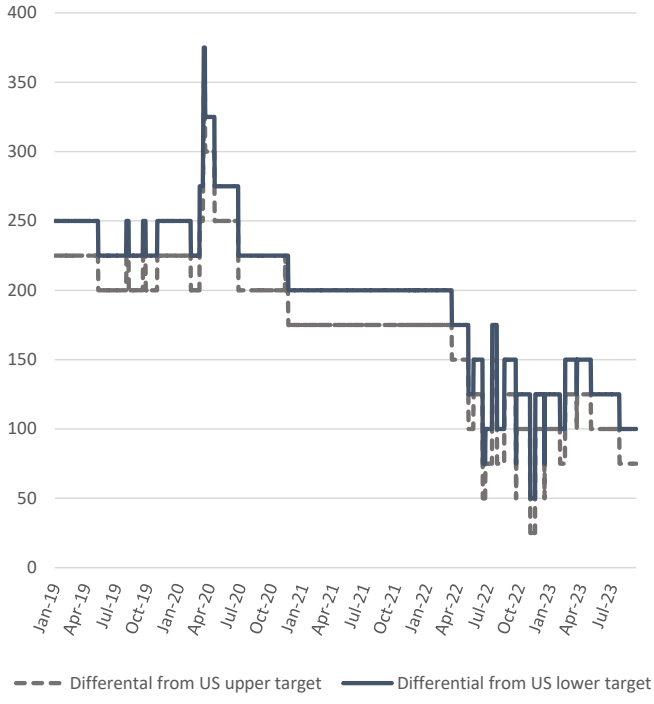
[7] The RRR now stand at 9.5 percent for U/KBs and NBQBs, 6.0 percent for digital banks, 2.0 percent for thrift banks, and 1.0 percent for rural and cooperative banks.

Figure 1.13
Philippine and US key policy rates

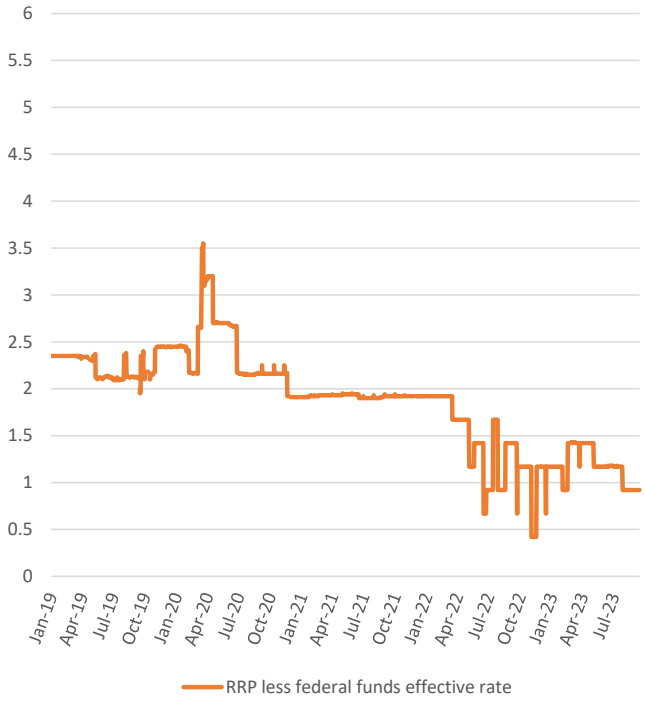
A. BSP RRP and US federal funds rate



B. Differential of BSP RRP and US federal funds target range (in bps)



C. Interest rate differential of BSP RRP rate and US federal funds effective rate (in %)



BPS = basis points; RRP = reverse repurchase rate; US = United States; BSP = *Bangko Sentral ng Pilipinas*
Source: BSP and US Federal Reserve via CEIC Data (2023b, 2023af)

Table 1.1
Monetary policy decisions on the overnight repurchase facility

Date	Interest rate	Policy decision and associated considerations
February 17, 2022	2.00	Maintained; due to manageable inflation and emerging uncertainty in domestic and global growth.
March 24, 2022	2.00	Maintained; to sustain the momentum of the economy on the face of increasing uncertainty.
May 19, 2022	2.25	25 bps increase; to restrain the second round effects and temper the expectations on inflation.
June 23, 2022	2.50	25 bps increase; to ensure macroeconomic stability in light of rising commodity prices and headwinds to domestic economic growth.
July 14, 2022*	3.25	75 bps increase; given the urgent need to address the inflation situation amid the ongoing normalization of monetary policy settings.
August 18, 2022	3.75	50 bps increase; with continued inflationary pressures projected to go beyond the inflation target over the policy horizon.
September 22, 2022	4.25	50 bps increase; due to inflation expected to surpass the target range and prevent further price pressures.
November 17, 2022	5.00	75 bps increase; due to expectations of higher inflation along with the adverse effects of upside risks and increased likelihood of further second round effects.
December 15, 2022	5.50	50 bps increase; as inflation remains high and broad-based; in addition to heightened inflation expectations.
February 16, 2023	6.00	50 bps increase; due to inflation showing a sharp rise in January, that is projected to remain high.
March 23, 2023	6.25	25 bps increase; due to persistent inflationary pressures and to preserve the buffer in consideration of external spillovers and continued uncertainty.
May 18, 2023	6.25	Maintained; as inflation reflects a gradual return within the target range, allowing for further assessment of macroeconomic and financial conditions, given the tighter global financial conditions.
June 22 2023	6.25	Maintained; due to inflation demonstrating a continued gradual return within target and to stave off buildup of potential financial imbalances.

bps = basis points
* off-cycle meeting
Source: BSP (2022, 2023g)

In contrast, Japan and countries in the Euro area will likely see slower growth than anticipated this year but with a similarly weak prognosis in the medium term. Among the large developing economies, China will grow faster this year than a year ago but may continue facing domestic headwinds from a real estate crisis and diminished business and consumer confidence. The growth of emerging and developing economies (EMDEs) is expected to be resilient and remain at about 4 percent in the short to medium term.

Inflation has decelerated globally but remains high among EMDEs except in Asia (IMF 2023b). Inflation in advanced economies (both headline and core) is expected to decline from 7.3 percent in 2023 to about 4.5 percent in 2024 and further to below 4 percent in the medium term. It is expected to decrease from 9.8 percent to 8.5 percent and remain above 5 percent among EMDEs during the same period but remain consistently below 3 percent in developing Asia. These forecasts are in line with a projected decline in world

oil prices. Non-OPEC (Organization of the Petroleum Exporting Countries) members are set to increase oil production, helping offset lower supply from key oil-producing economies, primarily Saudi Arabia and Russia (IMF 2023c). However, volatilities in food and energy prices due to recent developments, in addition to the Russian invasion of Ukraine, particularly the Israel-Hamas war, continue to pose upside risks (World Bank 2023a).

The growth in trade is expected to experience a significant slowdown globally—from 5.1 percent in 2022 to 0.9 percent in 2023—but may soon recover. This projection hinges on reduced demand, the appreciation of the US dollar, and increased trade restrictions. Goods trade is expected to decline by 0.3 percent this year but rise by 3.2 percent in 2024. Services trade is poised to register strong growth for 2023, but momentum is seen to wane slightly for the latter part of the year, although still expected to perform better than trade in goods (WTO 2023). Prolonged geopolitical conflicts, among many factors, are anticipated to significantly impact international trade, with escalations likely to disrupt growth.

Association of Southeast Asian Nations (ASEAN)-5 output is similarly anticipated to slow in the near term as the lagged effects of monetary policy rate hikes play out and governments continue with their fiscal consolidation efforts. Economies in the region, except for Thailand, benefited from a sharp recovery from the pandemic in 2022 and may face slower growth in 2023, with prospects not expected to improve much in 2024 for most countries (Table 1.3). In the Philippines, the post-pandemic momentum is seen to weaken, with economic growth expected to decline to slightly below the government's target range of 6–7 percent for this year. The country's medium-term growth is projected to reach about 6 percent, falling below the pre-pandemic assessments of the country's potential performance (which hovered about 6.5%).

In 2023, price pressures are seen to ease in most countries in ASEAN-5 as tightening policies take effect. The majority in the region will likely see their headline inflation at below 4 percent this year and the next year (Table 1.4). However, in the Philippines, inflation is forecast to inch up from 5.8 percent in 2022 to about 6 percent in 2023, which is outside of the inflation target band (3% +/- 1 percentage point), before easing to about 3.6 percent in 2024. The country's core inflation has fallen, indicating some easing of inflationary pressures, although the headline rate has begun to rise again (Figure 1.3a). Recent price pressures in the country have been mostly on the agricultural supply side due to increases in food costs, particularly for rice and vegetables (Figures 1.3b, 1.3c, and 1.5).[8]

Monetary policies in most developing Asian economies further tightened during the year, but monetary easing in the region may be expected by 2024. Thailand steadily raised its policy rate during the first three quarters of 2023, while the Philippines and Malaysia followed through with a

[8] Rice inflation became a concern in the third quarter of 2023, as prices grew by 17.9 percent in September. A price cap was imposed on regular milled and well-milled rice in September (EO 39 [s. 2023]). However, this was lifted after nearly a month. Export bans on rice were seen in some economies. India has imposed a ban on broken rice since September 2022 and on non-basmati white rice exports since July 2023. Bangladesh has had a standing export ban on aromatic rice since June (Kashem and Ali 2022; Sharma 2023).

Table 1.2
World outlook in short to medium term

	2011–2020	2021	2022	2023f	2024f	2025f	2026f	2027f
Output (Annual % change)								
World	2.9	6.3	3.5					
GEP (Jun 2023)				2.1 (3.0)	2.4 (3.0)	3.0		
WEO (Oct 2023)				3.0 (2.7)	2.9 (3.2)	3.2 (3.4)	3.2 (3.3)	3.1 (3.2)
Advanced economies	1.3	5.6	2.6					
GEP (Jun 2023)				0.7 (2.2)	1.2 (1.9)	2.2		
WEO (Oct 2023))				1.5 (1.1)	1.4 (1.6)	1.8 (1.9)	1.9 (1.9)	1.8 (1.7)
US	1.7	5.9	2.1					
GEP (Jun 2023)				1.1 (2.4)	0.8 (2.0)	2.3		
WEO (Oct 2023)				2.1 (1.0)	1.5 (1.2)	1.8 (1.8)	2.1 (2.1)	2.1 (1.9)
Euro area	0.6	5.6	3.3					
GEP (Jun 2023)				0.4 (1.9)	1.3 (1.9)	2.3		
WEO (Oct 2023)				0.7 (0.5)	1.2 (1.8)	1.8 (1.9)	1.7 (1.7)	1.5 (1.5)
Japan	0.4	2.2	1.0					
GEP (Jun 2023)				0.8 (1.3)	0.7 (0.6)	0.6		
WEO (Oct 2023)				2.0 (1.6)	1.0 (1.3)	0.7 (0.9)	0.5 (0.5)	0.4 (0.4)
EMDE	4.1	6.9	4.1					
GEP (Jun 2023)				4.0 (4.2)	3.9 (4.4)	4.0		
WEO (Oct 2023))				4.0 (3.7)	4.0 (4.3)	4.1 (4.3)	4.1 (4.3)	4.0 (4.3)
EAP	6.2	7.5	3.5					
GEP (Jun 2023)				5.5 (5.2)	4.6 (5.1)	4.5		
EMDA	6.0	7.5	4.5					
WEO (Oct 2023)				5.2 (4.9)	4.8 (5.2)	4.9 (5.3)	4.8 (5.2)	4.6 (5.1)
China	6.8	8.5	3.0					
GEP (Jun 2023)				5.6 (5.2)	4.6 (5.1)	4.4		
WEO (Oct 2023)				5.0 (4.4)	4.2 (4.5)	4.1 (4.6)	4.1 (4.6)	3.7 (4.6)
India	5.3	9.1	7.2					
GEP (Jun 2023)				6.3 (7.1)	6.4 (6.5)	6.5		
WEO (Oct 2023)				6.3 (6.1)	6.3 (6.8)	6.3 (6.8)	6.3 (6.5)	6.3 (6.2)
Consumer prices (Annual % change)								
World	3.5	4.7	8.7	6.9 (6.5)	5.8 (4.1)	4.6 (3.6)	4.2 (3.4)	3.9 (3.3)
Advanced economies	1.4	3.1	7.3	4.6 (4.4)	3.0 (2.4)	2.2 (2.0)	2.0 (1.9)	2.0 (1.9)
EMDE	5.2	5.9	9.8	8.5 (8.1)	7.8 (5.3)	6.2 (4.6)	5.7 (4.4)	5.2 (4.3)
EMDA	3.6	2.2	3.8	2.6 (3.6)	2.7 (2.8)	2.9 (2.8)	2.9 (2.8)	2.8 (2.8)
World trade volume (annual % change)	2.6	10.9	5.1	0.9 (2.5)	3.5 (3.7)	3.7 (3.7)	3.6 (3.6)	3.5 (3.5)
World prices (USD, annual % change)								
Oil	-2.9	65.8	39.2	-16.5 (-12.9)	-0.7 (-6.2)	-4.9 (-4.9)	-4.3 (-3.9)	-3.9 (-3.1)
Nonfuel primary commodities	-0.1	26.7	7.9	-6.3 (-6.2)	-2.6 (-0.7)	-0.1 (-0.4)	0.2 (0.2)	0.4 (0.2)

GEP = Global Economic Prospects; WEO = World Economic Outlook; EMDE = emerging market and developing economies; EAP = East Asia and Pacific; EMDA = emerging and developing Asia; USD = United States dollar; f = forecast
Note: Numbers in parenthesis are forecasts from year-ago editions (i.e., June 2022 and October 2022).
Sources: IMF (2022, 2023c); World Bank (2022, 2023b)

Table 1.3
Output projections for major ASEAN developing economies

	2020	2021	2022	2023f	2024f	2025f	2026f	2027f
GDP (Annual % change)								
Indonesia	-2.1	3.7	5.3	5.0	5.0			
ADO (Sep 2023)				5.0 (5.0)	5.0			
GEP (Jun 2023)				4.9 (5.3)	4.9 (5.3)	5.0		
WEO (Oct 2023)				5.0 (5.0)	5.0 (5.4)	5.0 (5.3)	5.0 (5.2)	5.0 (5.1)
Malaysia	-5.5	3.3	8.7	4.3	4.5			
ADO (Sep 2023)				4.5 (4.7)	4.9			
GEP (Jun 2023)				4.3 (4.5)	4.2 (4.4)	4.2		
WEO (Oct 2023)				4.0 (4.4)	4.3 (4.9)	4.4 (4.4)	4.4 (4.4)	3.9 (3.9)
Philippines	-9.5	5.7	7.6	5.7	6.0			
ADO (Sep 2023)				5.7 (6.3)	6.2			
GEP (Jun 2023)				6.0 (5.6)	5.9 (5.6)	5.9		
WEO (Oct 2023)				5.3 (5.0)	5.9 (6.0)	6.1 (6.0)	6.2 (6.0)	6.3 (6.0)
Thailand	-6.1	1.5	2.6	3.4	3.5			
ADO (Sep 2023)				3.5 (4.2)	3.7			
GEP (Jun 2023)				3.9 (4.3)	3.6 (3.9)	3.4		
WEO (Oct 2023)				2.7 (3.7)	3.2 (3.6)	3.1 (3.3)	3.0 (3.2)	3.0 (3.0)
Viet Nam	2.9	2.6	8.0	5.5	6.0			
ADO (Sep 2023)				5.8 (6.7)	6.0			
GEP (Jun 2023)				6.0 (6.5)	6.2 (6.5)	6.5		
WEO (Oct 2023)				4.7 (6.2)	5.8 (6.6)	6.9 (6.7)	6.8 (6.7)	6.8 (6.8)

ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product; ADO = Asian Development Outlook; GEP = Global Economic Outlook; WEO = World Economic Outlook; f = forecast
Notes:
(1) Top-line forecasts are averages of projections from the ADO September 2023 issue, the GEP June 2023 issue, and the WEO October 2023.
(2) Numbers in parenthesis are forecasts from year-ago editions (i.e., September 2022, June 2022, and October 2022)
Sources: ADB (2022, 2023); IMF (2022, 2023c); World Bank (2022, 2023b)

Table 1.4
Inflation forecasts for major ASEAN developing economies

	2020	2021	2022	2023f	2024f	2025f	2026f	2027f	2028f
CPI (Annual % change)									
Indonesia	2.0	1.6	4.2	3.6	2.8				
WEO (Oct 2023)				3.6 (5.5)	2.5 (3.2)	2.5 (3.0)	2.5 (3.0)	2.3 (3.0)	1.6
ADO (Sep 2023)				3.6 (5.1)	3.0				
Malaysia	-1.1	2.5	3.4	3.0	2.7				
WEO (Oct 2023)				2.9 (2.8)	2.7 (2.4)	2.3 (2.4)	2.1 (2.4)	1.8 (2.5)	1.9
ADO (Sep 2023)				3.0 (2.5)	2.7				
Philippines				6.0	3.6				
WEO (Oct 2023)	2.4	3.9	5.8	5.8 (4.3)	3.2 (3.1)	3.0 (3.0)	3.0 (3.0)	3.0 (3.0)	3.0

Table 1.4 *(continued)*

	2020	2021	2022	2023f	2024f	2025f	2026f	2027f	2028f
ADO (Sep 2023)				6.2 (4.3)	4.0				
Thailand				2.0	2.0				
WEO (Oct 2023)	-0.8	1.2	6.1	1.5 (2.8)	1.6 (1.5)	1.9 (2.3)	2.0 (2.0)	2.0 (2.0)	2.0
ADO (Sep 2023)				2.5 (2.7)	2.3				
Viet Nam				3.6	3.7				
WEO (Oct 2023)	3.2	1.8	3.2	3.4 (3.9)	3.4 (3.5)	3.4 (3.5)	3.4 (3.5)	3.4 (3.5)	3.4
ADO (Sep 2023)				3.8 (4.0)	4.0				

ASEAN = Association of Southeast Asian Nations; CPI = consumer price index; WEO = World Economic Outlook; ADO = Asian Development Outlook; f = forecast
Note: Numbers in parenthesis are forecasts from year-ago editions (i.e., October 2022 and September 2022).
Source: ADB (2022, 2023); IMF (2022, 2023c)

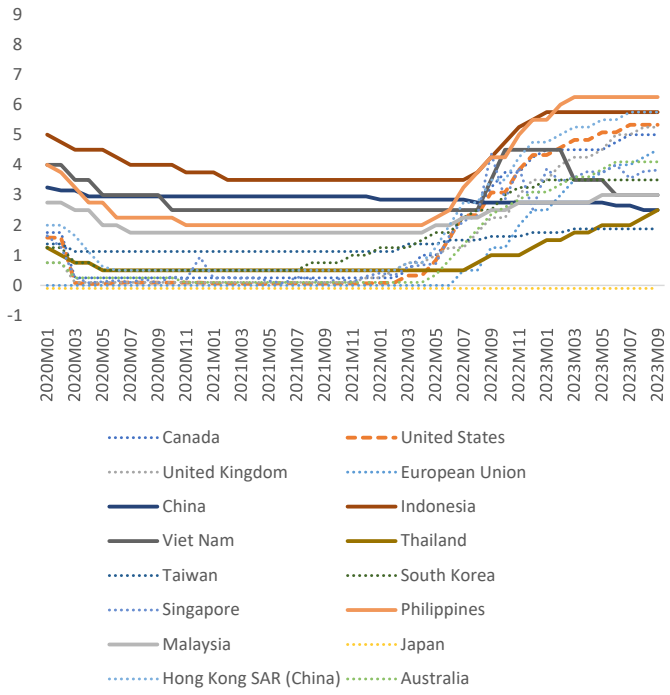
few more hikes during the same period (Figure 1.14). However, China and Viet Nam cut their policy rates by 25 and 150 bps, respectively, to provide stimulus to their slowing economies. Others in the region may follow suit as macroeconomic prospects weaken. Yet, their actions will depend on domestic price conditions and the decisions of the US Federal Reserve, given the latter's impact on key variables. Financial conditions in the Philippines had been surprisingly resilient until early 2023 despite last year's sharp monetary tightening based on a broad financial conditions index (FCI) (Figure 1.15). Positive readings of the Philippine FCI in the fourth quarter of 2022 suggest looser financial conditions than the normal level historically (>1 standard deviation by January 2023), although the index has since trended down.[9] The latter movement indicates tighter financial conditions this year, constraining economic activity. Conditions may tighten even further with an additional policy rate increase of 25 bps in October 2023, an off-cycle action that puts the overnight repurchase rate at 6.50 percent. This prevented supply-side price pressures and inflation expectations from exacerbating second-round effects (BSP 2023d).

Countries in developing Asia will continue to face limited fiscal space in the near term. Like elsewhere in the world, deficits and debt ratios have climbed in the region because of the public health and fiscal stimulus programs that had to be launched during the COVID-19 pandemic (Figures 1.16 and 1.17). The rise had been especially pronounced in the Philippines and Thailand, although much of the increase in debt in the former had been due to government efforts to build a cash buffer as a defense against the uncertainty created by the pandemic (Debuque-Gonzales et al. 2022a). High debt levels may constrain public investment, while the likely increase in interest rates may limit private investment. Deficits have been brought down in the region, with substantial fiscal consolidation observed in Indonesia and Thailand.

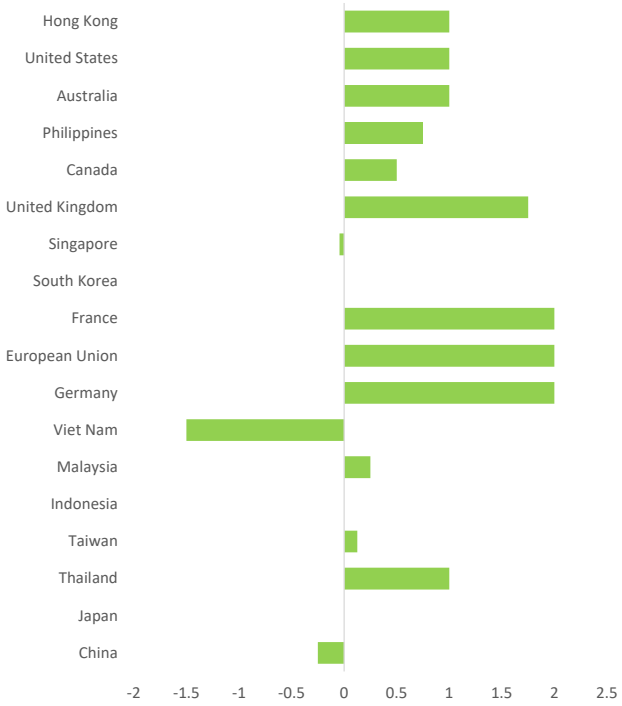
[9] The FCI summarizes indicators of various financial markets, including interest rates and spreads, asset values, credit quantities and liquidity, and measures of financial stress and risk (Debuque-Gonzales 2020; see the Appendices). It is measured relative to a country's stage in the business cycle.

Figure 1.14
Policy rates and rate changes

A. Policy rates (in %)



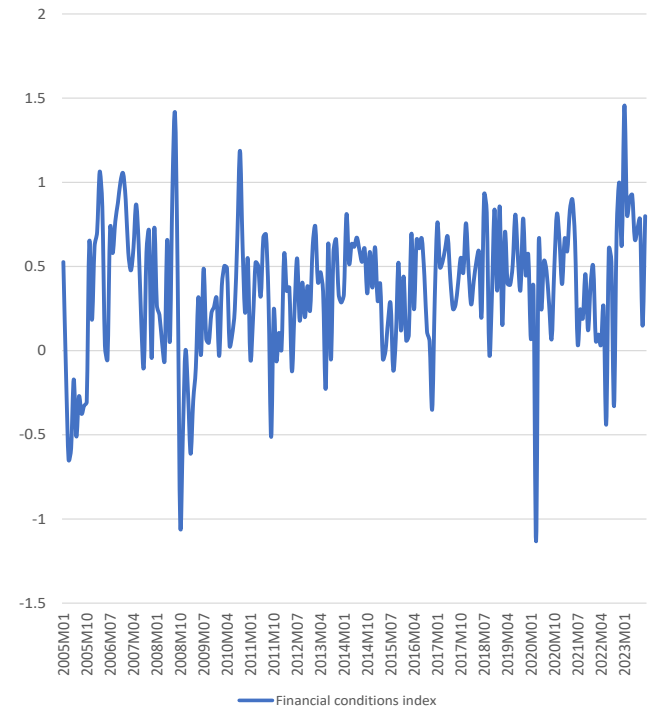
B. Policy rate changes, 2023M09 vs M01 (percentage points)



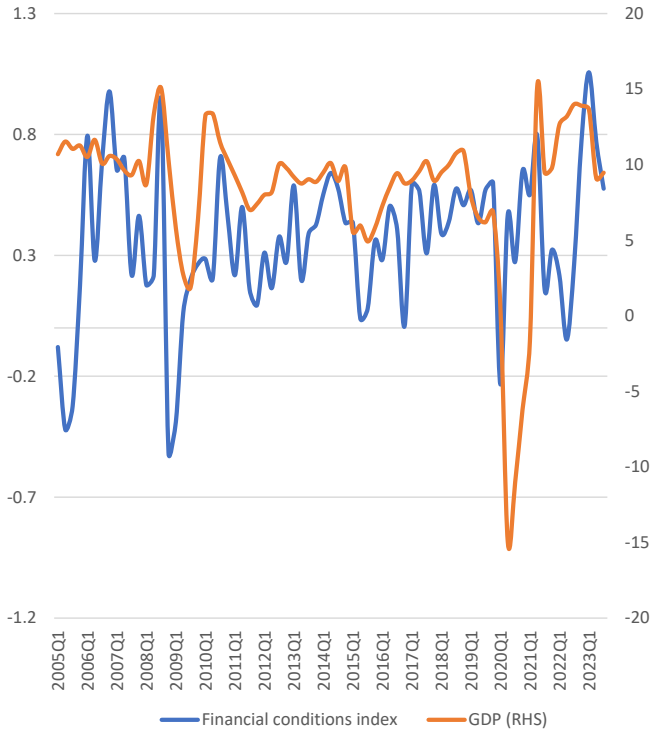
SAR = Special Administrative Region
Sources: Authors' computations using CEIC Data (2023w)

Figure 1.15
Financial conditions and GDP growth

A. FCI

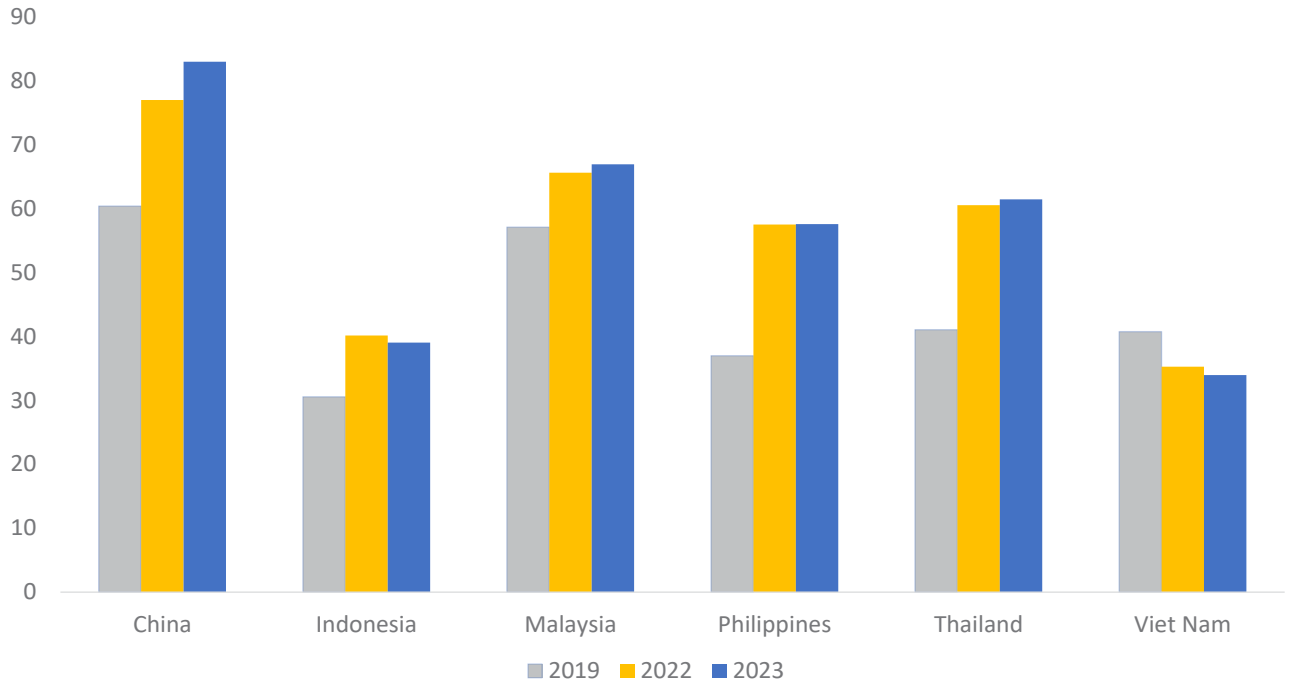


B. FCI and quarterly GDP



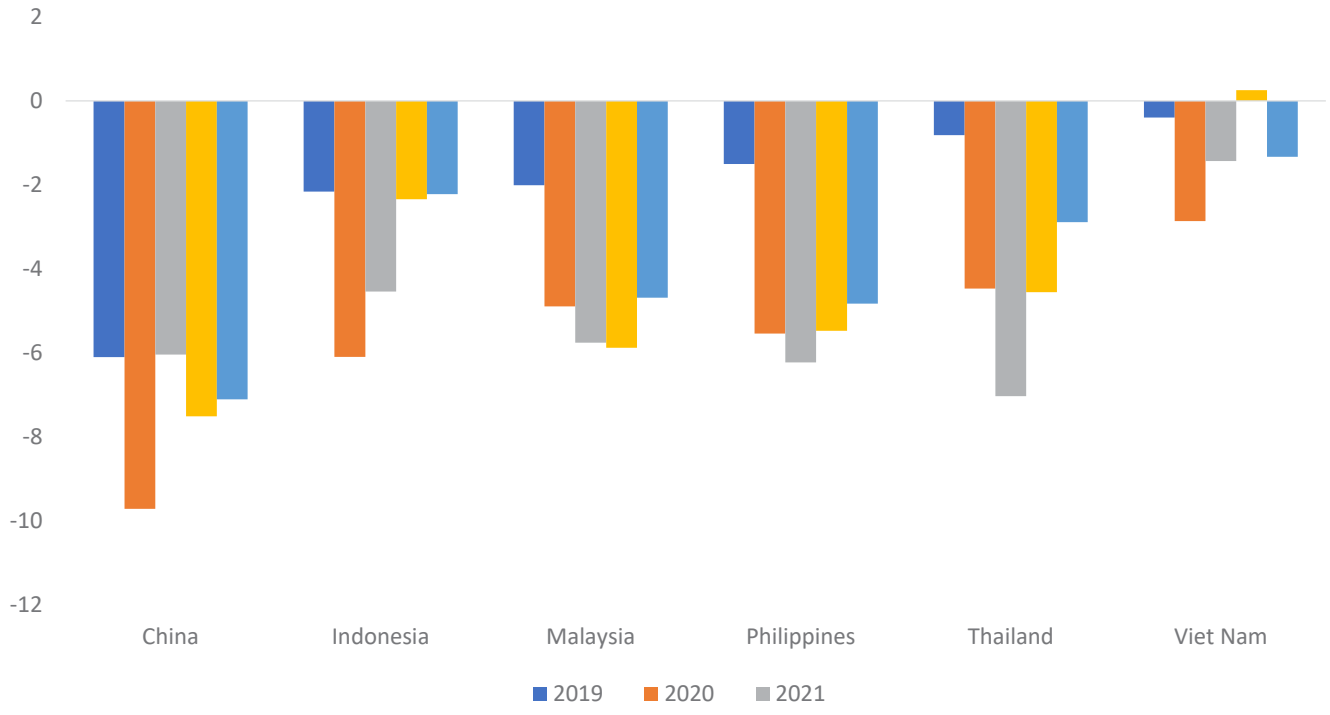
FCI = financial conditions index; GDP = gross domestic product; Q = quarter
Sources: PSA via CEIC Data (2023k); authors' computations

Figure 1.16
ASEAN-5 plus China general government debt (in % of GDP)



ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product
Source: IMF (2023c)

Figure 1.17
ASEAN-5 plus China general government balance (in % of GDP)



ASEAN = Association of Southeast Asian Nations; GDP = gross domestic product
Note: Computed as general government total revenue less total expenditure.
Source: IMF (2023c)

Macro projections

GDP growth is expected to slow to 5.3 percent in 2023, which is within the forecast range for the year of about 4.5 to 5.5 percent (Table 1.5). In line with previous expectations, monetary tightening and fiscal constraints due to a rising debt burden and a generally "gloomy and uncertain" outlook for the world economy—with many countries battling high inflation and experiencing a slowdown—have constrained consumer and government spending this year. An unexpected escalation of supply-side inflation contributes to the mix, dampening the relatively pessimistic (i.e., lower than consensus) projections. As previously noted, catchup spending in services, particularly tourism, and stronger deployment of overseas Filipino workers (OFWs) which provides support to international remittances, has helped bolster economic growth.[10]

GDP will likely grow between 5.5 percent and 6 percent in 2024. Consumption may support growth despite the weak global economic prospects, given the steady flow of remittances from abroad; increased wages, which may partially offset lost purchasing power; and improved jobs picture, with an increase in wage and salary for employees. Financial conditions have not worsened yet, as one might expect amid monetary tightening, with macro conditions set to further improve with declining inflation and some credit easing next year. While this year's public budget had been on a consolidation path programmed to grow by just 5.5 percent annually (DBCC 2023d), the 2024 budget is set to grow at a less restrictive pace of about 9.5 percent (DBM 2023a). On the production side, apart from the continued resilience of services, possible upsides would include a resurgence in certain sectors, such as construction, given the current momentum, and rising business expectations in some industries like utilities and agriculture, where firms have reported expansion plans in the next 12 months (BSP 2023d). The downside would be if external conditions worsen more than expected.

Inflation will likely reach 6 percent on average in 2023 and decline to within the target range (3% +/- 1 percentage point) in 2024 (Table 1.6). A spike in retail rice prices last September—combined with an upward climb in gasoline prices and minimum wage, transport fare, and power rate hikes—have kept the headline rate high this year, but easing pressures on both commodities combined with base effects will eventually bring inflation down next year. The impact of additional policy rate hikes this year will persist into 2024, with the estimated lag of monetary policy in the country estimated to be anywhere between 4 and 7 quarters (Tuaño-Amador 2003; Guinigundo 2005; Debuque-Gonzales 2020). However, there is a risk of rice prices remaining high and inflation averaging at the upper end of the band, with the uncertain duration of India's export ban and the El Niño phenomenon exerting upward pressure. Thailand, which already experienced a drought in the latter part of 2023, expects rice prices to continue climbing next year as dryness persists. Moreover, renewed geopolitical conflicts may introduce large commodity price volatilities, which could disturb the downward trend in global inflation.

[10] While figures have yet to reach 2019 levels, tourist arrivals grew by 165.3 percent in June 2023. The Department of Tourism reported PHP 212 billion in tourism revenues for January to July, which is 502.2 percent higher than in the same period last year (Ivana 2023). Meanwhile, 1.96 million OFWs were deployed in 2022, with remittances growing by 3.6 percent.

Table 1.5
Growth projections for the Philippines

	2011–2020	2021	2022	2023f	2024f
GDP (Annual % change)	4.7	5.7	7.6		
International institutions					
ASEAN+3 Regional Economic Outlook (October 2023)				5.9 (6.3)	6.5
Asian Development Outlook (September 2023)				5.7 (6.3)	6.2
Global Economic Prospects (June 2023)				6.0 (5.6)	5.9 (5.6)
World Economic Outlook (October 2023)				5.3 (5.0)	5.9 (6.0)
Credit rating agencies					
Moody's Analytics (October 2023)				5.2 (6.4)	5.3
Fitch Solutions (August 2023)				5.9 (6.2)	6.6
S&P Global Ratings (November 2023)				5.4 (5.2)	5.9
Government					
DBCC projections				6.0 to 7.0 (6.5 to 8.0	6.5 to 8.0 (6.5 to 8.0)
Author's projections				**5.3 (4.5 to 5.5)**	**5.5 to 6.0**

GDP = gross domestic product; DBCC = Development Budget Coordination Committee; f = forecast
Note: Numbers in parentheses for international institutions are forecasts from year-ago editions (i.e., September, June, and October 2022). Numbers in parentheses for credit raters Fitch Solutions and S&P Global Ratings are forecasts taken from year-ago editions (August and November 2022), while the numbers in parentheses for Moody's Analytics are year-ago forecasts taken from *FocusEconomics* (October 2022 edition). Numbers in parenthesis for the DBCC and the authors' projection are from the *PIDS 2022–2023 Economic Policy Monitor*.
Sources: ADB (2022, 2023); AMRO (2022, 2023b); DBM (various years); Fitch Solutions (2022, 2023); *FocusEconomics* (2022); IMF (2022, 2023c); Moody's Analytics (2023); S&P Global Ratings (2022, 2023); World Bank (2022, 2023b)

Table 1.6
Inflation projections for the Philippines

	2011–2020	2021	2022	2023f	2024f
CPI (Annual % change)	2.9	3.9	5.8		
International institutions					
ASEAN+3 Regional Economic Outlook (Oct 2023)				5.5 (4.0)	3.8
Asian Development Outlook (Sep 2023)				6.2 (4.3)	4.0
World Economic Outlook (Oct 2023)				5.8 (4.3)	3.2 (3.1)
Private sector					
Moody's Analytics (Oct 2023)				6.0 (5.0)	3.2
Fitch Solutions (Aug 2023)				5.7 (4.5)	3.6
S&P Global Ratings (Nov 2023)				5.9 (4.3)	3.4
Government					
DBCC projections				5.0 to 6.0 (2.5 to 4.5)	2.0 to 4.0 (2.0 to 4.0)
Authors' projections				**6.0 (3.5 to 4.5)**	**3.0**

CPI = consumer price index; ASEAN = Association of Southeast Asian Nations; DBCC = Development Budget Coordination Committee; f = forecast
Note: Numbers in parentheses for international institutions are forecasts from year-ago editions (i.e., September 2022 and October 2022). Numbers in parentheses for the credit raters Fitch Solutions and S&P Global Ratings are forecasts taken from year-ago editions (August and November 2022), and the numbers in parentheses for Moody's Analytics are year-ago forecasts taken from *FocusEconomics* (October 2022 edition). Numbers in parenthesis for the DBCC and the authors' projection are from the *PIDS 2022–2023 Economic Policy Monitor*.
Source: ADB (2022, 2023); AMRO (2022, 2023b); Fitch Solutions (2022, 2023); *FocusEconomics* (2022); IMF (2022, 2023c); Moody's Analytics (2023); S&P Global Ratings (2022, 2023)

Risks and recommendations

In last year's *PIDS Economic Policy Monitor* (Debuque-Gonzales et al. 2022), the authors highlighted several policy priorities and proposals that the present administration may consider. These included controlling inflation without harming growth; smoothing exchange rate volatility but maintaining flexibility; rebuilding fiscal space to promote fiscal sustainability while protecting those at risk; preparing for financial tightening and uncertainty through vigilant and strategic monitoring; addressing pandemic scars through infrastructure and human capital investment, the latter in education and health care; and continuing the policy momentum to encourage investment, especially foreign direct investment (FDI), to sustain growth. These remain highly relevant and should be pursued.

However, under the current macroeconomic scenario, three possible sources of policy uncertainty need to be reiterated. These are discussed below:

Inflation-related risks. The first set includes those related to possible mixed messaging and missed timing in monetary policymaking. It bears repeating that decisions on managing inflation should be solely that of the monetary authority, which should remain independent if the inflation targeting framework remains credible. The temptation to prioritize concerns apart from inflation should be resisted, particularly when inflation expectations are not yet fully under control, given the importance of price stability in protecting consumers' purchasing power, especially the poorest ones. Food inflation, in particular, significantly worsened living standards and increased poverty in the Philippines, hurting the weakest segments of society (Son 2008; Fujii 2011).

The central bank has been quite responsive to rapidly changing information from both domestic and foreign sources. However, as inflation threats remain, high-frequency monitoring and a calibrated response to price developments that carefully considers the nature of shocks, estimated pass-throughs, and policy lags must be proposed to ensure that monetary decisions are always well-timed. The authors continue to caution against inflation-related policies that could have costly unintended consequences. In last year's set of proposals, the authors warned that while the temptation to impose price controls and other untargeted measures may be high, such a policy distorts markets—possibly leading to "excess demand, supply rationing, and even a black market" or a generally unruly outcome—as recent experience has quite vividly confirmed (Debuque-Gonzales et al. 2022b).

Meanwhile, the government is urged to utilize every weapon in the arsenal to control inflation, particularly those for the supply side, such as easing import restrictions on agriculture products that may face shortages and instituting a better system for anticipating and addressing these shortages. For instance, the central bank has pushed to extend an executive order that temporarily reduces the most-favored-nation tariff rates of meat, corn, and rice (BSP 2023i; DOF 2023d).[11] This could help raise supply in lean times and contain food inflation. As repeatedly emphasized, subsidies should ideally be targeted to sectors directly hurt by these measures and the poorest consumers.

[11] Temporary tariff reductions under EO 10 (s. 2023), which is likewise an extension of EO 171 (s. 2022), are set to expire on December 31, 2023.

Fiscal risks. The second set pertains to the threat of stalled fiscal policy reforms. The need for details in the country's medium-term fiscal framework (MTFF) was previously flagged. This has been well received, particularly on the additional revenues expected from future legislative measures and the timing of deficit-reducing measures. A sound and credible plan remains critical in shaping market perceptions about the country's debt limits and keeping financing costs down. While the country's debt sustainability analysis generates relatively benign results and the economy ranks among the fastest growing in the region, attaining the growth needed to quickly climb out of debt may prove challenging, given the narrower fiscal space and the current weak global macroeconomic prospects.

In an earlier paper, the authors computed the country's fiscal gap, which measures the adjustment needed over a specified time horizon to achieve a particular fiscal target. They found that bringing the debt ratio back to pre-pandemic levels after a decade (i.e., 40% of GDP by 2031) would require annual primary balance adjustments ranging from 1.4 percent to 3.4 percent of GDP in the most optimistic to the most pessimistic scenarios, respectively (Debuque-Gonzales et al. 2022). However, assuming a longer time horizon (two decades or until 2041) and a central scenario of about 6 percent GDP growth and moderate real interest rates would require an annual adjustment of about 1 percent of GDP (>PHP 200 billion). While it may not be feasible to immediately attain a low debt ratio, the findings highlight the importance of a solid medium- to long-term fiscal consolidation plan. Logically, such a plan should have estimates of net gains from both the revenue and noninterest spending side, large enough to make an impact on the country's fiscal health.[12]

An example of a fiscal risk[13] that must eventually be addressed emanates from the current military and uniformed personnel (MUP) pension system. The DBCC (2022b), in the *Fiscal Risks Statement 2023*, placed the inability to reform the MUP pensions in its list of threats to the country's fiscal position, along with possible policy discontinuity from a change in administration and negative fiscal and economic impacts of national disasters.

The current MUP pension scheme is a noncontributory defined-benefit system with no corresponding assets currently (i.e., completely funded by the national government with related spending carved out from the public budget).[14] The scheme

[12] The 2022–2028 MTFF (DBCC 2022a) outlines the following revenue measures: value-added tax (VAT) on digital service providers, improved income taxation of digital content creators, the excise tax on single-use plastics, the remaining components of the previous administration's tax reform package, the Real Property Valuation and Assessment Reform Act and the Passive Income and Financial Intermediary Taxation Act [PIFITA], and tax administration reforms. It aims to raise the tax-to-GDP ratio from 14.5 percent in 2022 to 17.1 percent in 2028 (and the revenue-to-GDP ratio from 15.2 percent to 17.6 percent). Pending bills may impact revenues from the following sources: PIFITA (originally designed to be a revenue-neutral package); VAT on digital transactions; excise taxes on single-use plastics, premixed alcohol beverages, sweetened beverages, and junk food; and reforms in the fiscal regime for mining. According to the DOF proposal, excise tax on sweetened beverages, motor vehicle road user's tax, and the mining fiscal regime may generate revenues worth about 0.3 percent to 0.4 percent of GDP if the expected implementation for 2025 comes through (DOF 2023a).

[13] Another fiscal risk is managing the decentralization process. As the outcome of the Mandanas-Garcia ruling affects the fiscal space, multilateral observers have noted the importance of realistic transition plans to capacitate LGUs toward ensuring no diminution in the devolved public services and enhancing accountability (IMF 2023a). However, the current administration is reviewing possible amendments to EO 138, with some government officials recommending an extension of the transition period from 2024 to 2027 to give those affected more time to prepare for the change (DBM 2023b).

[14] The precursor was a contributory retirement and benefit system that failed in the aftermath of the Asian Financial Crisis, with the collapse attributed to financial mismanagement (Diokno 2013).

is unique in that, upon retirement, pensions are automatically computed from the base pay of MUP one rank higher and automatically indexed to the salary of the higher rank in the active service (Box 1.1).[15] Thus, broad salary increases would substantially impact MUP liabilities under this arrangement, directly worsening fiscal deficits.

Unsurprisingly, the MUP pension system's total funding requirements doubled after salary increases were implemented beginning in 2018.[16] This figure approximates the amount needed to cover future MUP obligations—the present value of future benefits plus accrued liabilities—or the pension scheme's unfunded liabilities.[17] In an actuarial study using end-2019 data, the Government Service Insurance System (GSIS) estimated this amount for the existing members and pensioners to be about PHP 9.6 trillion, up from about PHP 4.8 trillion previously (DOF 2021).[18] Finance officials claim the number has since risen to about PHP 14 trillion (*CNN Philippines* 2023).

Box 1.1 shows how the annual MUP pensions have typically exceeded the cost of supporting the active military in terms of MOOE and CO of MUP agencies, although not of PS. Moreover, arrears of the MUP pension scheme had already accumulated to PHP 57 billion as of 2021, with unmet payments traced to the salary adjustments several years earlier (DBCC 2022b). Although spending on MUP pensions averaged at just about half a percentage point of GDP in the last couple of years after reaching a high of about 0.7 percent of GDP in 2021, a sudden escalation is projected in the coming decade, but assuming the recent pace of salaries will continue (Salceda 2021; DOF 2023c).

The Senate and the House of Representatives have different versions of the MUP reform bill, although both have endorsed mandatory contributions by the new MUP pensioners (in some form) paired with sizable contributions by the government, aligned with the administration's proposals. They seemingly agree on the computation for monthly retirement pay,[19] the creation of separate trust funds for the armed forces and the uniformed services, and the retirement age (57 years). However, despite the urgency of the issue, determining who among the MUP will bear the brunt of the fiscal adjustment should be a matter of vigorous debate.

Lawmakers will ultimately have to create an equitable framework that shows the value placed by the government, both on the MUP services offered to the country, by providing them with a secure retirement and the country's protection from the escalation of fiscal risk. However, achieving the latter will be difficult without altering the

[15] There is no required age to be eligible for pensions as long as one actively served a full 20 years.

[16] These were stipulated in Joint Resolution 1 (Authorizing the increase in base pay of the MUP in the government and other purposes) approved by Congress, dated January 1, 2018. See National Budget Circular 574 (s. 2018), dated January 11, 2018.

[17] One can think of it as the size of the fund one must create today to fund all these obligations.

[18] This assumes a 7 percent interest rate (based on the 10-year Treasury note in end-2010) and annual 10-percent salary increases (based on the historical rate of change for uniformed personnel). However, the time horizon for calculating the present value of future benefits was not specified. Active members and pensioners are based on lists provided by the Armed Forces of the Philippines, the Philippine National Police, the Bureau of Fire Protection, the Bureau of Jail Management and Penology, the Philippine Coast Guard, the National Mapping and Resource Information Authority, and the Bureau of Corrections.

[19] Equivalent to 50 percent of the base pay and longevity pay of the permanent grade last held by the personnel in case of 20 years in active duty, increasing by 2.5 percent for every year of active duty rendered beyond 20 years to a maximum of 90 percent for 36 years of active duty and over.

existing MUP pension system's original components. In particular, removing the automatic indexation of retirement pay to the salary of active personnel can lop off PHP 6.6 trillion from the system's unfunded liabilities, according to computations by the same GSIS study mentioned above, bringing the figure down to much more manageable levels (about PHP 3 trillion). This feature, which exacerbates deficits, will require tweaking to permanently fix the system down the road. It is recommended to do so sooner rather than later.

Sovereign investment risks. The idea of a sovereign fund was floated in late November 2022. The relevant bill was signed into law in July 2023, with the implementing rules and regulations completed by November 2023 (Box 1.2). The Maharlika Investment Fund (MIF) was established "to promote economic growth and social development" by "investing national funds and coordinating and strengthening the investment activities of the country's top-performing government financial institutions" (RA 11954, Section 2). It aims to "promote socioeconomic development" by "making strategic and profitable investments in key sectors" to meet the following goals (RA 11954, Section 13):

i. to preserve and enhance the long-term value of the fund;
ii. to obtain an optimal absolute return and achieve financial gains on investments; and
iii. to satisfy various requirements (liquidity, safety/security, and yield) to "ensure profitability."

Moreover, "in pooling the investible funds from the government GFIs [government financial institutions] and channeling them to diversified financial assets and development projects," it hopes to contribute to "a prudent and transparent management of the government resources" (Section 6). Apart from the national government, mainly through dividends from the BSP (PHP 50 billion), the initial contributors are the GFIs, including the Landbank of the Philippines (LBP) (PHP 50 billion) and the Development Bank of the Philippines (DBP) (PHP 25 billion).

The MIF is now on the verge of joining a new breed of sovereign wealth funds (SWFs)—ironically not built on surpluses—earning it widespread criticism from the outset.[20] Undeterred by the Malaysian experience with the 1Malaysia Development Berhad (1MDB) and the scandal surrounding it, such arrangements began to be established around the mid-2010s by governments of developing countries that had substantial current account deficits or external debt as they attempted to invigorate their economies in a global slowdown (Milhench 2017). Most hoped to attract external capital through sovereign funds, in many cases by leveraging profitable state-owned companies and other assets.[21]

[20] The main criticisms against the MIF revolve around the perceived unclear rationale for the fund; the apparent lack of additionality in terms of resources and in the country's mix of institutions; its inappropriateness considering the country's deficits and debt; and the fiscal and monetary risk of such a fund, with the central bank as the national government's main source of contributions to the fund and, more fundamentally, the country's weak rule of law and poor governance conditions. These came from various sources, including statements by the Foundation for Economic Freedom, prominent business and civil society groups, Fabella (2023), and Abrenica et al. (2023), the latter penned by University of the Philippines School of Economics professors and lecturers.

[21] Among the countries that had launched or planned to launch a sovereign fund during the period were India, Turkey, Romania, and Bangladesh. The latter deviated from the group, intending to seed its fund by tapping its international reserves.

Box 1.1
MUP pensions

A comparison of the different pension schemes highlights the noncontributory aspect of military pensions, which the government appropriates for in the national budget. Another critical component in the discussion of pension reform is the automatic indexation to the next rank higher provided to the MUP upon retirement. The current pension scheme for GSIS, SSS, and MUP can be summarized as follows:

Comparison of MUP and civilian pension schemes

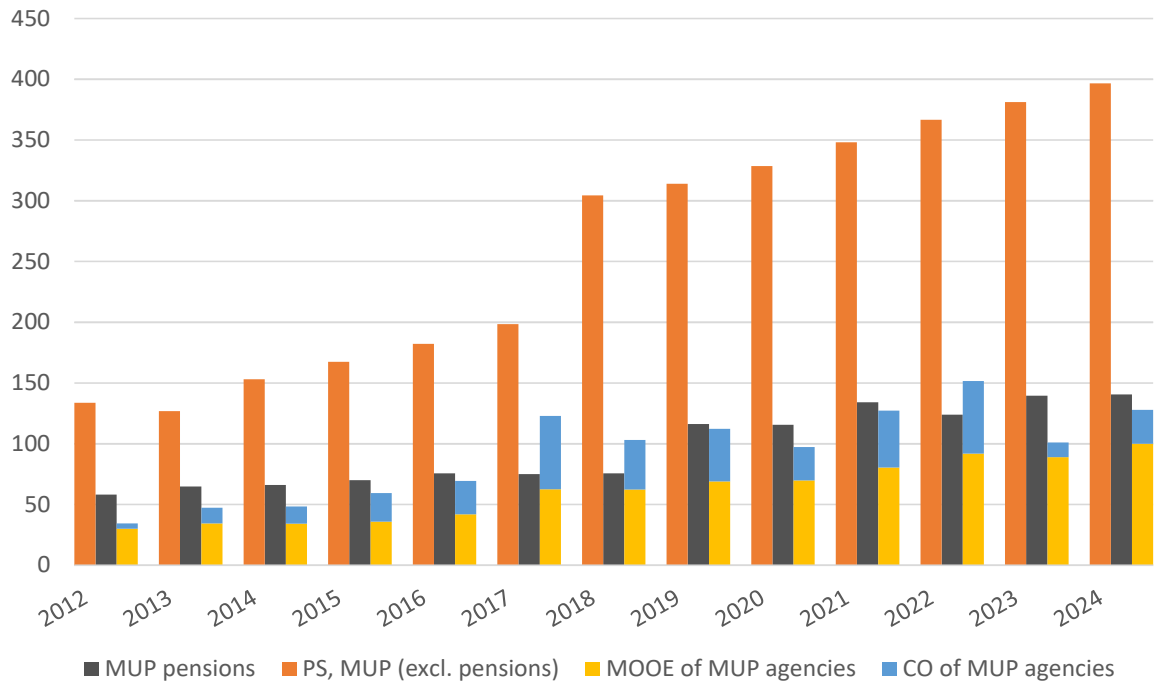
	Contribution	Eligibility	Basic monthly pension computation
GSIS	21% of pay (9% for members and 12% for government agencies)	At least 15 years of service; at least 60 years of age; and is not receiving a monthly pension benefit from permanent total disability	BMP = RAMC x (2.5% x RCS)
SSS	14% (4.5% employee and 9.5% employer)	At least 120 monthly contributions prior to the semester of retirement; at least 60 years old	Highest result of the following: 1. PHP 300 + 20% of the AMSC + 2% of the AMSC for each CYS in excess of 10 years 2. 40% of the AMSC 3. PHP 1200 if the member has at least 10 CYS and PHP 2,400 if at least 20 CYS + PHP 1,000 additional benefit and 13th month pension payable every December
MUP pensions	100% provided by NG	20 years of active service and compulsory upon reaching 30 years of service	(Base pay of the next grade higher than the grade last held + longevity pay) x 2.5% x years of active service

GSIS = Government Service Insurance System; SSS = Social Security System; MUP = military and uniformed personnel; NG = national government; RAMC = revalued average monthly compensation; RCS = record of creditable service; CYS = creditable years of service; PHP = Philippine peso; AMSC = average monthly salary credit for the last 60 months
Note: Before 2023, SSS contributions were at 13 percent (4.5% employee and 8.5% employer). Longevity for MUP pension is computed as 10 percent of base pay for every five years of service.
Sources: GSIS (n.d., 2010); SEPO (2012); SSS (n.d., 2019)

Box 1.1 *(continued)*

MUP pensions have typically exceeded the combined outlay for MOOE and CO. MUP pensions within the last decade reached 0.7 percent of GDP in 2021, with the biggest annual growth seen in 2019, following the implementation of the increase in salaries of MUP for 2018 and 2019. A noticeable annual change can be observed for the MOOE in 2017, attributable to significant additions to repairs and maintenance, intelligence expenses, and supplies and materials.

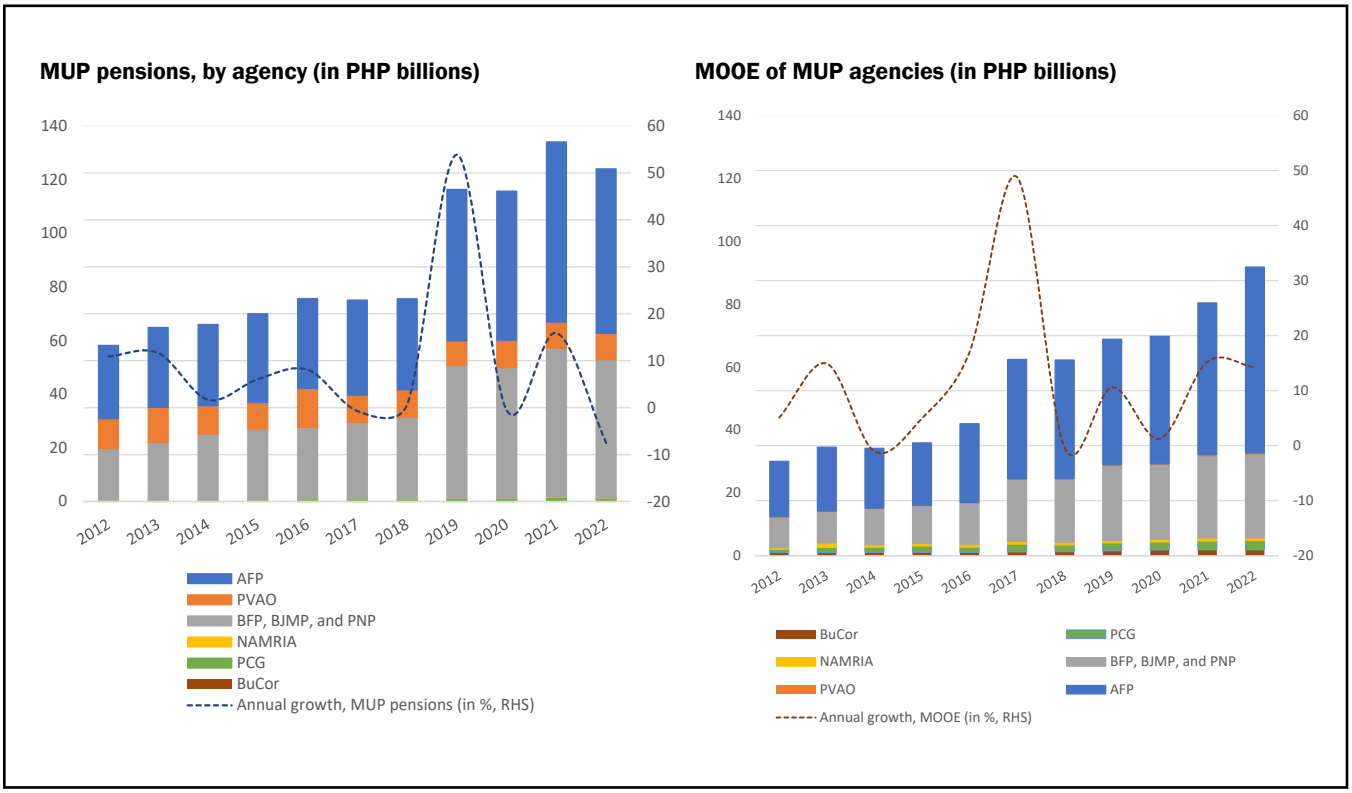
National government expenditure for MUP pensions (in PHP billions)



Looking at the 2022 distribution of total MUP pensions, the AFP takes about 49.4 percent of the total, while the BFP, BJMP, and PNP under the Department of Interior and Local Government (DILG) account for 41.6 percent. A small decline is seen in the annual growth spending for these pensions in 2022, while the MOOE of the MUP agencies recorded a slight slowdown.

PS = personnel services, MOOE = maintenance and other operating expenditures; CO = capital outlay; MUP = military and uniformed personnel
Note: 2023 and 2024 are programmed and proposed appropriations by the national government as of writing, respectively. Personnel services of MUP include basic pay, other compensation common to all, other compensation for specific groups, police benefits, and other benefits.
Source: DBM (various years)

Box 1.1 *(continued)*



MUP = Military and uniformed personnel; PS = personnel services, MOOE = maintenance and other operating expenditures; CO = capital outlay; AFP = Armed Forces of the Philippines; PVAO = Philippine Veterans Affairs Office; BFP = Bureau of Fire Protection, BJMP = Bureau of Jail Management and Penology; PNP = Philippine National Police; NAMRIA = National Mapping and Resources Information Authority; PCG = Philippine Coast Guard; BuCor = Bureau of Corrections; RHS = right-hand side.
Source: DBM (various years)

Launched in 2015, India's National Investment and Infrastructure Fund (NIIF) appeared to stand out in the group. It then hoped to bankroll projects by drawing coinvestors from other SWFs and pension funds and seemingly succeeded in doing so. It attracted large institutional investors with global portfolios and often received positive reviews from industry observers (e.g., Rundell [2023], who called it "a poster child of development finance").

In 2021, Indonesia introduced a sovereign development fund called the Indonesia Investment Authority (INA), partly modeled after the NIIF and built to draw FDIs into the country (Tang 2022). The INA was launched in the middle of a pandemic, yet it showed moderate success. It entered USD 28 billion in (nonbinding) investment agreements with other SWFs by the first half of 2023 from a USD 5 billion seeding, although with the Indonesian government as the only investor as of end-2022 (Guild 2023; Ruehl 2023).[22]

[22] By end-2022, the INA held mainly cash (USD 1.5 billion) and equity stakes in two profitable state-owned banks (USD 4.3 billion).

With a newly installed chief executive officer, the completion of the Maharlika Investment Corporation's (MIC) board (composed of nine persons, three of whom must be independent) and its expected initial capital of about USD 2.25 billion (based on current exchange rates), the Philippines has followed suit.[23] However, the government's intentions and fundamental goals and ways of meeting these goals are not yet as clear as those of its regional neighbors. Hopefully, the MIF's leaders can cohesively frame their investment beliefs and strategic vision for the fund for the latter to have sufficiently clear mandates.

Unlike the traditional (surplus-derived) SWFs, the new funds that have emerged are typically not designed to meet specific macroeconomic goals (e.g., preventing inflation, excessive exchange rate appreciation that may weaken sectors' competitiveness) apart from attracting capital, and generally have dual or even multiple purposes, combining various development and financial goals. They most certainly do not preclude domestic investment in what has been considered best practice for SWFs and are thus exposed to risks associated with public financial management that may worsen with multiple objectives.[24]

One can expect such funds to be a constant source of conflict, as strategic goals and commercial interests do not always naturally align.[25] While national investments should match the national government's requirements, as what the government ideally strives for when crafting the public budget, the likelihood of turning a profit may be higher if investment decisions are kept free of political complexities and patronage. Fund success consequently hinges on finding ways to settle this conflict.

While differences with other state funds make the MIF a unique experiment on development financing, the government is advised to follow what has already worked in many cases for different types of sovereign funds. The MIF's adherence to the Santiago Principles, which is meant to ensure a "transparent and sound" governance structure based on "adequate operational controls, risk management, and accountability", is a good starting point, provided such principles are followed (Box 1.3). To build the fund's credibility, which will be from scratch, the most important task today entails appointing a truly independent board and professional management team to embody good governance, minimize the risk of political interference, and ensure the funds' goals are met. Anything less would place the fund at a disadvantage.

The MIF should clarify its role and find ways to handle multiple objectives. For instance, "strategic and profitable" investments in key sectors "to promote socioeconomic development" denote conflicting objectives

[23] In a Financial Innovations Lab study, the Milken Institute (2023) states that the Philippine government began considering an SWF as early as 2013, with a feasibility study by the DOF leading to the filing of a Senate bill in 2016. This was reportedly followed by a proposal to the Office of the President in 2020 to establish a Philippine Investment Authority. Plans for setting up a SWF were revived in 2022 after the elections and under the new administration.

[24] The default recommendation for the traditional SWFs is to invest the money abroad rather than at home to support macroeconomic goals and lower the associated public spending risk. Domestic investment is discouraged, as SWFs are extrabudgetary funds that operate outside of the budget process, and thus, investing them domestically could weaken public financial management systems and lead to poor decisions (Bauer 2015).

[25] This has been the case even with the NIIF, where fund leadership and the government have clashed at times over investment choices and resource allocation (e.g., Singh and Batia 2022).

that may be difficult to reconcile. Other sovereign development funds have resolved this by adopting dual or even multiple investment structures (Milken Institute 2023).[26] The strategy adopted, however, would have to differ depending on the type of fund (i.e., risk tolerance and expected returns), and so too the needed expertise, with firewalls ideally built between these funds.

With the country's fiscal position still recovering from the pandemic crisis, economic managers must ensure that establishing the MIF will not draw from already scarce state funds.[27] The ASEAN+3 Macroeconomic Research Office (AMRO 2023a), a regional macroeconomic surveillance organization, has cited this as a "potential risk". It noted how government agencies' contribution to the fund's capital "could crowd out planned expenditure in other areas".[28] AMRO additionally noted that, while the GFI's contributions are small in relation to the size of their investible funds (less than 4%), these could still impact their financial positions if losses occur.[29]

This latter funding source, which accounts for 60 percent of the seed capital, is what makes the MIF a unique experiment.[30] State-owned development banks are stand-alone entities with their own (development) mandates. Like any state-owned company, they ideally operate at arm's length from the government. Indeed, in managing national wealth, it is the usual choice among state-owned entities—SWFs, development companies, and development banks—with the latter considered a better channel for domestic investment (Bauer 2015).[31]

The GFIs have now, in effect, turned over some control of their portfolio to the MIC—another state-owned corporation—although minimally and with board representation in the fund. Turning over the assigned contributions to the MIF implies a reduction in these banks' lending capacity, presumably by a certain multiple of the amount (if capital is not correspondingly increased). At least one may fail to meet the minimum capital requirements because of the contributions and breach limits prescribed by the MIF law, with investments likely exceeding one-fourth of its net worth.[32] The government must take

[26] For instance, the NIIF has a Master Fund for investment in infrastructure, a Fund of Funds managed by fund managers with good track records, and a Strategic Opportunities Fund, which provides long-term capital to strategic sectors that can drive economic growth.

[27] Apart from BSP dividends amounting to PHP 50 billion issued during the first two fiscal years of effectivity of the MIF law, other national government contributions include 10 percent of the national government's share from the Philippine Amusement and Gaming Corporation income and 10 percent of gaming revenues of other government-owned gaming operators and/or regulators, both for a period of five years, plus the privatization of state assets and other sources (e.g., royalties and special assessments).

[28] This is true for GFIs. For example, was exempted from remitting dividends (from last year's earnings) to the national government to help preserve its capital. By law, government-owned and controlled corporations are required to remit at least 50 percent pf their earnings to the NG.

[29] Around 3.7 and 3 percent of the investible funds of the LBP and DBP, respectively (AMRO 2023).

[30] Tapping into GFIs' investible funds and BSP dividends has been the result of a difficult search for seed capital for the MIF. Proposed funding sources initially included the country's foreign exchange reserves and contributions from the Social Security System and the Government Service Insurance System (GSIS). These were all met with strong public criticism and eventually dropped. The initial target had been to create a PHP 275-billion fund.

[31] Banks also have a known function and ability to screen and monitor their loans (e.g., Diamond 1984).

[32] With respect to their participation in the fund, sustaining sufficient capital is critical for these GFIs. The LBP's 2022 annual report reported a capital adequacy ratio (CAR) of 14.4 percent and Common Equity Tier 1 (CET 1) of 13.9 percent (LBP 2023). Considering the PHP 50-billion contribution to the MIF, the CAR and CET 1 of LBP go down to 10.7 percent and 10.2 percent. On the other hand, the DBP had a CAR of 12.6 percent and a CET 1 of 11.7 percent (DBP 2023). Netting out the PHP 25 billion to the MIF, the CAR and CET 1 declines to 8.3 percent and 7.4 percent, which is well below the BSP's minimum requirement. As of June 2023, the LBP's PHP 50-billion contribution to the fund was 21 percent of its total equity, while the DBP's PHP 25 billion was equivalent to 30 percent—beyond the 25 percent limit set in RA 11954 (BSP 2023f, 2023h).

precautions to ensure that these events do not fuel uncertainty and harm the country's overall financial stability.[33]

The most beneficial role the MIF can play is to help pull in new capital from multilaterals, other sovereign funds and large institutional investors, and even private funds, particularly in areas needing development, such as infrastructure. For instance, there are opportunities in green investment, where demand is rising due to climate-change-related goals.[34]

Some observers have noted, for instance, the advantage of inviting multilaterals to invest early in the setting up of the MIF, to benefit from their knowledge and governance inputs from the beginning and over the long term, thus enhancing fund credibility and governance quality and further unlocking capital from private investors (e.g., Bernardo 2023). The fund can also participate in public-private partnerships (PPP) under transparent and competitive bidding processes to develop key infrastructures needed by the country, as well as generate much-needed investment to achieve both strategic and profit-oriented goals.[35]

In the end, the success of the MIF will depend on whether it has enhanced capital (and use of capital), boosted infrastructure development, fostered FDIs, and promoted economic growth, all of which, while turning in a profit or otherwise proving itself viable. It will be—and should be—closely monitored by the public, as these funds are now beyond the usual budgetary controls, with strategic decisions affecting the entire country now entrusted to the MIC's board.[36]

This underscores the need for clear mandates and suitable and transparent performance benchmarks. However, these may be difficult to establish, especially for development projects, as the results may not readily appear in the fund's balance sheet. Returns may not be financial or take years to materialize, demanding a longer-term horizon for assessing fund performance. Establishing a credible return benchmark that cannot be used to mask poor performance—possibly from fund misuse and corruption—will be an important challenge for the MIF and the country's economic managers heading it.

[33] For instance, according to some legal opinions, the MIC board itself can opt to accept staggered contributions from the GFIs. This loosens the constraints on these banks' lending and matches the timeline of investment funds of similar size, which may take several years to deploy. This is typically the case for large infrastructure projects.

[34] Moreover, diluting the government's share to less than 50 percent would allow for greater operational flexibility. The NIIF is 49 percent owned by the Indian government and considered the right balance for providing sovereign comfort to investors and the discipline required to successfully run a sovereign development fund (Rundell 2023; Singh and Batia 2023).

[35] As of time of publishing this edition, the newly appointed MIC president announced the fund's interest in participating in private-sector-led public-private partnership (PPP) projects meant to create high-quality infrastructures following the PPP law's enactment (Simeon 2023). He proposed the MIC's as a "co-grantor", allowing it to manage PPP projects experiencing delays to help speed up the process.

[36] The MIC board consists of (a) the Secretary of Finance as Chairperson in an ex-officio capacity, (b) the MIC President and CEO as Vice-Chairperson, (c) the LBP President and CEO, (d) the DBP President and CEO, (e) two regular directors, (f) and three independent directors from the private sector.

Box 1.2
The MIF at a glance

Created under RA 11954, which was signed on July 18, 2023, the MIF is geared toward socioeconomic development through the pooling and redirection of funds from GFIs and contributions from the national government and other sources into investments for optimal returns and economic development. The management shall adhere to the Santiago Principles (see Box 1.3).

Objectives

Rechanel investible funds from GFIs into diversified financial assets and development projects

Earn returns; promote long-term value; maintain standards of liquidity, safety, and yield

Achieve socioeconomic development

Funding

Authorized capital stock
PHP 500 billion (5 bn shares)

Common shares (3.75 bn)
PHP 375 billion

To be subscribed by the national government, its agents or instrumentalities, including GOCCs or GFIs

With PHP 125 bn initially subscribed by

LBP	PHP 50 billion
DBP	PHP 25 billion
National government	PHP 50 billion

Preferred shares (1.25 bn)
PHP 125 billion

To be made available for subscription by the national government, its agencies or instrumentalities, GOCCs or GFIs; reputable private financial institutions, except SSS, GSIS, PhilHealth, Pag-IBIG Fund, OWWA, and PVAO Pension Fund

Contributions from the National Government shall be sourced from:

- BSP dividends
- Government share in PAGCOR
- DOF Privatization and Management Office (PMO)
- Other sources based on the fiscal regime to be implemented by the National Government

Box 1.2 *(continued)*

- The Board of Directors shall govern the MIF. It shall consist of the Secretary of Finance, sitting in an ex officio capacity; President and Chief Executive Officer as Vice-Chairperson; LBP President and CEO; DBP President and CEO; two regular directors; and three independent directors from the private sector.
- The Advisory Body shall guide the Board of Directors on investment and risk management. It shall consist of the DBM and NEDA secretaries and the Treasurer of the Philippines.
- The Risk Management Committee shall implement suitable actions to maintain the balance between risk and reward in business endeavors.
- The Audit Committee shall supervise internal and external audits and recommend an independent auditor.
- The Joint Congressional Oversight Committee shall monitor and evaluate the implementation of RA 11954.

Investments		
3. Adherence to limitations and safeguards shall ensure sound management.		
2. Business decisions are to be guided by the investment policy.		
1. The nature of investments to be made under the MIF are: • Cash, foreign currencies, metals, and other tradeable commodities • Fixed income instruments • Domestic and foreign corporate bonds • Listed or unlisted equities • Islamic investments • Joint ventures or coinvestments and mergers and acquisitions • Mutualw and exchange-traded funds invested in underlying assets • Real estate and infrastructure projects • Programs and projects for sustainable development • Loans and guarantees to or participation in joint ventures or consortiums with Filipino and foreign investors • Other investments with sustainable and developmental impact Prohibited investments: Areas explicitly prohibited under existing laws and conventions	• Balance between risk and return of the overall portfolio • Investment policies • Risk management • Performance standards • International best practices • Rules and regulations where investments are domiciled • Procedural framework and cooperation among investors • Procedure for assessing, deploying, and liquidating investments • Disclosure and transparency mechanism • ESG standards • All other matters for compliance with MIF objectives	• Subject to investment policies, guidelines, and risk management limits and procedures, approved by the Board of Directors, guided by the Advisory Body • Fund activities shall be made public

MIF = Maharlika Investment Fund; GFI = government financial institutions; PHP = Philippine peso; GOCCs = government-owned and controlled corporations; LBP = Land Bank of the Philippines; DBP = Development Bank of the Philippines; bn = ; SSS = Social Security System; GSIS = Government Service Insurance System; PhilHealth = Philippine Health Insurance Corporation; Pag-IBIG Fund = Home Development Mutual fund; OWWA = Philippine Health Insurance Corporation; PVAO = Philippine Veterans Affairs Office; DBM = Department of Budget and Management; NEDA = National Economic and Development Authority; ESG = environmental, social, and corporate governance
Source: RA 11954

Box 1.3
The Santiago Principles

1	The **legal framework** for the SWF should be sound and support its effective operation and the achievement of its stated objective(s).
2	The **policy purpose** of the SWF should be clearly defined and publicly disclosed.
3	Where the SWF's activities have significant direct domestic **macroeconomic implications**, those activities should be closely coordinated with the domestic fiscal and monetary authorities to ensure consistency with the overall macroeconomic policies.
4	There should be clear and publicly **disclosed policies, rules, procedures, or arrangements** in relation to the SWF's general approach to funding, withdrawal, and spending operations.
5	The **relevant statistical data** pertaining to the SWF should be reported on a timely basis to the owner, or as otherwise required, for inclusion where appropriate in macroeconomic data sets.
6	The **governance framework** for the SWF should be sound and establish a clear and effective division of roles and responsibilities to facilitate accountability and operational independence in managing the SWF to pursue its objectives.
7	The **owner** should set the objectives of the SWF, appoint the members of its governing body(ies) in accordance with clearly defined procedures, and exercise oversight over the SWF's operations.
8	The **governing body(ies)** should act in the best interests of the SWF and have a clear mandate and adequate authority and competency to carry out its functions.
9	The **operational management** of the SWF should implement the SWF's strategies independently and in accordance with clearly defined responsibilities.
10	The **accountability framework** for the SWF's operations should be clearly defined in the relevant legislation, charter, other constitutive documents, or management agreement.
11	An **annual report and accompanying financial statements** on the SWF's operations and performance should be prepared in a timely fashion and in accordance with recognized international or national accounting standards in a consistent manner.
12	The SWF's operations and financial statements should be audited annually in accordance with recognized international or national **auditing standards** in a consistent manner.
13	**Professional and ethical standards** should be clearly defined and made known to the members of the SWF's governing body(ies), management, and staff.
14	**Dealing with third parties** for the purpose of the SWF's operational management should be based on economic and financial grounds and follow clear rules and procedures.

Box 1.3

15	SWF operations and activities in host countries should be conducted in compliance with all applicable **regulatory and disclosure requirements** of the countries in which they operate.
16	The governance framework and objectives and the manner in which the SWF's management is **operationally independent** of the owner should be publicly disclosed.
17	**Relevant financial information** regarding the SWF should be publicly disclosed to demonstrate its economic and financial orientation to contribute to stability in international financial markets and enhance trust in recipient countries.
18	The SWF's **investment policy** should be clear and consistent with its defined objectives, risk tolerance, and investment strategy, as set by the owner or the governing body(ies), and be based on sound portfolio management principles.
19	*The SWF's investment decisions should aim to maximize **risk-adjusted financial returns** in a manner consistent with its investment policy and based on economic and financial grounds.*
20	The SWF should not seek or take advantage of privileged information or inappropriate influence by the broader government in **competing with private entities.**
21	SWFs view **shareholder ownership** rights as a fundamental element of their equity investments' value.
22	The SWF should have a framework that identifies, assesses, and manages the **risks of its operations.**
23	The assets and investment performance (absolute and relative to benchmarks, if any) of the SWF should be measured and reported to the owner according to **clearly defined principles or standards.**
24	A process of **regular review** of the implementation of the GAPP should be engaged in by or on behalf of the SWF.

SWF = sovereign wealth funds; GAPP = generally accepted principles and practices
Source: International Working Group of Sovereign Wealth Funds (2008)

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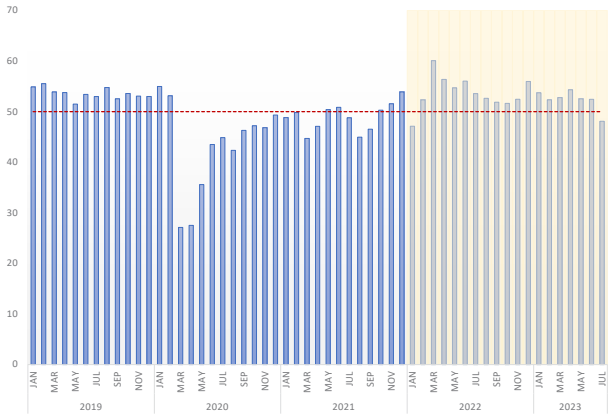
Appendices

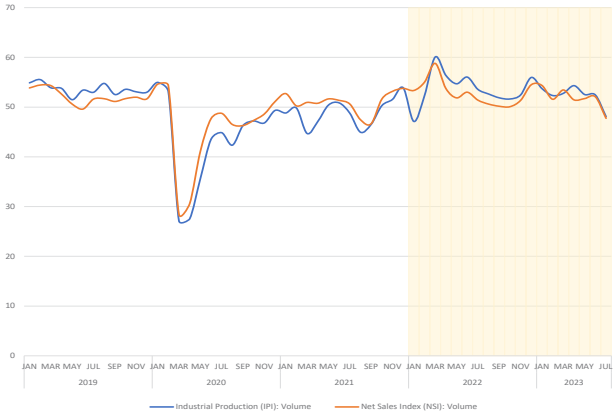
Appendix 1

Box 1
Leading indicators

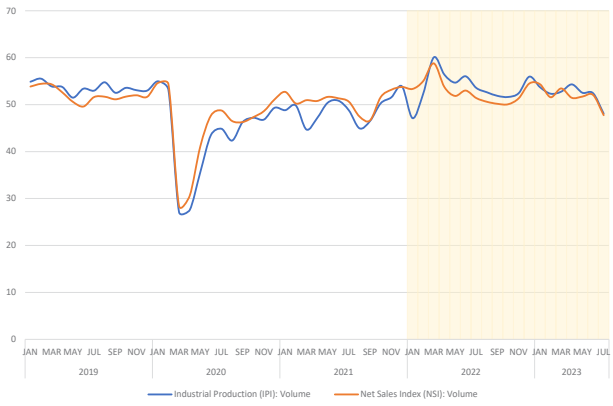
Production activity

Healthier PMI[1] scores in 2022 suggest improvement in economic activity. Unlike the previous year, continuous expansion was observed, with only the January score falling below the critical level of 50. The highest reading was recorded in March, and the lowest in October. So far, 2023 has been registering generally lower scores, dipping below the critical value in July.





As with PMI, readings of industrial production and net sales (volume) indices[2] hit the highest point in march and lowest in october. Growth in export of goods, which slowed down in 2022, was driven by electronic products, followed by ignition wiring sets and agricultural products.



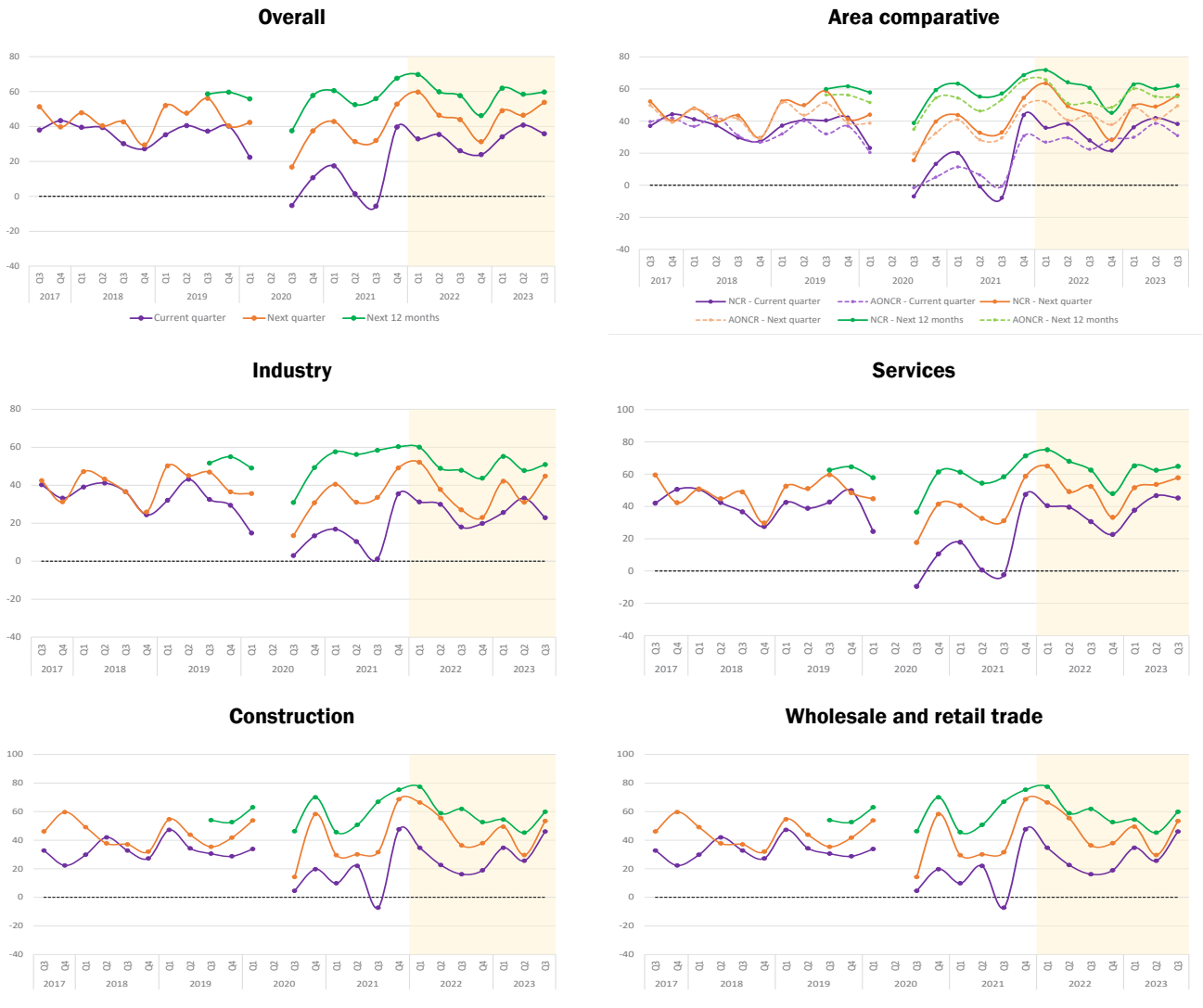
PMI = purchasing managers index; NSI = net sale index
Sources: PSA via CEIC Data (2023k, 2023n, 2023t, 2023x)

[1] This index from the Philippine Institute for Supply Management was used in gauging economic activity. It was based on a survey of purchasing executives on current market conditions. Scores above 50 indicate an expansion, while those below 50 indicate a contraction.
[2] These indicators are based on the findings of the Monthly Integrated Survey of Selected Industries. Both are comparisons with values from base year 2018.

Box 2
Business Expectations Survey [3, 4]

Results of the BES reflect an early boost and sequent slump in 2022. The overall outlook among firms for all periods (current quarter, next quarter, next 12 months) was more positive, rising in the first half due to the relaxation of pandemic restrictions and reopening of the economy, increase in demand, and election spending. The fourth quarter slump is attributed to higher inflation, peso depreciation, weaker demand, higher costs of production, and higher interest rates.

Business views for the current quarter were more positive in the first half of 2023. The outlook for future periods turned less upbeat in the second quarter, due to stronger inflation, higher interest rates, and weaker demand, as well as seasonal and climate challenges.



BES = Business Expectations Survey; Q = quarter; AONCR = areas outside National Capital Region
Source: BSP (2023d)

[3] The BES is a quarterly study of the central bank that analyzes the outlook of firms on business indicators, such as the macroeconomy, own operations, expansion plans, and select economic indicators.
[4] Reports use a diffusion index approach. As such, positive (negative) scores imply that respondents with a positive (negative) outlook outnumber those with a negative (positive) outlook.

Box 3
Consumer Expectations Survey[5,6]

The CES shows that although views for the current quarter in 2022 remain more pessimistic, they improved from 2021. Views for the next quarter and the next 12 months have also improved and remain more positive. Mid-year peaks are attributed to better work opportunities and pandemic recovery and expectations of good governance. Pessimism in the fourth quarter was due to inflation, low income, and fewer work opportunities.

Figures for the first half of 2023 point to weaker pessimism for the current quarter. Outlook for future periods meanwhile turn less optimistic due to inflation, lower income and unemployment, and government policies, among others.

CES = Consumer Expectations Survey; Q = quarter; AONCR = areas outside National Capital Region
Source: BSP (2023e)

[5] The CES is a quarterly survey that examines consumer outlook on indicators, such as economic condition, family financial situation, and family income; buying conditions, savings, loans, remittances; and macroeconomic indicators.
[6] Reports use a diffusion index approach. As such, positive (negative) scores imply that respondents with a positive (negative) outlook outnumber those with a negative (positive) outlook.

Box 4
Senior Bank Loan Officers' Survey[7,8]

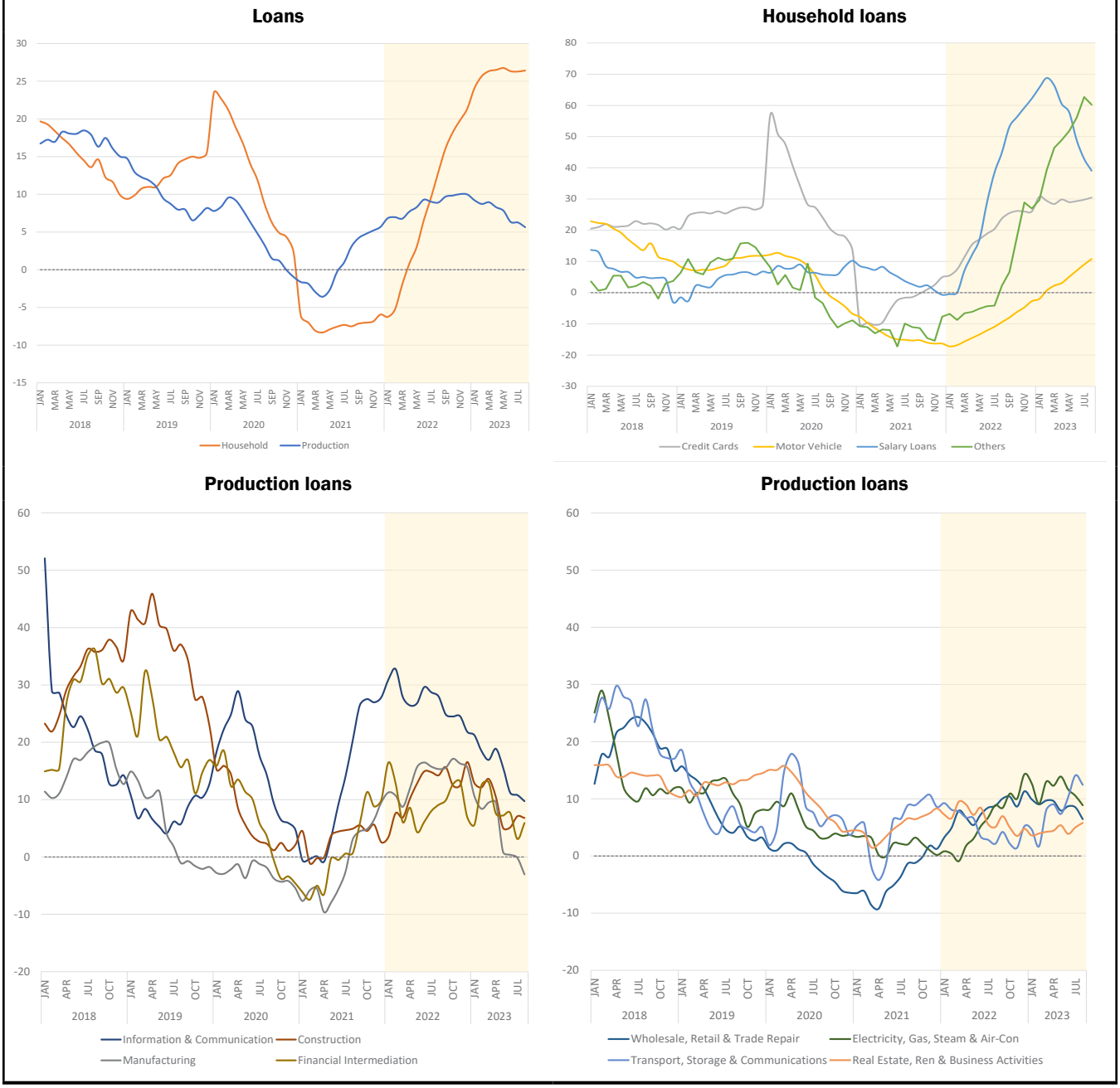
Positive DI scores on the SLOS indicate a net tightening of lending terms in 2022. Following a surge (24.0 points) in the first quarter, the score declined in the second quarter (15.2 points) and stabilized for the remainder of the year. The overall demand meanwhile saw a gradual decline. Net tightening persists in 2023, although the index score is lower in the second quarter. Demand score correspondingly increased.

SLOS = Senior Bank Loan Officers' Survey; DI = diffusion index; Q = quarter; SMEs = small and micro enterprises
Source: BSP via CEIC Data (2023ab)

[7] Conducted on a quarterly basis; the SLOS gauges credit activity based on lending behavior data collected from banks.
[8] In describing standards, a positive diffusion index implies net tightening, which means more banks are tightening than easing lending terms. A negative score implies net easing. In describing demand, a positive score indicates a net increase in loan demand. A negative score implies a net decrease.

Box 5
Loan activity

Loan activity in production continued to gather pace in 2022. Faster growth was seen in information and communication, construction, manufacturing, and financial intermediation. Household loan activity accelerated driven by increased demand across all components. In 2023, activity among households plateaued while production posted a slowdown.



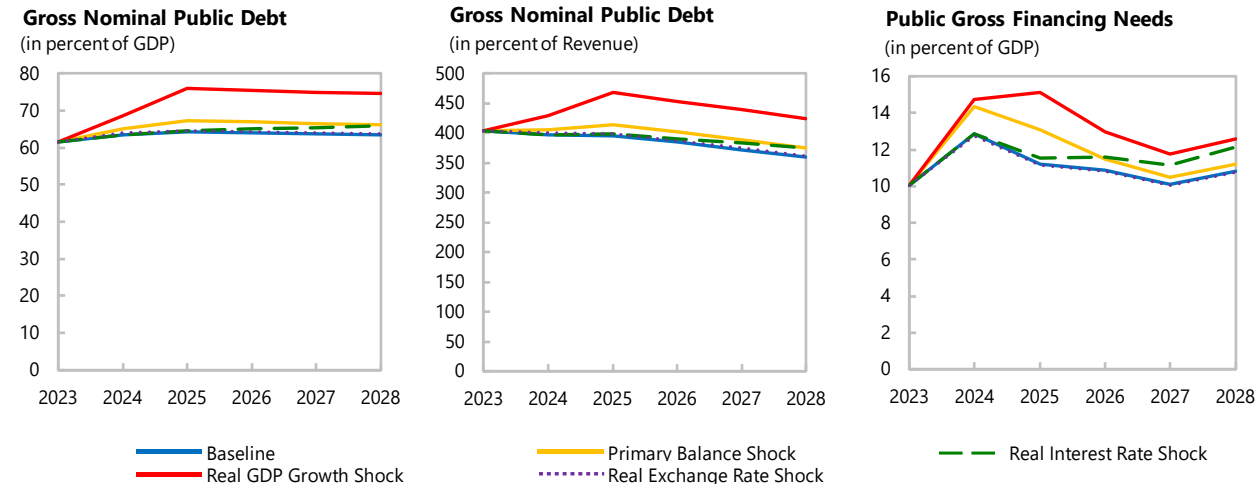
Source: BSP via CEIC Data (2023q)

Appendix 2

The stress tests reveal that a real GDP growth shock, such as sizeable disruptions that would again force the economy to contract, is expected to adversely affect the debt ratio the most. This is followed by a primary balance shock, which would come should there be a significant need for spending such as a severe El Niño, large-scale cost-of-living support measures, or contingent liabilities (e.g., social security institutions and MUP pensions). Significant loss of revenue widening the primary deficit would also affect the country's fiscal position.

Figure 1
DSA stress tests and debt profile vulnerabilities

a. Macro-fiscal stress tests



Additional Stress Tests

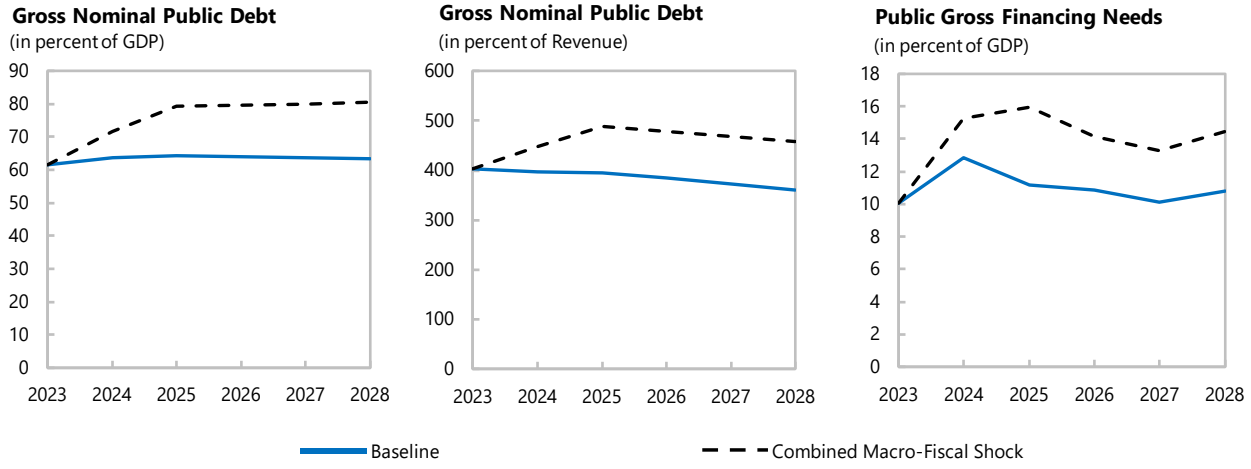
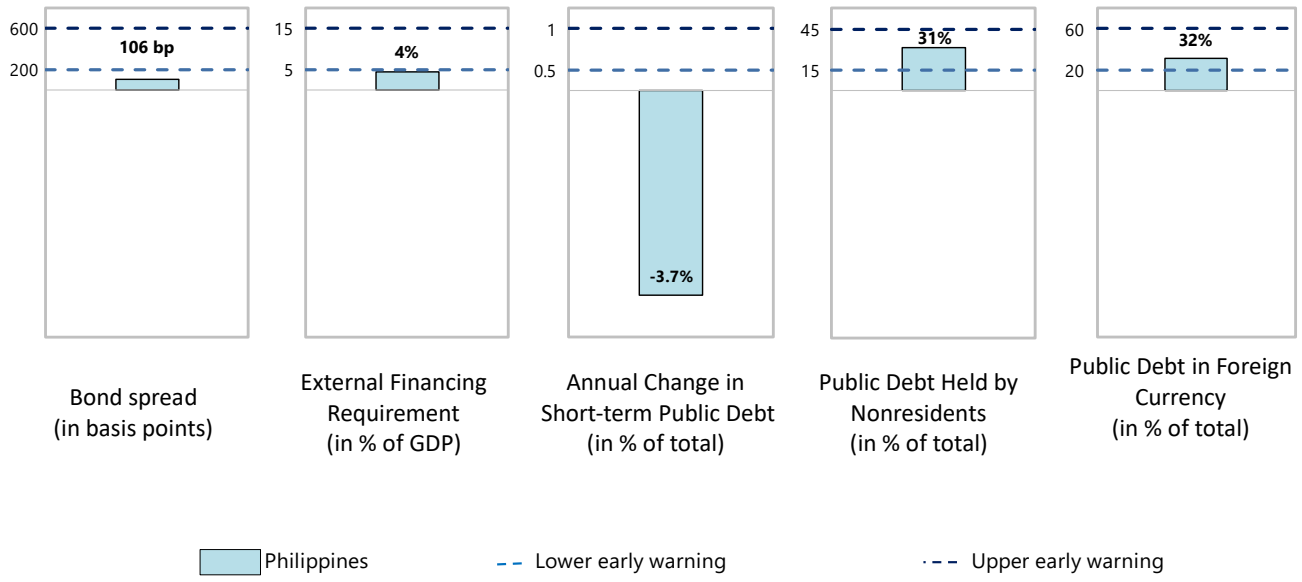


Figure 1 ***(continued)***

b. Debt profile vulnerabilities



GDP = gross domestic product
Note: EMBIG bond spread
Source: Authors' calculations using the IMF-DSA template

Appendix 3

FCI

To compute a high-frequency (monthly) FCI for the Philippines, a technique based on Hatzius et al. (2010) is adopted. This method condenses information from a large dataset to a few summary variables (common factors or principal components). This technique differs from standard principal component analysis (PCA) by allowing for unbalanced panels (time series with different beginning and ending dates), a useful feature that lengthens data history and broadens data coverage. To ensure that the FCI holds unique information about the future state of the economy, the method is applied to financial shocks obtained by first eliminating cyclical influences from the financial variables.

The following common factor model is applied: $v_{it} = \lambda_i' F_t + u_{it}$, where F_t is a k x 1 vector of unobserved financial factors capturing the common variation among the different financial indicators, and v_{it} is the error term (i.e., the financial shock corresponding to variable i) in a regression of the ith financial variable X_{it} on a vector of macroeconomic variables Y_t comprising output growth and inflation. The error term u_{it} is unrelated to both F_t and Y_t and assumed to be uncorrelated (or weakly correlated) across variables.

With an unbalanced panel, F_t is computed iteratively using least squares estimation.[1] The least squares estimator $\hat{F}_t$ solves the problem: $min_{\lambda_t, F_t} \sum_{i,t} (\hat{v}_{it} - \lambda_i' F_t)^2$. The $\hat{F}_t$ computed from a one-factor model represents the FCI adopted in this chapter.

Prior to estimation, all financial variables (i.e., 49 in total comprising yields, spreads, asset prices, credit quantities, liquidity measures, and financial stress and risk indicators) are transformed as needed (e.g., for stationarity) and normalized (i.e., demeaned and divided by their standard deviations) to ensure measurement units and data fluctuations do not unduly influence the extracted common factors. They are then regressed against current and two lagged values of log changes in prices (as measured by CPI) and economic output (as proxied by an industrial production index) to obtain the corresponding financial shock.

[1] This was performed using MATLAB codes from Debuque-Gonzales and Gochoco-Bautista (2017).

CHAPTER 2

Policy Updates

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Mark Anthony A. Barral
Connie Bayudan-Dacuycuy
Roehlano M. Briones
Jethro El L. Camara
Lyle Daryll D. Casas
Sonny N. Domingo
Ma. Christina F. Epetia
Kris A. Francisco
Kimberly R. Librero
Neil Irwin S. Moreno
Adoracion M. Navarro
John Joseph S. Ocbina
Queen Cel A. Oren
Robert Hector G. Palomar
Francis Mark A. Quimba
Tatum P. Ramos
Ramonette B. Serafica
Leih Maruss V. Sinsay
Aubrey D. Tabuga
Therese Jules P. Tomas
Valerie Gilbert T. Ulep
Jhanna Uy
Anna Rita P. Vargas

Poverty reduction and social protection

The COVID-19 pandemic's adverse effects on the Philippine economy and jobs led to a reversal in the poverty trend, partially eroding the country's recent gains in poverty reduction. Based on recent estimates by the Philippine Statistics Authority (PSA), the poverty rate of the population increased to 18.1 percent in 2021 from 16.7 percent in 2018 (PSA 2022a). One of the government's overarching goals, as stated in the *Philippine Development Plan (PDP) 2023–2028*, is to accelerate poverty reduction through social, economic, and institutional transformation initiatives. The government targets to reduce the poverty rate to 9 percent of the population by 2028 through "rapid, sustained, and inclusive growth that will create more, better, and resilient jobs" (NEDA 2023a, p.xv). Recent initiatives and policies are focused on reducing poverty and benefiting vulnerable groups.

Agricultural sector and agrarian reform beneficiaries (ARBs)

A noteworthy initiative on poverty reduction is the agricultural sector's improved position in the government's development agenda. Farmers and fisherfolk remain the poorest among the basic sectors at 30 percent and 30.6 percent of their populations, respectively, based on 2021 estimates of the PSA (CNN Philippines 2023a). Uplifting the agriculture sector can benefit the poorest groups. The current administration has committed to boosting the sector's productivity through increased budget allocation. The budget allocation for the Department of Agriculture (DA) and its attached agencies jumped by 34.5 percent from PHP 117.3 billion in 2022 to PHP 157.8 billion in 2023 (DA 2022). The proposed DA budget for 2024, amounting to PHP 197.83 billion, poses an increase of 6 percent from 2023. The increased funding will go to DA's national programs on commodities like rice, corn, livestock, and

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high-value crops, where efforts will focus on increasing productivity.

Apart from prioritizing the agricultural sector, easing the debt burden of ARBs is a major initiative of the government to improve the lives of farmers and their families. Signed into law on July 7, 2023, Republic Act (RA) 11953 or the New Agrarian Emancipation Act "condones all loans, including interests, penalties, and surcharges incurred by ARBs from land awarded to them under Presidential Decree 27 [s. 1972], and RAs 6657 and 9700" (DAR 2023, par. 4). This policy has benefited 610,054 ARBs covering 1.17 million hectares (ha) of awarded land. The unpaid debt under the condonation sums up to PHP 57.56 billion. Furthermore, the new law enables ARBs' inclusion in the national database called the Registry System for the Basic Sectors in Agriculture. ARBs will also be entitled to all support services that DA and other government agencies provide to farmers.

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Low-income, food-poor households

The Department of Social Welfare and Development (DSWD) launched a food stamp program (FSP) on July 18, 2023 to alleviate hunger among 1 million low-income and food-poor households identified by the PSA, whose data showed that 6.55 million individuals or 1.04 million households did not have enough income to meet even the basic food requirements in 2021. The main idea behind the FSP is human capital investments (PNA 2023a). For the program's pilot implementation, beneficiaries will be given PHP 3,000 in food credits from July to December 2023. The program has initially covered 3,000 eligible households. It targets 300,000 more household beneficiaries for 2024.

Electronic benefit transfer (EBT) cards will be provided to eligible households under the FSP. Each EBT card has PHP 3,000 worth of credits, which beneficiaries can use to purchase nutrition-rich food items from DSWD-accredited partner retailers (PNA 2023b). Nutrition development classes and reskilling programs will be conducted through the FSP. Its pilot implementation is funded with grants from the World Food Program and the Asian Development Bank.

Persons with disabilities (PWDs)

The 2016 National Disability Prevalence Survey conducted by the PSA showed that 12 percent of the population aged 15 years and above suffered from severe disabilities, while 70 percent had mild to moderate disabilities (PSA 2019). PWDs who are poor face multiple constraints in their daily and independent living and meeting their healthcare needs. Government initiatives include establishing a support fund to augment the existing national and local programs and provisions for the improved employment and daily living of PWDs.


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Senate Bill (SB) 1602 proposes the Disability Support Fund Act. It aims to certify PWDs under the Disability Assessment and Determination System (DADS) and provide each beneficiary with a monthly cash assistance of PHP 2,000. This amount will be indexed to inflation. The bill seeks to address the gaps in the implementation of national and local government programs. It also proposes funding assistance for local government units (LGUs) and accredited nongovernment organizations (NGOs) to establish responsive services for PWDs. The target beneficiaries include those who have psychosocial disabilities; chronic or life-long illnesses; and learning, mental, visual, and communication (i.e., hearing, speech, and language) disabilities. While the proposed law covers all PWDs who will be initially (i.e., first three years) certified under the DADS, the provision of a regular stipend will prioritize children with disabilities, adults with significant disabilities, and groups facing the highest disability costs and barriers (SB 1602). In the second phase (i.e., the next three years) of the program's implementation, those with no or low income and who face disability-related costs will be included in the provision of a monthly stipend. In the third phase (i.e., six years after the initial implementation), all other PWDs will be entitled to the monthly stipend.

Apart from the Disability Support Fund, SB 1433 aims to increase PWDs' employment rate in the public and private sectors. It seeks to incentivize employers who hire PWDs as regular workers, provide a monthly stipend of PHP 500 to each beneficiary (provided they are not covered by any other government assistance), give PWDs assistive devices and technology

services, and exempt PWDs from passport processing fees and other fees. Meanwhile, House Bill (HB) 8440 aims to reduce the burden on persons with permanent disabilities. If HB 8440 passes into law, PWDs will be entitled to a lifetime ID card instead of one that must be renewed every three years.

Social enterprise for poverty reduction

There are several proposals (i.e., SBs 97, 536, 583, 782, and 1041) pending at the Senate for poverty reduction through the institutionalization of the Poverty Reduction through Social Entrepreneurship Program. These bills intend to incentivize and promote social enterprises and integrate them into the national poverty reduction strategy. Furthermore, the proposals aim to establish a Social Enterprise Development Council or the National Enterprise Development Council for the development and promotion of social enterprises in the country. Under these councils, various institutions and funds will be created, such as the Center for Social Enterprise Development and the Social Enterprise Development Fund. The bills outline incentives and benefits like special credit windows, social enterprise guarantee funds, tax exemptions, and insurance for social enterprises and their stakeholders. Social entrepreneurship will be integrated into the school curriculum to raise awareness about its importance in poverty alleviation. These bills emphasize the significance of social enterprises in poverty alleviation and providing the necessary support and resources to foster their growth.

Financial literacy and tertiary education

Legislation to address poverty through education has been introduced in both the House of Representatives and the Senate.

HB 3135 seeks to declare a national policy promoting financial literacy as a means of poverty alleviation and national development. It advocates for an inclusive approach by integrating financial education into schools, workplaces, and antipoverty programs, facilitating a multichannel delivery of learning tools and information. It proposes the establishment of the National Financial Literacy Council, which will formulate a national plan for financial education.

HB 4523 aims to help impoverished Filipino families have at least one college graduate member by institutionalizing the Expanded Student Grants-In-Aid Program for Poverty Alleviation. Under this policy, a student-grantee from among the household beneficiaries of the *Pantawid Pamilyang Pilipino* Program will receive a maximum amount of PHP 60,000 every academic year, covering tuition and other related expenses.


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Cash transfer for impoverished households

HB 5547 aims to enhance and modernize the National Anti-Poverty Commission (NAPC), the agency responsible for coordinating the poverty reduction programs of the national and local governments and ensuring the active participation of marginalized sectors in the government's decisionmaking processes. The bill proposes allocating PHP 500,000,000 for the operation and administration of the NAPC and its modernization fund.

Two bills were filed in the House of Representatives to provide conditional grants to impoverished households. HB 856 aims to establish a mandatory cash transfer program for 12 million extremely poor Filipinos, while HB 867 proposes a monthly rice subsidy program.

Gender

The Philippines continues to lead Asia in pursuing gender parity. Based on the Global Gender Gap Index by the World Economic Forum, the country has steadily retained its top 20 ranking among over a hundred countries since 2006. Despite this, a significant change in economic participation and political empowerment is needed to close the remaining 21.7 percent gender gap (WEF 2022).

Much of the country's human capital remains unutilized, as working-age females choose not to enter the labor force (World Bank 2023), while males have consistently participated in the labor market, resulting in a persisting gendered pattern. Barriers arising from longstanding gender norms have identified females as responsible for the care and domestic work and males as providers and breadwinners for the family (Dugarova 2020; OECD 2021).

This is widely represented in the present culture, even in the labor market, wherein women are mostly seen working in care and service-oriented industries (e.g., domestic work, service industry, medical field) (UNESCAP 2022).

SBs 2050 and 584 aim to develop the current business environment to promote women involvement and empowerment. SB 24 pushes for an additional 15 days paid leave for the serious illness of an employee, their spouse, parent, or unmarried child, to factor in care work when most needed. There is considerable pressure to amend the Labor Code of the Philippines and expand existing protection for women, with several proposed legislation, namely SBs 931, 1827, 1808, and HB 4479. Under Senate Resolution (SR) 25, a review of the existing laws with provisions will be conducted to identify biases against women as mandated by RA 9710 (Magna Carta of Women).

Aside from labor concerns, laws relevant to family matters were proposed. SB 796 aims to establish a National Family Commission to formulate policies and programs that strengthen family ties. The proposed commission would be tasked to develop a national database on family concerns (i.e., problems and solutions). In cases where issues within the family cannot be resolved, legal separation (SB 719; SB 1198; SB 1969) and divorce (SB 147; SB 213; HB 00078) were raised in the Senate and the House of Representatives. As the only country, apart from the Vatican City, without a divorce law, the only way of separation in the Philippines is through nullity of marriage (void from the start), annulment (valid but voidable), and legal separation (still married). These processes take longer and require extensive resources. As such, vulnerable individuals (e.g., indigents, stay-at-home parents) are

forced to remain married despite experiencing extreme circumstances from their union like physical and emotional abuse (PCW n.d.). Progress was made in March 2023, with the House Committee on Population and Family Relations unanimously approving a bill reinstituting absolute divorce on the grounds of an abusive or dysfunctional relationship (CNN Philippines 2023b).

Several bills were filed in both houses of Congress to provide stronger protection against gender-based harassment and violence, such as SB 2232 and HBs 06971, 07376, and 07536, which intend to amend RA 11313 (Safe Spaces Act) and reevaluate existing penalties to completely capture the severity of the crime. There are also proposals to amend RA 9262 or the Anti-Violence against Women and Children Act of 2004. Specifically, HB 8009 and SB 1459 call for expanding the law to include electronic violence and other acts of violence and provide additional leave benefits for victims. As of May 2023, HB 8009 has passed the third and final reading, with a majority approving the bill.

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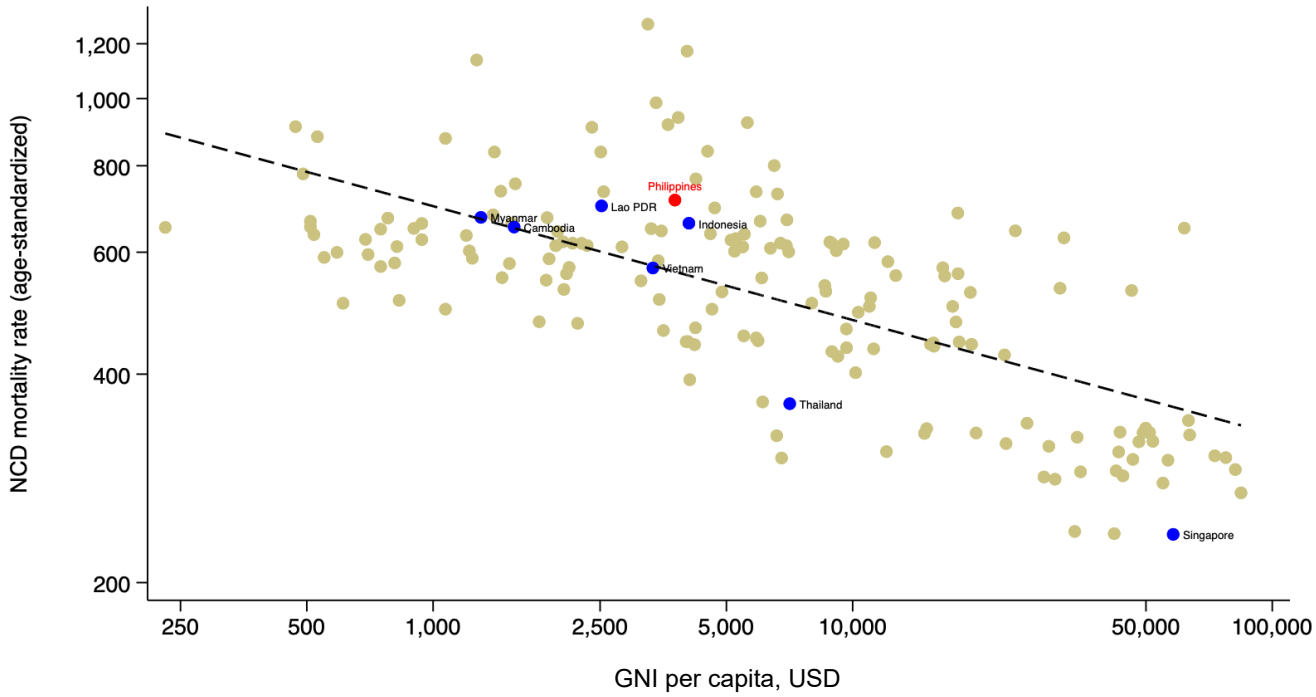
Significant legislation has championed gender inclusion, prompting numerous proposals of antidiscriminatory bills. SB 1600 or the SOGIESC (sexual orientation, gender identity, gender expression, or sex characteristics) Equality Act (in substitution of SBs 139, 245, and 442) seeks to protect individuals facing greater risk of violence and prejudice due to their SOGIESC. This was likewise filed in the House of Representatives under HBs 00222 and 05551. SB 708 and HB 04618 call for a national day against homophobia, biphobia, transphobia, and phobias for persons of diverse SOGIESC. A Comprehensive Anti-Discrimination Act was filed under SBs 108 and 1264, which not only prohibits discrimination based on sex and gender but also covers age, indigenous, racial or ethnic origin, disability, political inclination, human immunodeficiency virus status, and medical history, among others.

Health

The Philippines achieved significant progress in key health indicators in 2022 compared with the previous year. Excess mortality declined remarkably after a surge in 2021 due to the COVID-19 pandemic's impact (Our World In Data 2023). Mortalities related to COVID-19 decreased, as the disease dropped from the 3rd leading cause of death in 2021 to the 11th in 2022 (PSA 2023a). However, the country continues to grapple with noncommunicable diseases (NCDs)—the leading cause of premature deaths in the Philippines. Compared with its Association of Southeast Asian Nations (ASEAN) neighbors, the Philippines stands out for its high NCD mortality rate, even after accounting for differences in country age distributions (Figure 2.1) (WHO n.d.).

Figure 2.1
Age-standardized NCD mortality rates (per 100,000)



NCD = noncommunicable disease; PDR = People's Democratic Republic; GNI = gross national income; USD = United States dollar
Source: Authors' analysis of WHO database

Challenges in the country's maternal and child health (MCH) also persist. Although the under-5 mortality rate (U5MR) declined from 54 deaths per 1,000 live births in 1993 to 27 deaths per 1,000 live births in 2007, the improvement rate has stagnated in recent years. In 2022, U5MR remained at 26 deaths per 1,000 live births, relatively higher than those of the Philippines' regional peers. Maternal mortality shows a similar trend and even increased at the height of the pandemic (PSA 2023b), but reports suggest a decline in 2022 (ABS-CBN News 2023).

Socioeconomic disparities remain pressing. In 2022, the U5MR among the poorest 20 percent was four times higher than the U5MR among the richest 20 percent (PSA and ICFI 2023).

Basic health services

The COVID-19 pandemic exacerbated the already poor access to essential health services in the country. The Philippines' universal health coverage (UHC) service index, which measures the population coverage for essential health services, including reproductive, MCH, infectious diseases, NCDs, and service capacity and access, falls behind other ASEAN countries (WHO 2023b). Among the tracer services indicators are child immunization and cervical cancer screening. The 2022 National Demographic and Health Survey (NDHS) shows that only 72 percent of children received basic vaccinations in 2022, compared with the herd immunity target of 95 percent. Cervical and breast cancer screening rates are alarmingly low,

with only 1 percent of eligible individuals undergoing screening in 2022 (Figure 2.2).

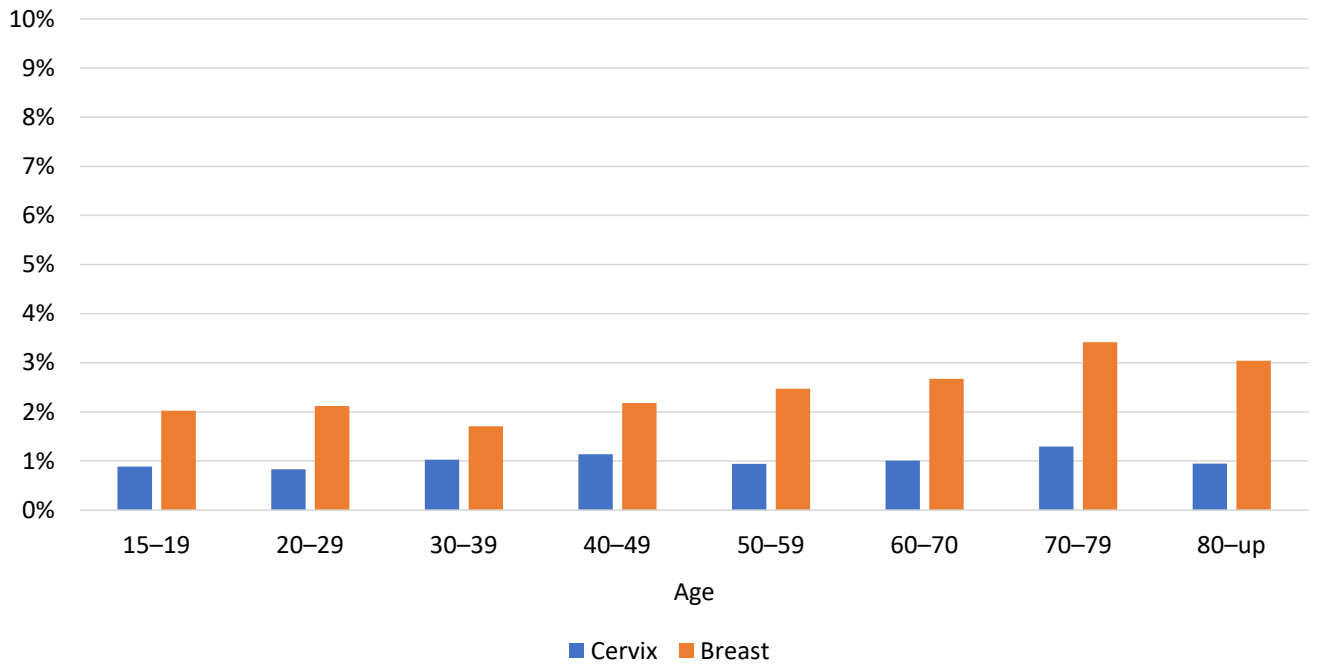
Tobacco use, including e-cigarettes, is a major concern and becoming more prevalent among the youth. An alarming 14.1 percent of Filipino youths use e-cigarettes (WHO 2019). Collaborative efforts are needed to enhance primary care services, raise awareness, and implement comprehensive tobacco control measures to ensure better health outcomes for the population.

Health sector investments

While the Philippines has had lower total health expenditures (THE) compared with its ASEAN peers, the country's THE increased threefold from 2010 to 2019 in real terms. Income growth and the government's prioritization of the health sector (WHO 2023a), including a surge in THE per capita during the COVID-19 crisis, propelled this growth, which reached USD 164 and USD 192 in 2020 and 2021, respectively (WHO 2023a). However, government health expenditure accounted for only about 1.5 percent of the Philippines' gross domestic product (GDP), significantly lower than those of Thailand, Viet Nam, Singapore, and Malaysia (WHO 2023a).

Before the pandemic, government spending on health per capita rose from USD 32 in 2010 to USD 58 in 2019 (in 2020 constant values). The share of government spending allocated to health increased from 42 percent in 2010 to 50 percent in 2019.

Figure 2.2
Prevalence of disease screening in the Philippines, 2022



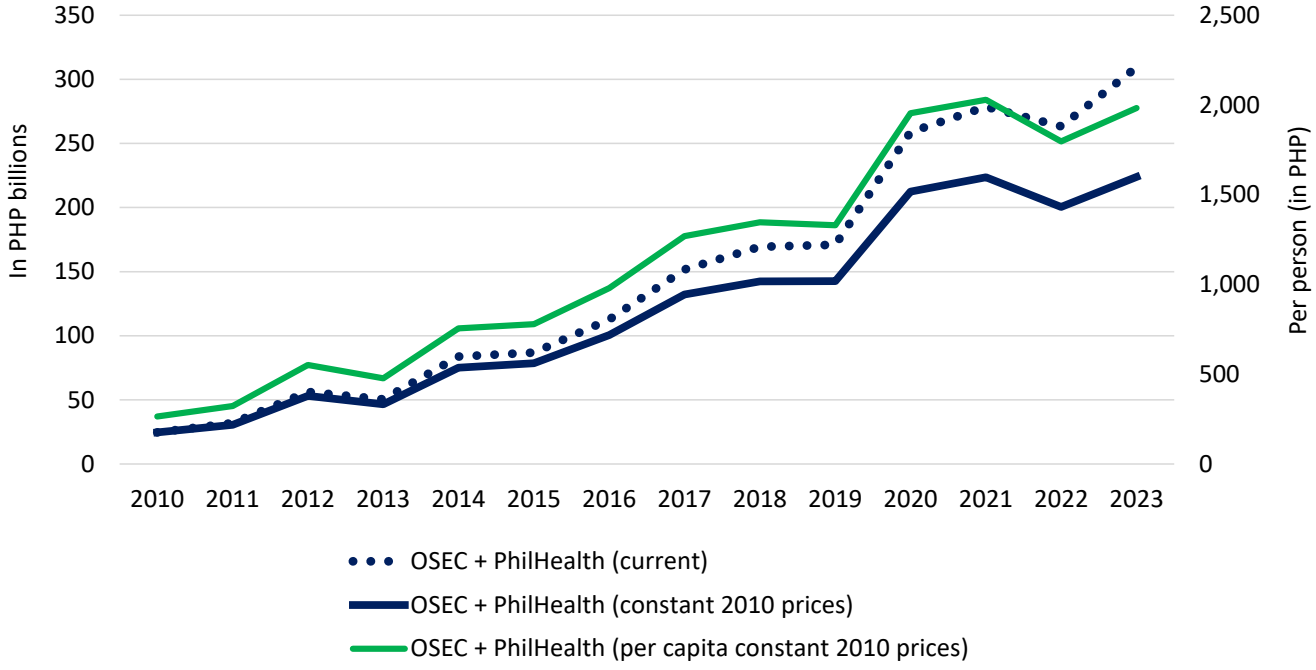
Source: Authors' analysis of the 2022 National Demographic and Health Survey

However, the government budget for health declined in 2022 after the reduced need for emergency pandemic response (Figure 2.3).

While increased government spending has contributed to the declining share of out-of-pocket (OOP) expenditures in THE, absolute OOP continues to increase (Figure 2.4). The sustainability of THE is a concern due to revenue constraints in the post-pandemic period.

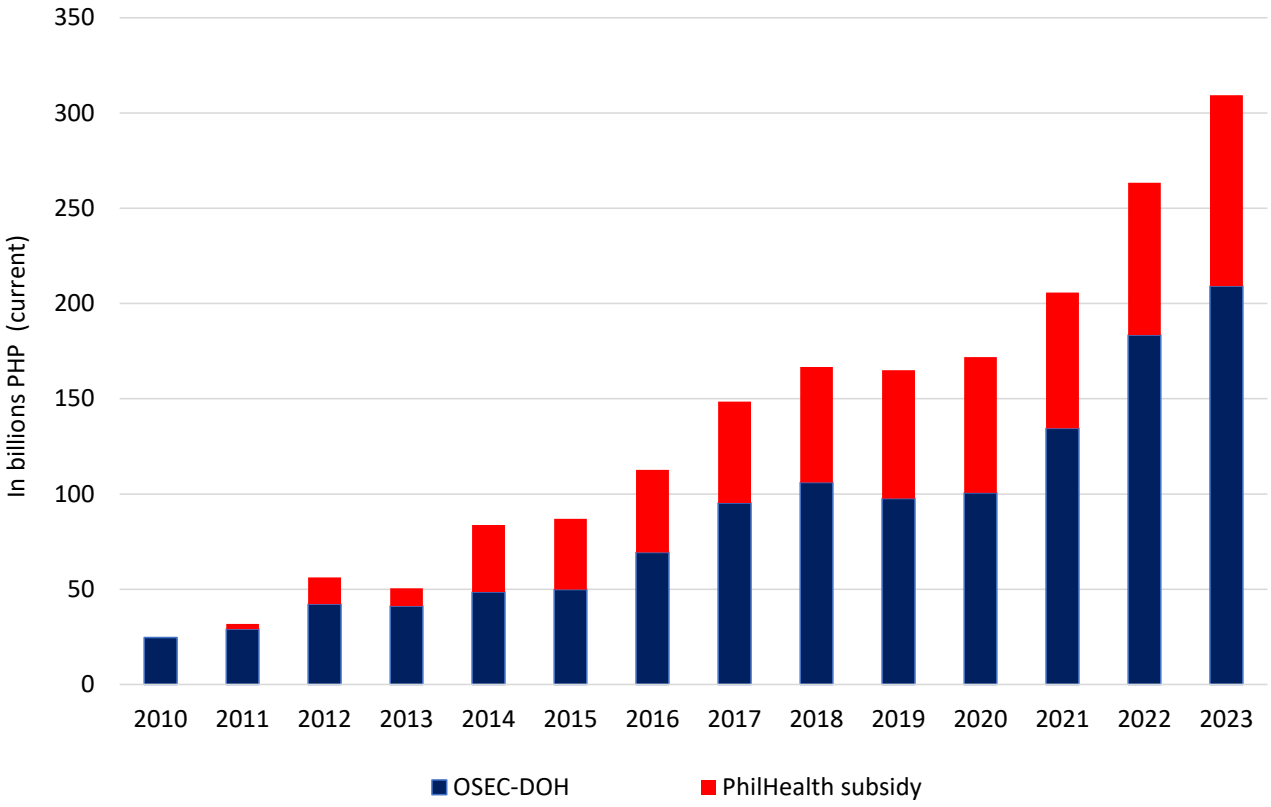
Primary health care (PHC) is vital for meeting the healthcare needs of communities. Despite PHC's importance in providing essential preventive, promotive, curative, and rehabilitative care, the Philippines spends only USD 50 per capita on PHC, which is relatively low compared with countries of similar income levels (Schneider et al. 2021). Public spending on PHC primarily comes from the national and local governments, with minimal contributions from social insurance. OOP payments predominantly funded PHC. The 2022 NDHS shows that 92 percent of Filipinos who went for outpatient consults paid OOP, and only 3.5 percent reported using PhilHealth. The majority of PhilHealth reimbursements in 2022 were allocated to inpatient services. Reimbursements for PHC clinics amounted to a significantly lower sum of PHP 5,600 of the PHP 129.63-billion payout (PhilHealth 2022a). This emphasizes the need to prioritize financing and investment in comprehensive PHC services under the UHC Act.

Figure 2.3
New appropriations for DOH and PhilHealth



DOH = Department of Health; PhilHealth = Philippine Health Insurance Corporation; PHP = Philippine peso; OSEC = Office of the Secretary of Health
Source: Authors' compilation (various rounds of the National Expenditure Program)

Figure 2.4
Philippine health spending by source, 2010–2021



OSEC = Office of the Secretary of Health; DOH = Department of Health; PhilHealth = Philippine Health Insurance Corporation
Source: Authors' analysis of the Global Health Expenditure Database (WHO 2023a)

Recent health policy reforms

In 2022, the Philippines implemented significant policies to improve PHC access. PhilHealth Circular 2022-013 removes the requirement for beneficiaries to have a minimum contribution period and allows all Filipinos to access benefits without a PhilHealth Identification Card. It operationalizes the outpatient primary care benefit package called the PhilHealth *Konsulta (Konsultasyong Sulit at Tama)*, which focuses on preventive care for all Filipinos and offers case management, basic laboratory tests, health risk screening, education, and essential medications for NCDs.

PhilHealth Circular 2022-023 promotes the formation of primary care provider networks (PCPN) by contracting LGUs and private healthcare providers. This initiative delivers the Konsulta package in selected provinces and cities, tests different contracting models, and encourages patient utilization. PhilHealth Circular 2022-032 also introduced Konsulta+, PhilHealth's comprehensive outpatient benefit package, which consolidates existing primary care and outpatient packages. It covers disease-agnostic and comprehensive primary care services and will expand to include other primary care services and standalone outpatient packages.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Following the shortage of 194,114 human resources for health (HRH) in public and private hospitals, which was reported by the Department of Health (DOH) in September 2022, a resolution urging an inquiry into the status of HRH in the Philippines was filed in the Senate in March 2023 to address the shortage and explore solutions (SR 536). In addition, HB 5276 aims to raise the minimum salary of nurses working in government institutions from the current range of PHP 8,000–13,500 to PHP 64,000 monthly.

The Mandanas-Garcia ruling of the Supreme Court is expected to fully devolve the hiring of nurses and midwives to LGUs, including the equivalent DOH budget for its deployment program for these cadres by 2023. Training and capacity building are partially devolved to provinces, with the DOH retaining national policies and technical assistance. As part of the devolution process, the budget for hiring nurses and midwives under the HRH Deployment Program would gradually shift to LGUs in fiscal year 2023.

The DOH Health Facility Enhancement Program (HFEP) aims to improve access to basic health services by funding health infrastructure, such as construction, upgrading, and rehabilitation of health facilities and medical equipment. The HFEP budget increased from PHP 19.6 billion in 2022 to PHP 23 billion in 2023. It is primarily allocated for the construction of barangay health stations and super health centers (DOH 2023). Despite the budget increase, the HFEP has low disbursement rates, which indicates poor funds utilization.

The devolution of the HFEP to LGUs intends to create a more efficient and responsive local health system. As part of the DOH Devolution Transition Plan, the HFEP will be devolved in different phases. Category 4 LGUs would have assumed responsibility in 2022, followed by Categories 2 and 3 LGUs, which will

assume responsibilities in 2023 and 2024, respectively. Category 1 LGUs remain under the DOH's management (DOH 2022). This devolution process allows LGUs to procure necessary capital outlays for their respective areas. Service delivery standards will guide the HFEP implementation. Capacity development strategies like technical assistance and policy research can enhance LGUs' capacity to meet the national service standards. The DOH and LGUs will jointly handle the monitoring and evaluation of projects, and incentives will be provided to LGUs that prioritize health-related programs and achieve their performance targets.

These policy reforms demonstrate the government's commitment to improving primary care services, strengthening healthcare networks, enhancing human resources and capital investments, and reforming healthcare financing under the UHC Act.

Education

The PDP 2023–2028 envisions Filipinos to be smart and innovative, with the country's learning poverty substantially addressed by 2028. Amid the learning crisis, RA 11899 was enacted in 2022 to establish the Second Congressional Committee on Education (EDCOM II)—three decades after the first EDCOM. The EDCOM II is tasked to evaluate the state of national education and recommend targeted, concrete, and transformative reforms. Transforming the country's education system become increasingly necessary to make up for the expected learning and productivity losses due to the COVID-19 pandemic.

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Early childhood care and development (ECCD)

- ***Alignment efforts.*** The PDP 2023–2028 emphasizes the need to institutionalize the partnership between the ECCD Council and the National Nutrition Council (NNC) to fully implement RA 11148 (*Kalusugan at Nutrisyon ng Mag-Nanay* Act of 2018). Progress in childhood nutrition outcomes had been slow, which was exacerbated by the COVID-19 pandemic. One of the platforms to increase health literacy among poor households is the Parent Effectiveness Services (PES) (DOH et al. n.d.; NEDA 2023a). The PES program was institutionalized in July 2022 through RA 11908 (PES Program Act), seeking its establishment in all cities and municipalities. The PES complies with the parent education component of the Early Years Act of 2013. Furthermore, SB 2029 and HB 8393 aim to amend the Early Years Act to align the ECCD curriculum and the K to 12 program.
- ***Inclusive education.*** RA 11650 seeks to establish at least one Inclusive Learning Resource Center of Learners

with Disabilities in all cities and municipalities to ensure that learners with disabilities have access to the formal early and basic education system. Among other interventions are educational and nutrition programs. The law reinforces RA 11148 by providing poor households with access to children's assessment and referrals for development delays and other disabilities for early prevention. It supports the Alternative Learning System (ALS) Act to ensure that children with disabilities and special needs are accounted for in the education system.

- ***Capacity building for child development workers (CDWs).*** There are challenges in professionalizing CDWs, such as the lack of security of tenure and unstandardized salary. Several bills have been filed to institute the Magna Carta of CDWs, which pursues to create plantilla positions, form a personnel selection board, determine minimum qualifications, and establish a system for continuing education and skills training for CDWs.


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Basic education

- ***Basic Education Development Plan (BEDP) 2030.*** The Department of Education (DepEd) unveiled the BEDP 2030 on June 3, 2022, the first long-term plan for basic education. Recognizing the challenges facing the basic education sector, the plan operates under four pillars—access, equity, quality, and resiliency—with governance as an enabling mechanism. The first phase focuses on learning continuity and recovery to address the adverse impacts of physical school closures and the COVID-19 pandemic on learning. DepEd adopted the Basic Education Monitoring and Evaluation Framework, as outlined in Department Order (DO) 29 (s. 2022), to track and measure the BEDP 2030's achievements. Based on DO 27 (s. 2022), the monitoring and evaluation data for quality outcomes under the BEDP 2030 will include the national assessments.
- ***Learning delivery modalities.*** While DepEd directed the resumption of full face-to-face classes in November 2022, it released DO 50 (s. 2022), which authorizes schools to temporarily continue implementing a blended learning modality under certain conditions (e.g., schools' conversion into evacuation centers). HB 3403 proposes establishing the Alternative Learning Management Council to harmonize learning delivery modes and ensure that they are responsive

and adaptive to learners' needs.

- ***Teacher development.*** RA 11713 (Excellence in Teacher Education Act) amends RA 7784 to enhance the Teacher Education Council, institutionalize the National Educators' Academy of the Philippines, and establish a scholarship program for teacher trainees. Following the Magna Carta for Public School Teachers, DO 8 (s. 2023) emphasizes that teachers' participation in volunteer work and extracurricular activities is optional and should not intervene during teaching hours. HB 4572 proposes establishing the Teacher Education for Achievers Program to incentivize teacher education and attract the brightest to the profession.
- ***K to 12 program and Mother Tongue-Based Multilingual Education (MTB-MLE) policy.*** Several bills in Congress aim to amend the Enhanced Basic Education Act of 2013. There is a move to suspend the MTB-MLE policy through HB 6717 because of implementation issues. SR 5 was filed to review the status of the K to 12 program's implementation, including the MTB-MLE policy. The Bureau of Curriculum Development continuously works on curriculum development to address the learning gaps incurred during the pandemic.

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Higher education

- ***Quality of higher education.*** The collaboration of the public and private sectors can improve the standard of education that higher education institutions (HEIs) provide, particularly state universities and colleges (SUCs). HB 8014 proposes collaboration to provide financial and technical support for improving education standard, research quality, and extension activities. HB 7219 seeks to establish a Development Research Fund to renovate existing HEI buildings, expand facilities and services, and fund studies to address critical challenges. The Commission on Higher Education (CHED) promulgated the policy on quality and quality assurance for HEIs through Memorandum Order (MO) 17 (s. 2022) under the Higher Education Act of 1994.
- ***Learning delivery modalities.*** Several bills support flexible modes of learning, including SB 871, which aims to mainstream the use of information and communications technology (ICT) by providing SUCs with up-to-date ICT hardware and software. HB 6397 and SB 1 seek to advance student engagement in online classrooms. CHED issued guidelines through MO 6 (s. 2022) to assist HEIs in implementing blended learning.

- ***Expanding student support.*** SB 1360 and HB 7494 propose expanding the Universal Access to Quality Tertiary Education Act (UAQTEA) of 2017 to cover tuition and other school fees for students from private HEIs. The proposed Student Loan Payment Moratorium During Disasters and Emergencies Act (SB 2101 and HB 7710) seeks to help students affected by disasters and calamities. HB 6291 aims to institutionalize the Higher Education Loan Program to ease student-borrowers' financial needs. Various bills were filed to provide mental health services, campus safety measures, and free college entrance exams, among others.
- ***Expanded Tertiary Education Equivalency and Accreditation Program (ETEEAP).*** SB 1908 and HB 5728 aim to institutionalize the ETEEAP as an integral part of the education system by determining qualification requirements and creating a consultative body headed by CHED to meet the program's objectives.

Technical and vocational education and training (TVET)

- ***Stimulating enterprise-based education and training (EBET).*** HB 7400 and SB 363 focus on creating a national EBET system with practical training programs for middle-level workers. The proposed Revised National Apprenticeship Program Act (HB 6523 and SB 1912) establishes apprenticeship models and concepts, highlights the role of contracts, and develops an equivalency system between TVET and the formal higher education system.
- ***Trainee support.*** The Technical Education and Skills Development Authority (TESDA) released the 2023 Omnibus Guidelines for the Implementation of TESDA Scholarship Programs through Circular 009, in

https://www.tesda.gov.ph

line with the administration's 8-Point Socioeconomic Agenda, the PDP, and TESDA's two-pronged strategic thrusts. The proposed UAQTEA expansion (SB 1360 and HB 7494) seeks to cover students from private and LGU-operated technical vocational institutes.

- ***System for TVET Accreditation and Recognition (STAR) Program.*** TESDA formulated the STAR Program, which recognizes TVET programs that have exceeded the minimum requirements for TESDA registration. It provides a basis for classifying programs that technical vocational institutes deliver through the STAR Level Award, which can be categorized into One-STAR, Two-STAR, and Three-STAR levels. The technical vocational institutions' STAR-rated programs intend to serve as a benchmark that other institutions can emulate.
- ***Flexible learning delivery.*** TESDA issued guidelines through Circular 021-2022 for using the multiregional TESDA Online Program (TOP) among TESDA Technology Institutions (TTIs) to facilitate flexible learning delivery in TVET.
- ***Microcredentialing.*** TESDA established through Circular 048-2021 a system that recognizes microcredentialing, which involves measures to certify a skills portfolio, acknowledge small and discrete learning, and provide credentials to existing knowledge and skills applicable across jobs. Following this, TESDA issued Circular 058-2022, which lays out the supplemental guidelines for recognizing microcredentials for life-long learning and upskilling or reskilling of TVET learners. The circular provided additional criteria for recognizing microcredential

courses and awarding scholarship funds to microcredential course participants. TESDA developed a credentialing system through Circular 003-2022, which recognizes and rewards individuals who conduct teaching functions in TTIs as successes and best practices.

Labor and employment

The Philippines has logged impressive labor and employment outcomes in the aftermath of the COVID-19 pandemic (Table 2.1). The labor force participation rate (LFPR) averaged at 65.6 percent in the first half of 2023—with an increasing trend since 2017—and surpassed the 61 percent LFPR average in the immediate pre-COVID-19 years. The latest employment rate figures have returned to pre-pandemic levels, while the underemployment rate has declined, suggesting improving employment quality among workers. Developments in labor sector outcomes have been evolving with several advances on the policy front.

Migrant worker policies

The Department of Migrant Workers (DMW), created under RA 11641, which merged the functions and responsibilities of various government offices involved in managing international labor migration, issued important policies in its first year of operation in 2022, such as the Implementing Rules and Regulations (IRR) that operationalizes the policies in RA 11641.

Under the RA 11641 IRR, the DMW Office of the Secretary directly supervises the Office of Land-based Overseas Filipino Workers (OFWs) Concerns that houses the Overseas Land-based Tripartite Consultative Council Secretariat, the Office of Sea-based OFW Concerns that houses the National Maritime Polytechnic, and the Philippine Research Institute for Migration and Development, among others. Several other offices were also created: the Office of the Undersecretary (OU) for Internal Management and Administration takes over the functions of the Philippine Overseas Employment Administration's (POEA) Deputy Administrator (DA) for Management Services, while the OU for Foreign Employment and Welfare Services takes over the functions of the POEA's DA for Employment and Welfare and the Department of Foreign Affairs' (DFA) Office of the Undersecretary for

Table 2.1
Key labor statistics, Philippines, 2017–2023

	2017	2018	2019	2020	2021	2022	2023H1
Labor force participation rate (%)	61.2	60.9	61.3	59.5	63.3	64.7	65.6
Employment rate (%)	94.3	94.7	94.9	89.7	92.2	94.6	95.4
Underemployment rate (%)	16.1	16.4	13.8	16.2	15.9	14.2	12.5
Unemployment rate (%)	5.7	5.3	5.1	10.3	7.8	5.4	4.6

H1 = first half
Source: PSA (2022b; 2023c)

Migrant Workers' Affairs. It supervises the Welfare and Employment Office, the Pre-Employment Service Office, and the National Reintegration Center for OFWs. The OU for Licensing and Adjudication takes over POEA's DA for Licensing and Adjudication, while the OU for Policy and International Cooperation takes over the Department of Labor and Employment's (DOLE) International Labor Affairs Bureau.

In the same year, the DMW reinstated the National Certificate II (NCII) requirement for household service workers (HSWs), which had been relaxed to a certificate of training competency or completion during the COVID-19 pandemic. The NCII requirement vouches for the skills qualification of HSWs to promote workers' protection and welfare. In 2023, the DMW renamed the Overseas Employment Certificate, which serves as an exit clearance for OFWs in the Philippine ports of exit, as the OFW Clearance or OFW Pass and is now issued at no cost for rehires or *Balik-Manggawa* OFWs. Furthermore, the DMW issued the guidelines for the *Agarang Kalinga at Saklolo para sa mga* OFWs *na Nangangailangan* (AKSYON) Fund, established under RA 11641, which provides for medical, financial, psycho-social, legal, rescue, repatriation assistance or other similar interventions for OFWs regardless of documentation status. Families of OFWs in distress or those left behind may avail of humanitarian services through the AKSYON Fund.

Local employment policies

On local employment, DOLE issued a revised IRR of RA 11165 or the 2019 Telecommuting Act. The revisions elaborated the inclusions in the minimum provisions of telecommuting programs originally listed in the 2019 IRR. It further emphasized and expanded the guiding

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principles on labor standards (e.g., work in an alternative workplace is equivalent to that in a regular workplace).

In 2023, DOLE issued the guidelines for the implementation of the Integrated Livelihood and Emergency Program (DILEEP), which combines the Integrated Livelihood (Kabuhayan) Program and the Emergency Employment *(Tulong Panghanapbuhay sa Ating* Disadvantaged Workers [TUPAD]) Program. The DILEEP adopts a three-pronged approach by providing (1) emergency employment, (2) entrepreneurship opportunities, and (3) skills training. The TUPAD program provides temporary wage employment for up to 90 days for qualified beneficiaries in community-based disaster recovery or rehabilitation projects. The DOLE Integrated Livelihood Program (DILP) provides up to PHP 40,000 to individual beneficiaries and PHP 1.5 million to group beneficiaries to finance the formation, enhancement, or restoration of livelihood undertakings. The DILP includes a training component that DOLE-attached agencies (e.g., National Wages and Productivity Commission, Regional Tripartite Wages and Productivity Board, TESDA) and other partner agencies (e.g., Department of Science and Technology [DOST], Department of Trade and Industry [DTI]) may provide.

Policies under discussion

In the past year, both chambers of Congress discussed important legislation—including increasing the paid service incentive leave in the private sector from 5 to 10 days for qualified workers, expanding prohibited work-related sexual discrimination to cover

actual or presumed sex of employees and increasing penalties for violations thereof, and strengthening the national apprenticeship program through an overarching guiding framework—which can improve workers' welfare when passed into law.

Housing

In 2022, the government under the leadership of President Ferdinand Marcos Jr. unveiled its flagship housing program, the *Pambansang Pabahay Para sa Pilipino Housing* (4PH) Project, in which it targets building 1 million housing units annually for the next six years, starting in January 2023 (DHSUD 2022). The government's objective to provide affordable and decent housing was reflected in Circular 2022-004 of the Department of Human Settlements and Urban Development (DHSUD), which became fully operational in the same year.[1] The circular enumerates the key 4PH features, including innovative strategies to ensure housing affordability and accessibility. The Office of the Press Secretary emphasized the government's aim to build sustainable and inclusive settlements and well-planned communities while ensuring housing provision (Pinlac 2023).

The 4PH operational manual identifies LGUs as the main project proponents responsible for site selection and development and selection of buyer-beneficiaries (DHSUD 2023). LGUs are tasked to formulate the project concept and craft policies and programs to aid funding, construction, and property management (Cruz 2023). LGUs may also provide additional support to address amortization shortfall (Cruz 2023). Moreover, local leaders must deliver their commitments in line with the 4PH's sustainability objective (Marcelo 2023).

Under this program, the government will use blighted, idle, vacant, and underutilized public and private-owned lands for housing and mixed-use development (DHSUD 2022; Cruz 2023). It will promote onsite and near-site in-city housing or resettlement, since the target beneficiaries are mostly informal settler families living in the metropolis or city centers (Cruz 2023; De Leon 2023; DHSUD 2023). The 4PH Project has a high-density/vertical housing emphasis and will provide interest support to lower monthly amortization payments through government funds or the General Appropriations Act (GAA) (DHSUD 2022; Cruz 2023).

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[1] RA 11201, also known as the DHSUD Act, was signed into law in 2019, giving the DHSUD functions on policy development, coordination, and monitoring and evaluation; environmental, land use, and urban planning and development; housing and real estate development regulation; and homeowners association and community development, among others.

As it enters its second year, the present administration can employ additional strategies for the housing sector. It may learn from the programs of previous administrations, including the *Oplan Lumikas Para Iwas Kalamidad at Sakit*; the Yolanda Permanent Housing Program; the Building Adequate, Livable, Affordable, and Inclusive Filipino Communities (BALAI)[2] program; and the 20-year National Housing and Urban Development Sector Plan (NHUDSP).

The current administration's housing objectives align with those of the last two administrations. The Aquino and Duterte administrations' plan and program documents promoted housing affordability (SHDA 2012; NEDA 2017; DHSUD 2021a, 2021b, 2021c). During the Aquino administration, households living in danger zones and affected by calamities were resettled, highlighting the concept of "Build Back Better" (NEDA 2013; DBM 2014). Meanwhile, the Duterte administration emphasized livability and the quality aspect of adequacy (NEDA 2017; DHSUD 2021c).

The current housing supply targets to meet the quantitative aspect of adequacy differ greatly from those of the past two administrations. The previous targets of catering to about 1.5 million households for 2011 to 2016 and 1.6 million households for 2017 to 2022 are far from the current target of developing 6 million housing units for 2023 to 2028 (NEDA 2011, 2017; DHSUD 2022). However, the current administration's capacity to supply its current target is questionable, given the unmet targets in previous administrations (Nonato 2017; Ordinario 2022).

[2] BALAI is a PHP 1.15-trillion nationwide resettlement project for families displaced by the government's infrastructure program and those living in unacceptable housing conditions (PIDS 2019b).

Another key theme promoted by previous administrations is sustainability. As stated in the PDP 2011–2016, the theme: *"Gaganda ang buhay kung may bahay at hanapbuhay* (life will improve with housing and livelihood)" guided the Aquino administration's housing agenda, focusing not only on providing housing units but also developing sustainable communities (NEDA 2011). During the Duterte administration, the PDP 2017–2022 and the NHUDSP promoted sustainable communities, human settlements, and urban development, with DHSUD programs supporting "sustainable housing in well-planned communities for every Filipino family" (NEDA 2017; DHUSD 2021a, p.29).

The Aquino administration shed light on the importance of community participation through the people's plan approach, while the Duterte administration continued promoting community-driven development (Calata 2017; NEDA 2017; Galuszka 2020). Among the programs incorporating this approach is the Social Housing Finance Corporation (SHFC)'s High Density Housing Program, which relocates informal setter families (ISFs) to in-city multistorey buildings (Ballesteros et al. 2017; SHFC n.d.).

Decentralization was also emphasized over the years. The Department of the Interior and Local Government (DILG) led the flagship housing program of the Aquino administration (Villamejor-Mendoza et al. 2018). The Duterte administration's PDP 2017–2022 underscored the need to decentralize activities, including comprehensive land use planning, local shelter planning, land acquisition and development, and regional resettlement action plan, in coordination with national government agencies (NGAs) (NEDA 2017).

The current administration also emphasizes decentralization, noting the critical role of LGUs in site selection, site development, and selection of beneficiaries (Cruz 2023; DHSUD 2023).

For land acquisition, the Duterte administration highlighted the need for improved land inventory and a national urban database (NEDA 2017; DHSUD 2021a). The current administration may also benefit from an improved land inventory. The Aquino administration aimed to provide ISFs with tenured housing units through in-city and near-city low-rise buildings and off-city row housing (Watanabe 2016; Villamejor-Mendoza et al. 2018). The Social Housing Finance Corporation has started implementing the High-Density Housing Program. The Duterte administration promoted in- and near-city and low- and medium-rise resettlement (DHSUD 2021b), as well as vertical housing under the BALAI program, particularly among resettlement candidates and informal settler families in high-risk areas and danger zones (DHSUD 2021a). Meanwhile, the current administration highlights the need to build closer to residents' original dwellings and encourages onsite and near-site developments (Cruz 2023; DHSUD 2023). It aims to optimize land utilization, especially in highly urbanized and component cities (De Leon 2023), and has a stronger vertical development strategy. While similar vertical development was encouraged in the previous administrations, this was limited to medium-rise buildings or MRBs. The current strategy to build high-rise buildings (e.g., 22-storey condominiums) for socialized housing drew flak from developers. Concerns were raised that it could lead to vertical slums like the country's experience with the Vitas Tenement Housing.

The previous administrations considered the importance of other housing-related services and infrastructure to sustain communities. Aside from focusing on livelihood, the Aquino administration

integrated basic infrastructure support, such as providing potable water and access to electricity and roads (NEDA 2011). The NHUDSP developed under the Duterte administration involved transit-oriented development and national open, public, and green space network programs (DHSUD 2021a).

Both administrations pushed for innovative mechanisms and encouraged alternative housing technologies and financing arrangements. The Aquino administration's strategies to address housing needs and ensure sustainability include promoting alternative housing technologies (e.g., exploring the use of indigenous and recyclable materials and incorporating housing construction standards on climate change adaptation and disaster risk reduction and management [DRRM] service) and financing schemes (e.g., developing workable public-private partnership [PPP] schemes for socialized housing development) (NEDA 2011). Under the Duterte administration's BALAI Filipino Communities Rental Housing Program, rent was offered for households that could not afford or were not inclined to homeownership (DHSUD 2021c). The NHUDSP promoted innovative housing finance mechanisms, including green bonds and reverse mortgage programs for senior citizens, one-stop processing centers to streamline housing availment, and a national urban database (DHSUD 2021a). The PDP 2017–2022 encouraged income-based subsidy schemes and convergence budgeting (NEDA 2017). The Duterte administration advocated for increased participation from the private sector through joint projects (PIDS 2019b).

Overall, there are similarities in the three administrations' housing strategies, with the succeeding ones selectively employing practices and emphasizing aspects that require more attention. In implementing its housing program, the present administration must consider learning from the experiences of the previous administrations. For instance, the lack of accountability among LGUs in addressing housing problems needs serious attention. Highlighting the need for decentralization is appropriate, given the LGUs' potential to solve issues like site selection and development, housing design development, and estate management. Meanwhile, the national government may focus on developing and monitoring innovative financial mechanisms and physical and social services for housing projects. The DHSUD and key shelter agencies have corresponding responsibilities under the 4PH procedure manual. The lack of capacity of some households to pay for amortization is acknowledged through the strategy on interest support and encouragement among LGUs to provide additional amortization support. Nevertheless, the strategy to support households that cannot pay for amortization or access mortgage financing remains insufficient (Ballesteros et al. 2022). The current administration must provide housing options (e.g., ownership, rental) targeted to the needs of the low-income and marginalized sectors rather than pursue a one-size-fits-all housing program. Vertical developments can address land constraints, but their promotion depends on geographical situations, land cost, and target beneficiaries' needs and acceptability, which must not be neglected in meeting the 4PH targets. The lack of consideration for these factors has long prevented the government from achieving its housing objectives.

Agriculture

After two years of economic contraction, the agriculture, fisheries, and forestry's gross value added (GVA) grew by 0.5 percent in 2022. However, the core crops, livestock, and fishery sectors continued contracting by 1.1 percent in total. The growth of poultry and eggs and other animal production and support services for agriculture boosted the sector.

The other big economic story was food price inflation. After remaining benign at 2.9 percent in 2020, food price inflation accelerated to 4.2 percent in 2021, surged to 5.9 percent in 2022, and erupted to 9.2 percent in the first five months of 2023. Global supply shocks took much of the blame, although commodities with high levels of agricultural protection experienced the largest price shocks in 2023, such as sugar (64.2%), fish (7.7%), and corn (5.9%). The most spectacular was onion, whose average price in 2022 to 2023 (November–February) hit PHP 336 per kilogram (kg) (red variety) versus PHP 180 per kg in the previous year. The DA price monitoring recorded PHP 720 per kg in December 2022 (CNN Philippines 2022). Meanwhile, rice, which had undergone deep trade policy reform in 2019, stayed at 2.3 percent inflation rate from 2022 to 2023.

Trade

The price surge can be linked to the DA trade policies. DA issued Department Circular (DC) 8 (Additional Guidelines on the Importation of Fresh Onions) in 2021, imposing a Certificate of Necessity for Imports as a condition for approval (Arcalas 2023) to address the complaints of onion industry stakeholders against competition from imported onion. Subsequently, imports of the product fell by 74 percent in 2022 at only 26,1010 tons. While onion production was higher by 10.5 percent in

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2022 than in 2021, the lack of imports prevented the total available supply from matching the demand at previous prices (about PHP 100 per kg for white onion and PHP 140 for red onion in 2021). DA's trade policy was put in the spotlight for other commodities with skyrocketing prices, most prominently, sugar. Public discussions and commentary on the topic tend to blame "smuggling" and "economic sabotage". This tendency mistakes cause for effect—the incentive to smuggle increases as import policy becomes more restrictive. Thus, tight import controls on onion, sugar, and other agricultural products strongly incentivized smuggling. Conversely, open trade is the best cure for smuggling.

PDP 2023–2028

Adopted through Executive Order (EO) 14 (s. 2023), the PDP 2023–2028 highlights the food affordability problem in its chapter "reduce vulnerabilities and protecting purchasing power". Under the key outcome "food security and nutrition ensured" is "sufficient and stable supply of food commodities attained". Among the strategies is to "diversify food supply sources by augmenting domestic supply through international trade and maximizing the use of nontraditional agricultural areas" (NEDA 2023a, p. 80). Logically, the strategy entails repealing nontariff barriers through outright import quotas, both statutory (as in sugar) or de facto (as in onion), to prevent future price surges. DC 3 (s. 2023) revoked DC 8 (s. 2021) but has no language proscribing the placement of quantitative restrictions in issuing sanitary and phytosanitary import clearance.

Another key feature of the PDP 2023–2028 is continuing the past administration's agricultural strategies, as stated in the National Agriculture and Fisheries Modernization and Industrialization Plan (NAFMIP) 2023–2030, such as farm

clustering and consolidation adopted under the outcome "efficiency of agriculture, forestry, and fisheries enhanced". It mentioned increasing investments in research, development, and extension for biological, physical, and digital technologies and strengthening the Province-led Agriculture and Fisheries Extension System (PAFES).

Expenditure policy

President Ferdinand Marcos Jr. concurrently served as the DA Secretary. The DA budget for 2023 reached PHP 85.9 billion—reflecting an increase of 46 percent from the previous year. National commodity banner programs (e.g., rice, corn, high-value crops, organic agriculture, livestock, urban and peri-urban agriculture) received PHP 42.8 billion in 2023, surpassing the PHP 24.6 billion allocated in 2022. Allocation to farm-to-market roads nearly doubled from PHP 7.5 billion to PHP 14.5 billion. Expenditure outlays for the agriculture and agrarian reform increased from PHP 143.4 billion to PHP 152.1 billion in 2022 (DBM 2021, 2023).

The increase in national government expenditure on the sector contrasts with EO 138 (s. 2021) (Full Devolution of Certain Functions of the Executive Branch to Local Governments). NGAs should refrain from duplicating direct delivery of devolved functions with LGUs, given the increased budget allocation to LGUs due to the implementation of the Mandanas ruling. NGAs should focus on developing polices and standards for service delivery, providing technical assistance, and monitoring and assessing LGU performance. The national budget shall include requirements for LGUs' capacity building to help them assume devolved functions and services and prioritize subsidies for the local projects of LGUs from 5th and 6th income classes and geographically isolated and disadvantaged areas (GIDAs) and those with the highest poverty incidences. The DA expenditure programs should move away from expensive production support composed mainly of input subsidies while focusing on productivity improvement and enabling LGUs through a matching grant scheme for local agricultural development plans and programs. The appropriate level of national and local engagement is the province, as envisioned under the PAFES.

Legislation

One important law passed in 2022 was RA 11901 (Agriculture, Fisheries, and Rural Development Financing Enhancement Act of 2022). This legislation repealed RA 10000, or the agri-agra law. The agri-agra law previously mandated that 25 percent of all banks' loanable funds be allocated credit for agricultural production and related inputs, with a minimum of 10 percent designated for lending to ARBs. The new law, RA 11901, maintains the quota of 25 percent but broadens compliance with agricultural value chain finance (AVCF) while removing the mandatory allocation to ARBs. This is a key step toward promoting AVCF while reducing the cost of financial intermediation in the country.

The President recently signed into law RA 11953 or the New Agrarian Emancipation Act. It condones all debts related to awarding of land under the Comprehensive Agrarian Reform Program (CARP). The condonation covers both principal and interest payments. Any encumbrance on the land title (e.g., Certificate of Land Ownership Award

[CLOA]) must be removed. The Land Bank of the Philippines (LBP) computed the amount of debt to be condoned at PHP 57.6 billion, affecting about 800,000 ARBs. The amount collected annually equals PHP 1 billion. About 108,000 are due and demandable but have not been paid, while 575,000 are under the "distributed but not yet paid" category owing to failure to document individual liability, which is commonly the case for group CLOAs (Ballesteros 2022). The fiscal impact of condonation is negligible, but its financial impact on ARBs is significant both from savings on amortization and facilitation of future land transactions. No conditions are attached prospectively to the condonation, although ARBs are disqualified from the condonation if they violate relevant agrarian reform laws. Once approved, the law can ease the draconian restrictions plaguing agricultural land markets in the country.

Judicial decisions

On the judicial front, the Supreme Court has recently issued a Writ of *Kalikasan*, a preliminary injunction against the dissemination of Golden Rice and Bt Eggplant, both new genetically modified organisms (GMOs) recently approved for commercial propagation in the country. The issue of GMO regulation had been discussed in a previous *Economic Policy Monitor* (PIDS 2019a), particularly the 2015 writ against GMOs issued by the Supreme Court. The Supreme Court rescinded the injunction in 2016 after the government imposed stricter regulations under existing laws and government treaties. However, the current new ban on the GMOs represents a real loss to the country's economy, human welfare, and the environment. Bt eggplant can reduce pesticide use in eggplant production by 48 percent (Francisco 2014). As far back as 2004, the rate of return to research and

development (R&D) investment in Golden Rice had been estimated from 66 percent to 133 percent (Zimmerman and Qaim 2004). The judicial risk from the strong and strident environmental lobby had a chilling effect on the development and spread of much-needed biotechnology innovations.

Trade and industry

To support the long-term vision of the Philippines to achieve *"matatag, maginhawa, at panatag na buhay"* (strongly rooted, comfortable, and secure life), the government's 8-Point Socioeconomic Agenda includes investment promotion and innovation, research, and development, which relate to the country's trade and industrial policy. Chapter 9 of the PDP 2023–2028 assesses the situation of trade and investments and identifies confronting challenges, especially with the continuing threat of the COVID-19 pandemic. Among these challenges are high-standard requirements in health and environmental protection that impede market access; weak or falling exports of firm-populous sectors like garments, handicrafts, and wooden productions; fragmented, insufficient, and poorly communicated export financing schemes; the lack of timely and proactive policies; and the country's inability to retain skilled workforce. Among the strategies are promoting trade and investments in goods and services in two outcomes identified in the PDP 2023–2028, particularly (a) restoring, sustaining, and strengthening the global position of the country's export sectors; and (b) boosting trade, upgrading skills, and enhancing sustainability through increased and more targeted investments.

Under the first outcome, the measures are to proactively resolve constraints to export growth and competitiveness; monitor and implement preventive measures

and interventions for distressed firms; implement targeted and granular strategies for increased exports through global value chains, food and agri-marine, and labor-intensive manufacturing; diversify exports by fortifying sectoral backward and forward linkages; advance purposive, assertive, and forward-looking free trade strategies; position the Philippines as the foremost supplier of tradeable intermediate services; and ensure an integrated and whole-of-government commitment to delivering broad access to the National Quality Infrastructure.

For the second outcome, the strategies are to maximize the synergy and decisive alignment of national and local government promotion strategies; launch an aggressive branding campaign on the country's new business climate ushered in by recent structural reforms; leverage the Strategic Investment Priority Plan; increase the country's attractiveness to foreign direct investments; and position the Philippines as the prime destination for foreign investments against climate change and environment, social, and governance investments.

Legislative agendas strengthening these strategies are prioritized in the 19th Congress. The first outcome puts forward the urgent ratification of the Regional Comprehensive Economic Partnership (RCEP) Agreement, the National Quality Infrastructure Act, and the Export and Industry Development Act. For the second outcome, an EO will be issued for a whole-of-government, harmonized, and structured investment facilitation mechanism (NEDA 2023a).

In 2022, President Ferdinand Marcos Jr. directed the DTI to "bring up the game" and prepare the export industry to compete (Maralit 2023). He recognized the need to improve some elements of the law and support exporters in competing in foreign

markets and the importance of the RCEP in opening up the market to facilitate freer trade for the Philippines.

At the Philippines Business Opportunities Forum held in February 2023 in Tokyo, Japan, the President reminded participants of amendments to the Retail Trade Liberalization law, which reduced the minimum capital for foreign retailers to USD 500,000 from USD 2.5 million, in addition to the amended Public Service Act, allowing foreign investors up to 100 percent ownership in public services. Both policies are geared toward making the domestic environment more competitive and bringing in more technology. He highlighted the preferential access that investors in the Philippines can enjoy, such as the US Generalized System of Preferences, which allows up to 70 percent of Philippine exports to enter the US duty-free, and over 6,000 tariff lines under the European Union (EU)'s Generalised Scheme of Preferences Plus. The President also discussed the preferential tariffs of the ASEAN free-trade area with Southeast Asia.[3]

[3] https://pbbm.com.ph/speeches/speech-by-president-ferdinand-r-marcos-jr-at-the-philippines-business-opportunities-forum/ (accessed on May 16, 2023).

Increased access through online platforms

Several bills have been filed to facilitate better trade, increase market access, and boost the competitiveness of domestic industries. HB 4979 (Online Pinoy Creative Market Act) shall direct the DTI to create an online market platform for creative products and services and support micro, small, and medium enterprises (MSMEs). As the biggest job-creating sector and one of the groups hit hardest by the COVID-19 pandemic, it is necessary to revitalize the MSME sector through online platforms.

HB 1394 aims to modernize the Warehouse Receipts Law of 1912. The archaic law must be updated to maximize technological developments and other advantages in efficiency, process simplification, and transparency. The new framework will improve access to credits, particularly for those engaged in agricultural activities. However, a countermeasure must be passed in the Senate. SB 1053, or the Revised Warehouse Receipts Law of the Philippines, has been pending since September 2022.

Agroindustry for exports

There are proposals to revitalize the agriculture and food industries. HBs 80, 6300, 7131, and 7045 intend to improve the production of pili nut, banana, *malunggay* (moringa), and pineapple, respectively, and develop these industries for export. Considering their nutritional and medicinal values and uses in cosmetics and other industrial products, pili nuts and malunggay can compete in the larger market. The Philippines is considered the only country capable of producing pili-based foods and byproducts at the commercial level. Despite being two of the country's top export products for decades, the banana and pineapple industries face several challenges. Establishing export development and promotion councils can help boost these products' production processes and exports.

House Resolution (HR) 1060 seeks to revive the abaca industry, urging major government agencies like the Department of Finance (DOF), DTI, DA, DOST, DepEd, and CHED to promote the widescale production and use of abaca.

HB 7190 proposes to amend Section 296 of the National Internal Revenue Code of 1997, or the Investments Promotion Act, which expands the period of availing of income tax holiday (ITH) from 4–7 years to 7–10 years. These shall include enterprises with a potential for job creation, including mining and tourism; activities in sectors with market failures due to insufficient basic goods and services; activities that generate value creation through innovation, upgrading, or moving up along the value chain; those supporting industrial development; and emerging industries with a potential comparative advantage.

Trade facilitation

HB 4933 proposes to enhance the competitiveness of Philippine maritime trade by strengthening the oversight functions of related agencies against international shipping lines' imposition of excessive and unnecessary fees. Once passed into law, it will make the country's transport and logistic services more reliable and efficient and will enhance the flow and competitiveness of domestic products.

Intended effects and level-playing field

RA 11203, or the Rice Tariffication Act, was enacted in 2019, amending the Agricultural Tariffication Act of 1006 (RA 8178). It replaced the system of quantitative restriction on rice with a pure tariff system. Given the rice industry's situation and experience—such as the reduced contribution of *palay* production to the GDP, the decline in the returns of palay production to rice farming households, and the constraints in accessing finance and technology—HR 222 seeks to conduct an inquiry on the impact of rice liberalization, exportation, and trade on the production and farm gate and retail price of rice. It aims to protect the interests and welfare of rice farmers, as the country remains heavily dependent on rice as a staple food and is considered an agricultural economy.

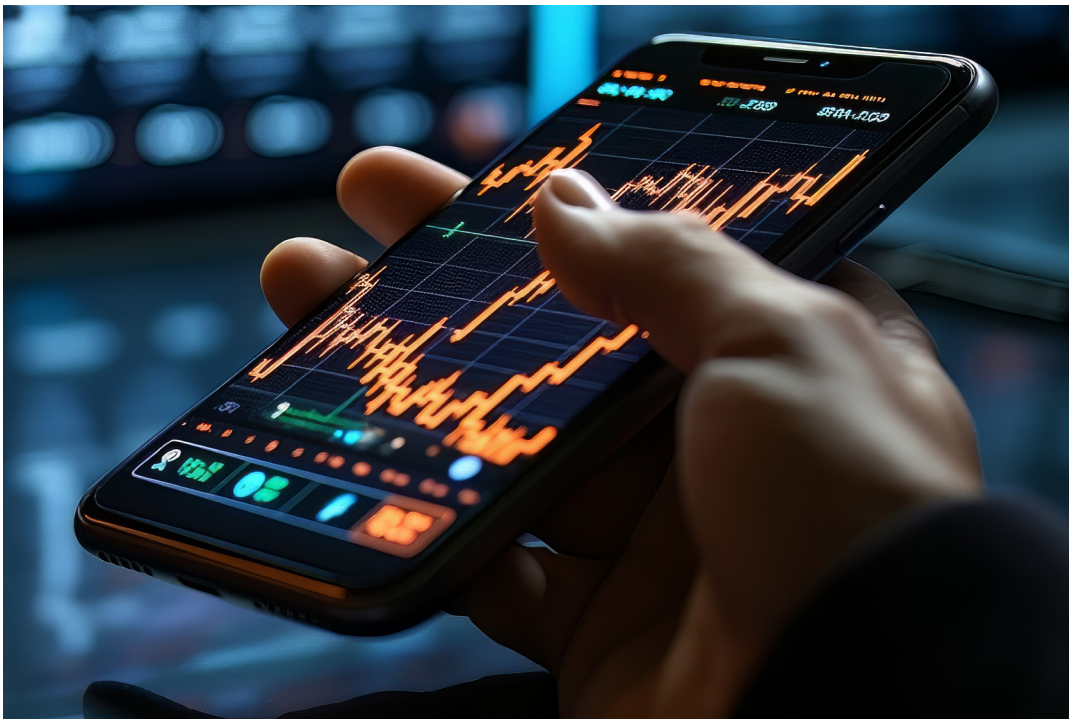
Other bills aim to investigate the causes of persistent decline in the price of copra (HR 1062) and unregistered products, particularly cosmetics and food supplements (HR 1090), which undermine competitiveness. HB 2680 seeks to institutionalize the review of government products and services to conform to the existing standards that the DTI sets and amend RA 4109 or the Standards Law of the Philippines.

Philippine Creative Industries Development (PCID)

Creative industries are crucial in stimulating sustainable and inclusive development. The *Creative Economy Outlook 2022* noted the increasingly significant contribution of culture and creativity to the global economy. Moreover, the creative economy intersects economic, cultural, and social aspects with technology, intellectual property, and tourism. Thus, creative industries strengthen income generation, export activities, and job creation, promoting social inclusion, cultural diversity, and human development (UNCTAD 2022).

The PCID Act (RA 11904) aims to spearhead the growth of Philippine creative industries and make the country a leading regional player. Primary strategies under the law include protecting and strengthening the rights and capacities of firms, artists, content creators and providers, workers, indigenous communities, and other stakeholders (Austria 2022). DTI signed the IRR in November 2022 to ensure its effective implementation. The law mandates the creation of the Philippine Creative Industries Development Council (PCIDC), which shall be led by DTI and composed of the secretaries of DepEd, DOST, NEDA, Department of Tourism (DOT), and DILG; chairperson of CHED; chairman of the National Commission for Culture and the Arts; director general of the Intellectual Property Office of the Philippines; and private sector representatives. The PCIDC will formulate the PCID Plan, including the objectives, targets, and strategies to develop and promote the local creative industries and key performance indicators for value creation, GDP share, employment, market creation and expansion, investments, and creative intellectual property. RA 11904 also provides various support mechanisms covering infrastructure, R&D, innovation and digitalization, financing, and education, among others.

Various bills have been filed in support of this landmark legislation. SB 1889 aims to implement policies that protect and promote worker welfare in the film, television, and radio entertainment industries. SB 28 provides incentives to proprietors, lessees, and operators of theaters and cinemas, while



SB 876 aims to grant tax exemptions to local music producers and artists and earmark the amusement tax derived from concerts of foreign acts for subsidies in developing the local music industry. To spearhead the growth of the local film industry, SB 2250 seeks to declare September as the Philippine Film Industry Month, initiate promotional activities like film festivals and free film screenings, and provide learning opportunities on film-related disciplines.

Digitalization and innovation of industries

The COVID-19 crisis highlighted the importance of innovation and digitalization in fostering economic recovery. Building on its previous industrial policies, mainly the Inclusive Innovation Industrial Strategy (i3S), the DTI has developed a new industrialization strategy centered on science, technology, and innovation. It presented this strategy at the first Industrial Digital Transformation Congress (IDTC) in December 2022. Under the new strategy, priority measures are set for the next six years under the clusters: industry, manufacturing, and transport; technology, media, and telecommunications; health and life science; and modern basic needs and resilient economy. Technology adoption is the key to accelerating innovation and, eventually, employment and income generation. Thus, collaboration among the government, industry, and the academe is vital for promoting productivity, efficiency, and adaptability among industries in the post-pandemic period (Amper 2022b).

A key initiative under the industrial policy is the creation of regional inclusive innovation centers (RIICs) to serve as a linchpin of productive collaborations among different agents in the innovation ecosystem. Establishing RIICs in the regions

shows the government's nuanced approach to building a robust innovation and entrepreneurship ecosystem, recognizing the diversity of regional conditions (DTI 2019). In September 2022, government agencies and state universities, led by the DTI, signed a memorandum of agreement to create the Region 8 (Eastern Visayas) RIIC. Regional stakeholders considered high-value coconut products as the RIIC's focus (Business Week Mindanao 2022). The DTI launched in June 2023 the Region 6 (Western Visayas) RIIC, or the Weave Philippines, to upscale the region's weaving industry and establish its global value chain integration (Lena 2023).

Regional Innovation Roadshows were conducted to promote the STI-based industrialization strategy. The roadshows aim to raise awareness of Industry 4.0 technologies and the importance of government-industry-academe collaboration in developing competitive and innovative industries. In 2022, roadshows were held in Regions 10 (Northern Mindanao) and 12 (SOCCSKSARGEN). Participants from different sectors tackled existing innovation mechanisms, current challenges, potential capacity-building strategies, market linkages expansion, regulations, and technical assistance (Amper 2022a; Rucat 2022).

MSMEs are at the forefront of innovation and digitalization efforts. The government partnered with the United States Agency for International Development in formulating a five-year program to boost MSME participation in the digital economy. The Strengthening Private Enterprise for the Digital Economy (SPEED) aims to ensure that MSMEs adopt safe, reliable, and affordable technology solutions. It intends to collaborate with the private sector to expand the use of e-payment systems and integrate e-commerce platforms into the logistics supply chain. The DTI implements the Big Brother-Small Brother Digitalization Project, which encourages big businesses to assist MSMEs in digital upskilling (Crismundo 2023a).

Existing programs have been enhanced to accelerate innovation and digitalization. The DTI has partnered with other government agencies and the private sector in creating e-commerce platforms and giving MSMEs access to valuable digitalization sources (Pascual 2022). For instance, the DTI partnered with e-commerce and logistics provider Somago to improve the online presence of One Town, One Product Philippines (OTOP PH).[4] The partnership can strengthen OTOP PH's digitalization by expanding the reach of its e-marketing and digital campaigns and increasing the number of MSMEs participating in e-retail stores (DTI 2023). SB 2021 aims to institutionalize the DTI's Shared Service Facility Program and allot annual funding for the program under the GAA (Crismundo 2023b).

Investment promotion strategies

The government expanded the investment incentives for various industries under the 2022 Strategic Investment Priority Plan (SIPP), the first to be crafted under the Corporate Recovery and Tax Incentives for Enterprises (CREATE) Law. The 2022 SIPP outlines priority industries and projects that can qualify for incentives under the CREATE Act, particularly the scope and coverage of priority activities and the industry tier

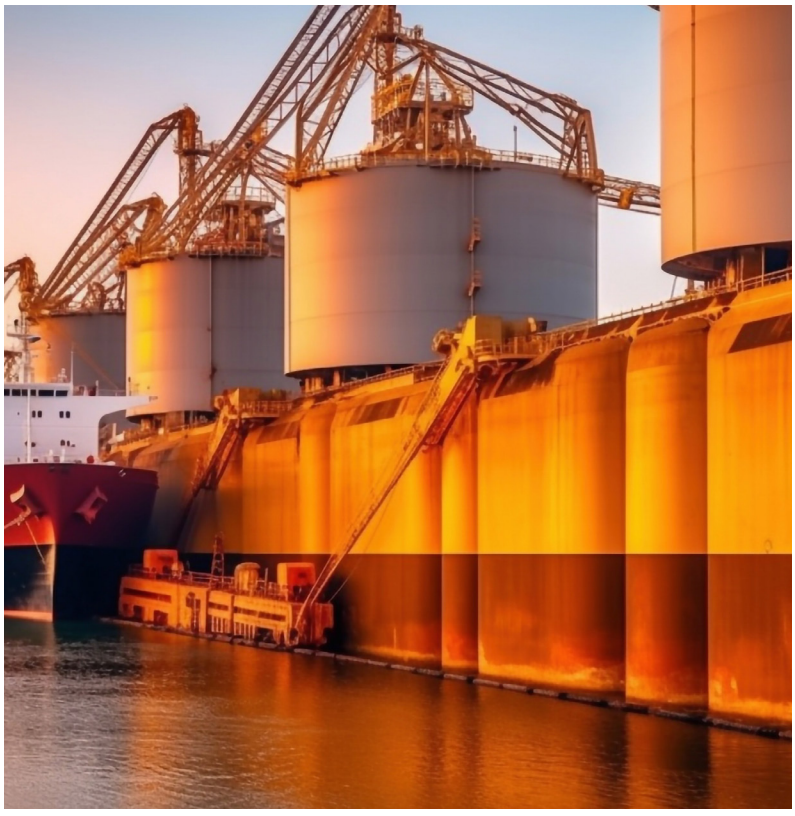
[4] OTOP PH is a priority stimulus program that enables localities to identify, develop, and promote products and services strongly associated with their cultural identity and comparative advantage (DTI 2023).

categories with corresponding durations of incentives.[5]

The 2022 SIPP classifies activities into three tiers: Tier 1 covers activities listed in the 2020 IPP; Tier 2 covers activities addressing value chain gaps and promoting green ecosystems, robust health systems, and self-reliant defense; Tier 3 covers activities facilitating R&D and innovation and attracting technology investments (Daño 2022). The SIPP focuses on Tiers 2 and 3, which have longer incentive coverage (Cahiles-Magkilat 2022).

As a supporting mechanism, EO 18 (s. 2023) establishes a "green lane" for strategic investments in government offices. It aims to streamline the processing and issuing of permits, licenses, certifications, and authorizations for strategic investments (Gita-Carlos 2023).[6] The DTI-Board of Investments is mandated to create a One-Stop Action Center for Strategic Investments—the only point of entry for projects qualified as strategic investments—and direct the development and implementation of a computerized business permit and licensing system. It intends to complement the functions of the Anti-Red Tape Authority in streamlining government processes and establish a conducive business ecosystem in the country.

[5] Incentives granted under the plan include income tax holidays, enhanced deductions, and a preferential 5-percent corporate income tax rate (ASEAN Briefing 2022).



Development of globally competitive industries

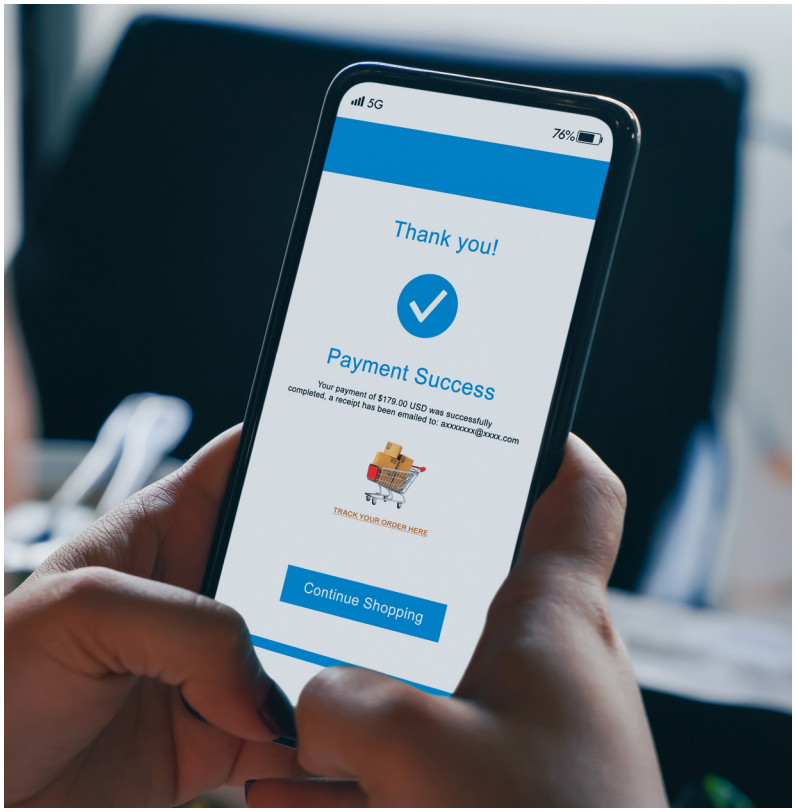
The government will undertake an industry development-centric approach to enhance the country's competitiveness and improve its position in the global economy. The Philippine Export Development Plan 2023–2028 places greater importance on industry- and firm-level interventions and policies to bolster sectoral development. The plan has three strategic actions to develop export competitiveness, including addressing production constraints, building a strong innovative export ecosystem, and increasing awareness of the Philippines as a global player (Bajo 2023).

Collaborative efforts are seen to enhance the competitiveness of local industries. SB 2218 seeks to formulate and implement the comprehensive *Tatak Pinoy* (Proudly Filipino) strategy. The Tatak Pinoy Act would spearhead government-industry

[6] Strategic investments cover those aligned with the national development plans (e.g., PDP 2023–2028), including highly desirable projects, FDIs, and projects or activities under the SIPP (Gita-Carlos 2023).

partnerships by addressing coordination, institutional, and information asymmetry challenges. It intends to utilize this partnership to develop globally competitive Filipino enterprises by diversifying their productive capabilities and empowering them to produce increasingly diverse and sophisticated goods and services. Programs under the strategy will revolve around the following pillars: workforce, infrastructure, technology and innovation, investments, and public fiscal management and government procurement (Argosino 2023).

In the past year, Congress passed bills intended to enhance the competitiveness of traditional and emerging industries, such as livestock, poultry, and dairy (HB 440), rubber (SB 606), and financial technology (HB 659). Among others, these legislations aim to create governing bodies to promote the industry and oversee the regulatory environment, formulate roadmaps and incentives, strengthen forward and backward linkages, stimulate upgrading, enforce safety and quality standards, and foster PPPs.



Services

The immediate past administration enacted significant reforms, such as the Foreign Investment Act, the Public Service Act, and the Retail Trade Liberalization Act, to improve the country's business environment and liberalize industries, including the services sector. The PCID Act (RA 11904) and the Philippine Digital Workforce Competitiveness Act (RA 11927) that lapsed into law, along with regulations and policies, involve developing human capital; upgrading export services like the information technology and business process management (IT-BPM) sector; and promoting creative industries, tourism, and digital trade (e-commerce). The services sector participates in the digital economy, provides digital-enabled services, and enhances processes through digital transformation. However, further regulatory and policy reforms are needed to sustain the services sector's growth in the digital era. The government must strengthen relevant regulatory institutions, expand internet connectivity, upgrade digital skills, improve competition, and promote consumer welfare.

Services sector opportunities

The digital economy and creative industry can benefit from the two bills that lapsed into law in July 2022. The PCID Act, whose IRR was signed in November 2022, aims to promote the development of creative

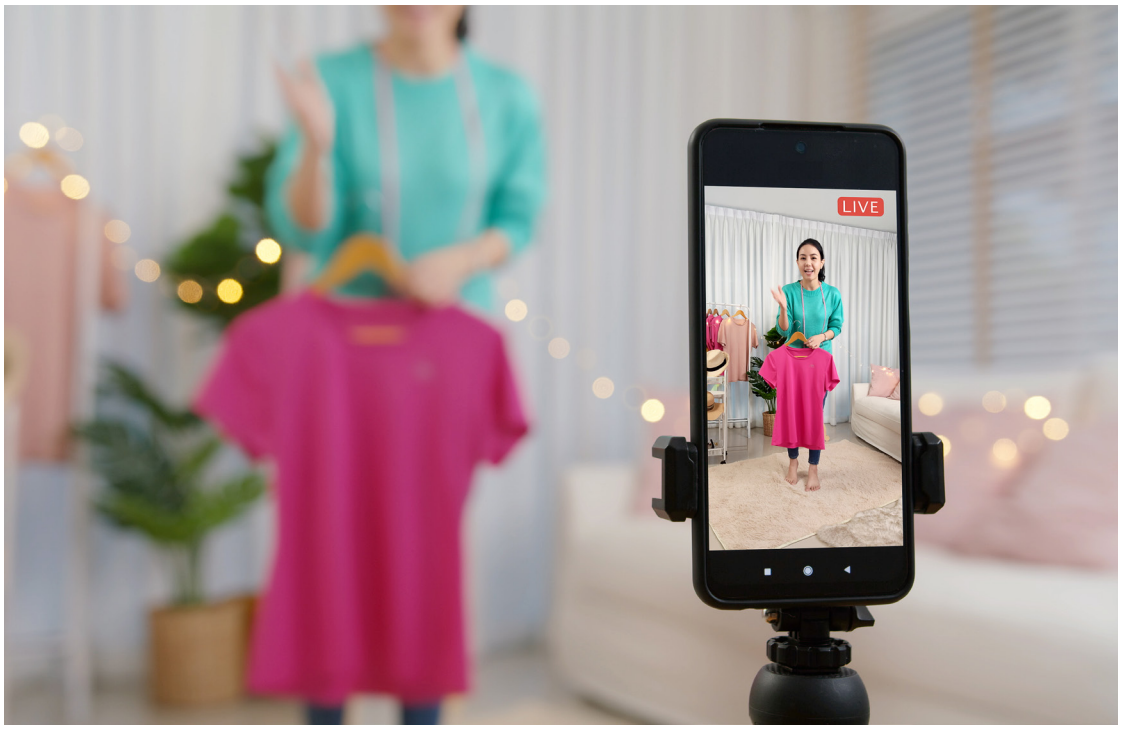
industries, including entities producing creative services (DTI 2022a). The PCIDC shall be established and tasked to create the PCID Plan. Creative entities shall be granted infrastructure, R&D, and digitalization support and access to credit assistance, human resource development and capacity-building programs, and assistance to government services. Data and information management support shall also be provided to measure the creative industries' growth.

The Philippine Digital Workforce Competitiveness Act intends to equip the Filipino workforce with competent digital skills through training, development programs, and provision of shared service or coworking facilities, digital libraries, and learning hubs, among others. The Inter-Agency Council for Development and Competitiveness of Philippine Digital Workforce will be created to spearhead initiatives to further develop the digital workforce. A public consultation for the development of the law's IRR was conducted in February 2023 (NEDA 2023b).

RCEP, the largest free trade agreement that opens opportunities for trade and investment, was officially ratified in February 2023. It promises to increase Philippine export by 3.7 percent in 2030 and facilitate efficient and simpler cross-border trade and lower tariffs for MSMEs. The agreement can attract investment and help the IT-BPM sector move up and provide knowledge process outsourcing (ASEAN Briefing 2023).

E-commerce sector

The digital economy reached PHP 2.08 trillion in 2022, accounting for 9.4 percent of the GDP, where e-commerce contributed about 20 percent to the digital economy's GVA (PSA 2023d). DTI released Joint Administrative Order (AO) 22-01, reiterating that online businesses must comply with



the laws that apply to offline businesses. The Joint AO reminds online businesses (e.g., e-commerce platforms, e-retailers, online merchants) of their responsibilities to ensure consumer welfare and inform consumers of their rights.

As part of DTI's campaign to promote the use of digital payments and increase financial inclusion, it launched the social media campaign *e-Bayad mo!* and the Pay-Drama Series, which informs users of the benefits of digital payments, digital literacy, and consumer rights awareness (DTI 2022b). SB 1846, or the proposed Internet Transactions Act of 2022, covers the internet transactions of online travel and delivery services, nonfinancial services, and retail of consumer goods and online media. If passed, the proposed e-commerce bureau would supervise e-commerce promotion and implement rules and regulations for internet transactions on e-commerce platforms and online merchants and consumers. Entities engaged in internet transactions shall be required to register and must have licenses to operate and engage in e-commerce.

Telecommunications sector

Telecommunication services accounted for 30.7 percent of the digital economy's GVA in 2022 (PSA 2023d). Based on Ookla (2023), mobile and fixed broadband performance improved in 2023. The download speed for mobile internet increased from 19.26 megabits per second (Mbps) in May 2022 to 25.84 Mbps in May 2023, improving the country's ranking from 91st to 83rd, respectively. For fixed broadband, the download speed increased from 60.09 Mbps in May 2022 to 92.53 Mbps in May 2023, improving the Philippines' ranking from 58th to 45th place.

The Department of Information and Communications Technology (DICT) released DC 01 (s. 2022) to facilitate the efficient deployment of passive ICT infrastructure, provide internet services to GIDAs, and improve the courier services industry. It seeks to streamline the registration process and regulation of independent tower companies, satellite systems providers or operators, and private express and/or messengerial delivery service operators.

IT-enabled sectors

Strengthening cybersecurity regulation is essential for secured ICT networks. It will help improve the trust of investors, businesses, and consumers in engaging in the IT-BPM industry, digital trade, e-commerce, and online banking. The performance of cybersecurity in the Philippines fell to

61st rank out of 194 countries in 2020 from 37th rank out of 193 countries in 2017. In response, the DICT drafted the National Cybersecurity Plan 2023–2028, which is open for public consultation until 2023. The draft consists of enacting the cybersecurity law, protecting critical information structures and cyberspace, creating a computer emergency response team and cybersecurity workforce, and strengthening international cooperation to enhance cybersecurity (DICT 2023). In addition, the Subscriber Identity Module (SIM) Registration Act (RA 11934) was passed in October 2022, requiring SIM owners to register their mobile numbers. It promotes the responsible use of SIM and protects users from illegal or malicious content and other security threats.

The National Tourism Development Plan 2023–2028 was approved in May 2023, bringing digitalization and connectivity to enhance tourism services. The DICT supports the plan by providing free Wi-Fi in 94 tourism areas identified by the DOT. The government is working on an e-visa system for better e-travel services (CNN Philippines 2023c).

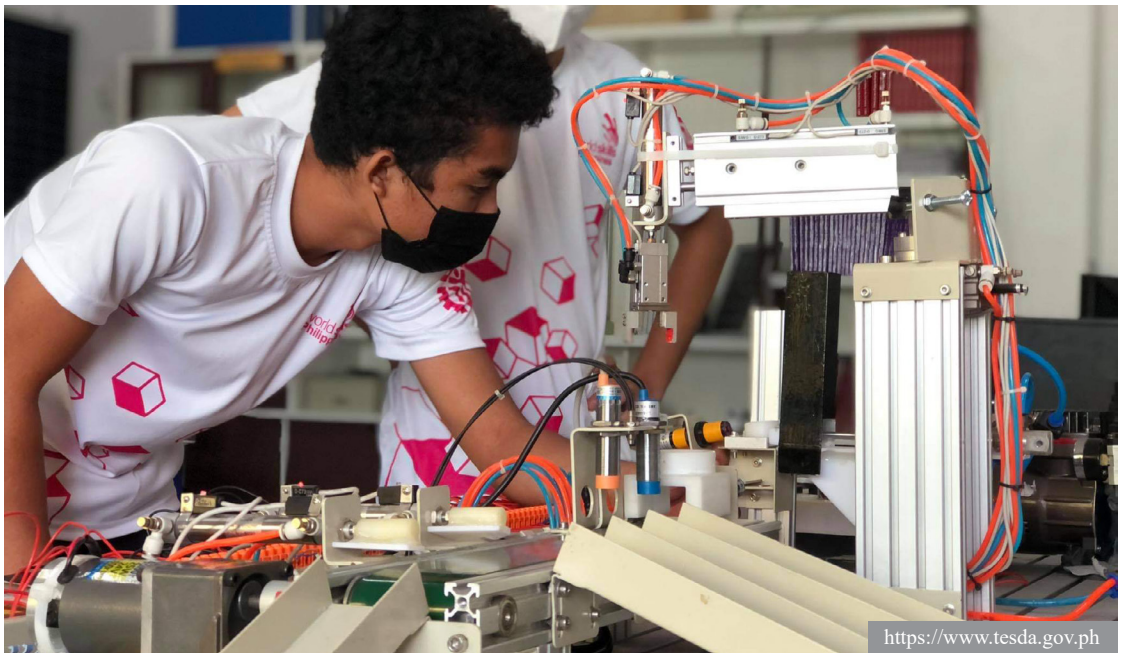
Issues

Measuring the digital economy and implementing digital taxation remain a global issue. Improving services-related statistics and developing regional plans are essential for the inclusive growth of the services sector and better utilization of free trade agreements. Likewise, regulatory reforms to improve digital connectivity for businesses and consumers are critical in enhancing the services sector's quality, competition, and efficiency. These include strengthening the National Telecommunications Commission's regulatory independence, developing a spectrum plan, removing the requirement of a legislative franchise, and creating an open-access policy in the internet connectivity segment.

Science, technology, and innovation (STI)

The Philippines recognizes the vital role of STI, including ICTs, in attaining sustainable development and accelerated socioeconomic growth. The DOST, through the National Academy of Science and Technology, led the formulation of a 30-year STI Foresight and Strategic Plan for 2050, called *Pagtanaw* 2050. The STI plan focuses on four clusters: food, nutrition, and health; water and energy; environment and space exploration; and built environments. It outlines the achievement of the vision for 2050 through 12 key operational areas, including the blue economy; governance; business and trade; digital technology/information and communications; science education and talent retention; food security and nutrition; health systems; energy; water; environment and climate change; shelter, transportation, and other infrastructures; and space exploration.

STI is prominent not only in the country's long-term development plans but also in its medium-term priorities. Chapter 8 of the PDP 2023–2028 discusses the government's plan to advance R&D, technology, and innovation (NEDA 2023a). The Harmonized National Research and Development Agenda (HNRDA) 2022–2028 provides a strategic framework for the country's R&D efforts. It identifies several priority areas like health; agriculture; industry, energy, and environment; and DRRM and climate change. Both the HNRDA and the PDP uphold the government's objective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to increase R&D investments; foster collaboration with the academe, industries, and public institutions; and promote technology transfer and commercialization of research outputs, especially amid the frontier technologies of the Fourth Industrial Revolution, such as artificial intelligence, additive manufacturing, advanced materials, materials for energy, nanotechnology, and quantum technology (Dadios et al. 2018).

The Philippines has been implementing laws, policies, and other initiatives to promote STI and harness its potential for social progress and competitiveness. Enacted in 2019, the Philippine Innovation Act (RA 11293) serves as a fundamental framework for STI policies in the country. However, the National Innovation Council (NIC) only convened in 2022, owing to birth pains from the COVID-19 pandemic that led the government to realign budgets for the NIC to other concerns. Some bills that have been filed to ensure that science and technology (S&T) supports the country in achieving its development goals are the Science for Change Program, Science for Filipino Society Program, and other bills supporting the procurement of S&T-related supplies and materials.

The country has established policies and programs to support innovation among startups and MSMEs. The Innovative Startup Act (RA 11337) provides startups with a supportive ecosystem through financial incentives, funding, streamlined regulatory processes, and capacity-building programs. Under this law, the DOST, DTI, and DICT give startups access to financing, mentorship, and incubation support through the Startup Ecosystem Development Program. The DOST spearheads the implementation of the Small Enterprise Technology Upgrading Program to enhance MSMEs' technological capabilities. Bills were filed to strengthen the capacity of the DOST and its attached agencies (HBs 02706

and 03231), including the Philippine Science High School (HBs 03216, 04462, and 07335). Meanwhile, the DTI supports innovation activities for MSMEs through the RIICs.

Although the country has STI policies in place and commits to attaining the Sustainable Development Goals (SDGs)—including SDG 9 or the global goal on industry, innovation, and infrastructure—huge investments in STI have thus far not been forthcoming. Decisionmakers continue to regard STI as unaffordable luxuries, especially when faced with competing development priorities, and the private sector has yet to make requisite investments in STI. Recent data suggest that less than half of Philippine firms are innovation active (Albert et al. 2023). While much of their production focuses on meeting local demands, firms do not see a huge need for innovation.

STI policies should focus not only on the scientific and technological content of innovations but also on institutional issues and the wider context of introducing and adopting innovation in the market (Chaminade and Lundvall 2019). The government recognizes the significance of building a skilled and knowledgeable workforce in STI to improve the country's innovation ecosystem. Scholarships and grants are available for students pursuing science, technology, engineering, and mathematics disciplines. Furthermore, the government encourages collaboration between industries and the academe through partnership and internship programs to bridge the gap between education and industry needs. Proposed laws (e.g., HBs 01457 and 05017) have been filed in Congress to encourage SUCs to partner with the business sector.

International collaboration is a vital aspect of the Philippines' STI policies. The country actively participates in regional and global STI networks, such as the ASEAN Committee on Science, Technology, and

Innovation and the Asia-Pacific Economic Cooperation (APEC), to facilitate knowledge sharing, capacity building, and technology transfer and leverage the country's global expertise and resources to accelerate STI development.

The government has made significant policy pronouncements on embracing digitalization and digital transformation. For instance, the DICT identified four priority areas: cyber security and safety, citizen-centric governance, digital inclusion, and innovation-driven economy. The agency drafted the updated National Cybersecurity Plan for 2023–2028 in response to increased vulnerability to cyberattacks associated with the growing e-commerce and e-banking transactions in the country during the COVID-19 pandemic. The plan calls for the passage of a Cybersecurity Act to balance the economic relationships affecting noncompliance to cybersecurity regulations. Reforms in cybersecurity policies recognize the need to address misaligned incentives, asymmetric information, and externalities amid the shared responsibility between the public and private sectors. The cybersecurity plan identifies the need for capacity development on cybersecurity, secured networks and systems, incident response and recovery plans, and extensive collaboration with the private sector.

The DICT launched a mobile super app, the eGov PH (e-Government Philippines), to streamline government transactions and services for citizens and businesses. The eGov PH offers a one-stop online shop for public services and information, covering both national and local government levels. The super app has features like SIM registration, LGU services, job applications, tourism, and a feedback management system. It supports the DICT's priority for citizen-centric governance and digital inclusion.

While digital transformation offers many benefits, implementing policies to hasten digitalization in the public sector remains challenging. First, many government agencies in the country use legacy systems. This poses significant cybersecurity risks and impedes the use of frontier technological innovations. Second, the volume of data generated by government agencies grows exponentially, which presents a major difficulty in storage, management, and analysis and requires investments in hardware, software, and people skills. Third, as government agencies move their operations online, they become more vulnerable to cyberattacks. Thus, it is important to prioritize cybersecurity in the government's digital transformation initiative.

As the government boosts its digitalization and innovation efforts, it should recognize the country's unevenly distributed digitalization dividends and innovation skills, which may worsen current inequalities. Among the objectives of digital transformation and innovation in the public sector is to streamline and optimize government processes. However, challenges like data security, privacy, and interoperability issues remain. Many government agencies are too attached to legacy systems and lack data and ICT governance frameworks and technical expertise and resources. The government must make services more inclusive and responsive to the citizens' needs by actively engaging the private sector and citizens in the country's digitalization program and investing in innovation. This may lessen resistance to change and uphold efforts to stay competitive in a rapidly changing world.

Land transport

The government issued numerous policies related to the Public Utility Vehicle (PUV) Modernization Program in 2022 and the first half of 2023. These are the expanded implementation of the equity subsidy scheme for transport service providers through the national budget and agency-level policies.

At the agency level, the Department of Transportation (DOTr) issued DO 2022-05, which provides the guidelines for the expanded equity subsidy scheme per the national budget and subsequent related legislation, and DO 2022-019, which prescribes the guidelines for issuing certificates of compliance to manufacturers, assemblers, distributors, importers, dealers, rebuilders and suppliers participating in the program's fleet modernization component.

The Land Transportation Franchising and Regulatory Board (LTFRB) released several issuances, including MC 047 (s. 2022), which adopts the standard specifications of minibuses (as contained in the Philippine National Standards 2160:2021) that are part of the PUV modernization program. MC 063 (s. 2022) establishes the eligibility requirements for consolidated transport service entities that can avail of equity subsidies, the amount of subsidy per type of PUV, the instruction on modernization of fleet per route and mode classification, and the general guidelines for availing of the subsidy. MC 076 (s. 2022) includes modern minibuses and public utility buses in the provision of equity subsidy and gives additional instructions and guidelines for availing of the subsidy. MC 081 (s. 2022) amends some of the equity subsidy scheme requirements and allows recipients to open settlement accounts for equity deposits in other banks besides the LBP. MC 013 (s. 2023) sets the deadline on March 31, 2023 for the application to consolidate individual franchise holders of certain types of PUVs (i.e., public utility jeepneys [PUJs],

Filcabs,[7] and UV Express vehicles)[8] into a cooperative or corporation and directs the reversion of the franchise of individual operators who fail to join a consolidated entity after June 30, 2023 to the government (which protesters dubbed as "jeepney phaseout", affecting many operators of single-unit jeepneys). LTFRB MC 017 (s. 2023) nullifies earlier deadlines and penalties on franchise consolidation and extends the deadline for the application for franchise consolidation on all routes to end-December 2023. MC 018 (s. 2023) allows the provision of an alternative certificate of compliance to consolidated entities in PUV transport service routes, with technical parameters (to be submitted to partner financing institutions as an assurance of the financial viability of routes) pending the results of the route rationalization studies.

The PUV modernization program was supposed to have a three-year transition starting in 2017, but the DOTr and the LTFRB extended the transition due to the COVID-19 pandemic. The reaffirmation of the implementation pathway in 2023 was consequential, because it triggered protests and led to the nationwide transport strike[9] of organized groups of jeepney drivers and operators on March 6–7, 2023. On July 24, 2023, one of the public transport groups,[10] *Manibela (Samahang Manibela Mananakay at Nagkaisang Terminal ng Transportasyon)*, held a transport strike, claiming that the government's promises were not met.[11]

https://www.pna.gov.ph/photos

To contextualize the implementation difficulties and opposition by some drivers and operators, the objectives and components of the program must be revisited. According to Delgra (2019), the PUV modernization program has three main objectives: ensure inclusive, comfortable, safe, and dignified access to public transport (social objective); reduce the public transport system's negative impacts on the environment and public health (environmental objective); and have efficient, affordable, and economically

[7] Described in the government-issued Local Public Transport Route Plan Manual as PUVs "with a seating capacity of 7 to 11 passengers and are meant to replace tricycle services in all national roads, highways, expressways, or any arterial road" (DOTr et al. 2017, p.6).
[8] The circular says that the LTFRB will issue the guidelines for other PUV classes like public utility buses and minibuses.
[9] It was supposed to be a week-long transport strike, but the groups ceased the strike after a meeting with DOTr officials and an agreement that the government would put on hold the deadline and review the modernization program.
[10] Other organized transport groups have expressed opposition to the strike and condoned any form of disruption that would affect commuters (Saavedra 2023).
[11] The transport strike was supposed to be up to July 26, 2023, but Manibela discontinued the strike due to the commuters' call for transportation services amid the heavy rain brought by Typhoon *Egay*. The group warned to continue the strike if the government fails to address the issues they raised (CNN Philippines 2023d).

sustainable public transport services (economic objective). The program has 10 components: regulatory reform, LGU public transport route planning, route rationalization, fleet modernization, industry consolidation, financing, vehicle useful life program, pilot implementation, stakeholder support mechanism, and communication.

As part of the regulatory reform, DOTr issued in 2017 the Omnibus Franchising Guidelines, which officially started the PUV modernization program. LGUs' public transport route plans are now a requirement for the issuance of franchises, unlike before when the applicant transport service providers propose the routes. Fleet modernization requires safety features,[12] promotes environment-friendly units like electric vehicles and Euro IV-compliant combustion engines, and disallows PUVs that are more than 15 years old. Industry consolidation disallows the "one franchise–one PUV unit–one transport operator" setup and requires existing operators to consolidate themselves into juridical entities capable of providing at least 15 units. This is tied with the vehicle useful life program, which involves incentivizing owners of end-of-life traditional jeepneys (15 years or older) to surrender their units to scrapping facilities. The financing scheme involves special financing facilities under the LBP and the Development Bank of the Philippines (DBP), participation of private banks and other legitimate financing institutions, and provision of equity subsidy from the national government. The equity subsidy from the national government started at PHP 80,000 per unit in 2018 and increased to PHP 160,000 per unit in 2020.[13] The pilot implementation in 2018 was conducted in specific routes in Tacloban City, Manila, Taguig City, Pateros, and Iloilo City.[14] Stakeholder support mechanisms include training, skills equipping, and behavioral change programs. DOTr and LTFRB spearheaded the communication campaigns.

The program's most contentious components are financing for modern PUVs, industry consolidation, and route rationalization. Many PUV drivers and operators oppose the program because of the difficulty in complying with the requirements, which implies remaining policy gaps that must be addressed. With respect to financing, legislative hearings revealed that the reality does not match the requirements. In a public hearing at the House of Representatives in March 2023, LBP and DBP officials said that based on their initial study, the modern PUV cost per unit is from PHP 1.6 million to PHP 1.8 million. However, a modernized jeepney now costs between PHP 2.3 million and PHP 2.8 million per unit, and the monthly amortization in the current financing scheme is from PHP 38,000 to PHP 40,000 for seven years. These amounts are unaffordable compared to a driver's supposed average income of PHP 300 to PHP 500 per day, which normally amounts to only PHP 9,000 to PHP 15,000 monthly (Manila Standard

[12] These include but are not limited to access for the elderly and persons with disabilities, a dashboard camera, and a layover or garage sufficient for all units in the operator's fleet.

[13] The LGU extended subsidies in one case of the pilot implementation. Tacderas et al. (2021) explained in their study of the General Santos City case that the LGU stepped in and legislated an ordinance providing a subsidy of about PHP 100,000 per unit to encourage participation in the PUV modernization program. The study revealed that the government did not consider many upfront costs of acquiring modernized jeepneys and forming cooperatives, including chattel mortgage fees, bank service fees, expenditures for forming cooperatives, land and infrastructure investments (for the required garage for the fleet), and other related costs like garage safety officers and resident mechanics.

[14] LTFRB information as cited in Estipular (2020).

2023). Although the government provides capacity-building support in forming cooperatives or corporations, it remains insufficient given that industry consolidation entails additional costs for operators and drivers. For instance, jeepney cooperatives must put up the required paid-up capital of PHP 300,000 (DOTr 2023)[15] and may have to spend for tax clearances (Yu 2023a).[16] There is an allegation of covert payments for undue favors on route rationalization, which transportation officials denied but was among the reasons for the transport strike (Yu 2023b).

Policies must have a just transition in the PUV modernization program and confront the reality faced by the poorest drivers and operators. Policies should focus on revisiting the subsidy amount, reducing the cost per unit of modern PUVs, reducing the cost of cooperatives formation for drivers and operators, engaging extension workers in areas where cooperatives formation is challenging, and investigating the alleged irregularities in route rationalization.

Air and marine transport

The conflicting roles of government agencies managing the country's seaports and airports have impeded the growth and development of the water and air transport sectors. The Philippine Ports Authority (PPA), the agency responsible for funding and managing the operation and maintenance of public ports, and the Civil Aviation Authority of the Philippines (CAAP), which is tasked to operate and maintain airports, air navigation, and similar facilities, perform contradicting roles that limit their effectivity as an operator or regulator of these sectors (Llanto et al. 2005; World Bank 2009; Patalinghug et al. 2016; Rodolfo 2017; Baek and Kim 2018; Tongzon 2018). The lack of coordination in infrastructure planning for multimodal transport aggravates this issue, resulting in the inefficient use of government funds and imbalance of infrastructure investments throughout the country. Over the years, several bills have been filed in the House of Representatives and the Senate to separate the regulatory, development, and

https://www.facebook.com/MIAAGovPH

[15] The required paid-up capital of cooperatives is PHP 750,000 for vans and PHP 1 million for buses (DOTr 2023).
[16] The expenditure for the tax clearance allegedly costs between PHP 20,000 and PHP 30,000 per driver with a single unit, or about PHP 450,000 for a cooperative of 15 individual operators, for a total of PHP 750,000 for the paid-up capital and tax clearance requirements (Yu 2023a).

operational functions of the PPA and the CAAP. However, none of these bills has been translated into law.

To reform the country's port administration, HB 01400 was filed in July 2022. This bill proposes the conversion of the PPA into a corporation named the Philippine Ports Corporation (PHILPORTS) to handle the commercial and development functions of public ports in the old PPA's system. All regulatory functions would be transferred to the Maritime Industry Authority (MARINA). The proposed PHILPORTS would no longer be a revenue-generating government-owned or -controlled corporation and instead would provide services to the public. The role of PHILPORTS would be limited to collecting port fees and dues that MARINA approves, which would stop receiving a share in revenues for cargo and other services from contracted service providers and private commercial ports. However, HB 01400 has been pending with the Committee on Government Enterprises and Privatization since August 2022. A more recent version of the bill, HB 08055, was filed in May 2023. Similarly, it proposes converting the PPA into the PHILPORTS, which will retain the PPA's development, management, and operational functions and transfer the regulatory functions to MARINA. The Committee on Government Enterprises and Privatization has reviewed HB 08055 and referred it to the Committee on Transportation.

In contrast to these measures, PPA has initiated the privatization of the management and operation of ports under its jurisdiction since 2016. The agency seeks to improve port management and services by encouraging private sector participation in port operations through the Port Terminal Management Framework (PPA AO 03-2016). As stipulated in AO 03-2016, PPA offers different modalities of private sector partnership (Table 2.2), such as full

Table 2.2
Modalities under PPA's Port Terminal Management Framework

Category	Specific infrastructure investment	Tier 1 (full concession)	Tier 2	Tier 3	Tier 4	Tier 5 (Pure O&M)	Tier 6 (PPA-STU managed ports)
Physical undersea infrastructure	Capital, maintenance dredging	Contractor	PPA	PPA	PPA	PPA	PPA
Physical landslide infrastructure	Wharf, piers, land reclamation	Contractor	Contractor	PPA	PPA	PPA	PPA
Above-ground semi-fixtures	Quay cranes, gantry cranes	Contractor	Contractor	Contractor	PPA	PPA	PPA
Above-ground fixtures	Passenger terminal building, pavement, fence	Contractor	Contractor	Contractor	Contractor	PPA	PPA
Mobile handling equipment only	Forklifts, trucks	Contractor	Contractor	Contractor	Contractor	Contractor	PPA

PPA = Philippine Ports Authority; O&M = operations and management; STU = Special Takeover Unit
Source: PPA AO 03-2016

concession, full operation and management contract, and other modes of partnership in delivering port services and infrastructure, given the differences in each port's infrastructure needs. The concessionaire will be selected through competitive bidding. The overall implementing guidelines for the selection and award of contract under the PTMF was released through AO 12-2018. Essentially, the winning bidder will pay a fixed concession fee and a variable fee (depending on the traffic volume) to PPA in exchange for the privilege to manage, operate, and maintain a PPA port for a specific period. Other AOs were issued to support the implementation of the port operation's privatization under the PTMF. AO 010-2019 prescribes a uniform tariff level for Tier 3 ports (Table 2.2), while AO 016-2019 simplifies the classification of investment categories between the PPA and the contractor by combining Tiers 3, 4, and 5 ports into one group. The latest PPA issuance, AO 002-2023, contains the recommended tariffs for ports under the Tier 2 classification.

Two pertinent bills filed in Congress in 2022 aim to address the issue of conflicting roles delegated to the CAAP. HB 02234 and SB 1073 propose the creation of separate entities, the Philippine Airports Corporation and the Philippine Airports Authority, respectively, to take care of the planning, construction, and operation of airports in the country. Both proposals aim to address the need to upgrade the country's domestic and international airports and air navigation facilities. HB 02234 has remained pending with the Committee on Government Enterprises and Privatization since August 2022 and has been referred to the Committee on Transportation, while

SB 1073 has been pending since September 2022. Another proposal to create the PPA was filed as HB 7420 in March 2023. Like earlier bills, it proposes having a single entity to plan, develop, and maintain all airports in the country and regulate the privatized airports of CAAP. Moreover, it aims to address the overlapping functions of the DOTr and the CAAP in the development, maintenance, and operation of airports. HB 7420 has been pending with the Committee on Government Enterprises and Privatization since March 2023.

The DOTr is turning to a PPP for infrastructure upgrade and service enhancement at the Ninoy Aquino International Airport (NAIA), the country's busiest airport. The PPP project at NAIA is currently in the project preparation stage. Another PPP project in NEDA's list of infrastructure flagship projects (as of March 31, 2023) is the Air Traffic Services-Air Navigation Services (ATS-ANS), currently in the pre-project preparation stage. The ATS-ANS project seeks to upgrade the existing traffic services and navigation facilities to cover the country's airspace.

Energy

For the energy sector, new policies on investment liberalization, regulatory frameworks, the renewable portfolio standards (RPS) policy, renewable energy (RE) integration into the grid, feed-in tariff (FIT) system, consumer access to the retail supply market, and nuclear energy development were passed in 2022 and the first half of 2023.

RA 11659, or the 2022 Public Service Act amendments, provided clarity on foreign investments in the energy sector. The law specifically defined public utility

in the Philippine context by enumerating six public services, three of which are in the energy sector, namely, distribution of electricity, transmission of electricity, and petroleum and petroleum products pipeline transmission systems.[17] This clarifies that the constitutional 40-percent limit on foreign ownership of businesses deemed public services does not apply to energy sector investments not defined as a public utility.[18] Another policy on investment liberalization is the Department of Energy (DOE)'s DC 2022-11-034, which amended Section 19 of DC 2009-05-0008 or the IRR of RA 9513 (Renewable Energy Act of 2008), by removing the nationality requirement imposed on businesses engaged in the exploration, development, and utilization of solar, wind, hydropower, and ocean energy.

New regulatory frameworks were created for microgrids, distributed energy resources (DER), biomass waste-to-energy technology, and offshore wind technology. RA 11646, or the Microgrid Systems Act, established the regulatory framework for setting up and operating microgrid systems in unserved and underserved areas. DOE DC 2022-05-0017 promulgated the IRR of this law. Energy Regulatory Commission (ERC) Resolution 11 (s. 2022) provided rules for DER or generation units (usually small) located near the end-users or directly connected to the distribution system. The rules apply to renewable energy-sourced DER for end-user consumption and export to the distribution grid and DER for end-users regardless of technology. The ERC resolution clarified the licensing, pricing, commercial sale and lease agreements, and interconnection standards for DER. DOE DC 2022-02-0002 provided the conditions for the eligibility of biomass waste-to-energy facilities in policies under the Renewable Energy Act of 2008. EO 21 (s. 2023) provided the regulatory procedures for offshore wind development, including the permitting process, rationalization of fees, and integration with the government's Energy Virtual One-Stop Shop (EVOSS).[19] DOE DC 2023-05-0013 promulgated the implementing guidelines of EO 21 (s. 2023). These new regulatory frameworks democratize energy access, because they support the tapping of generated electricity closer to the end-users and enable additional access to RE sources.

Policies clarifying and supplementing the RPS policy and initiating the renewable energy market (REM), which in turn is meant to facilitate RPS implementation, were issued. The RPS policy mandates electricity suppliers to source or produce a minimum percentage of their electricity supplies from renewable sources.[20]

DOE DC 2022-09-0030 adjusted the minimum annual incremental RE percentage for mandated participants from 1 percent in 2017 to 2.52 percent taking effect in 2023 to meet the aspirational targets of

[17] The other three are water pipeline distribution systems and wastewater pipeline systems, including sewerage pipeline systems, seaports, and PUVs.

[18] RA 11659 established critical infrastructure, or vital infrastructure systems and assets, the destruction or incapacity of which will put national security at risk, as another class of public service and provides reciprocity requirements on foreign investment. There is a statutory 50-percent limit on foreign investment in critical infrastructure if the foreign investor's country does not accord reciprocal rights. However, it is indefinite how this will affect energy sector investments, because what is deemed critical infrastructure will be declared by the President, as the law prescribes.

[19] The EVOSS is a system for fast-tracking the permitting process in energy sector investments. Under this system, participating government agencies are mandated to issue permits within a specified number of days.

[20] The RPS rules were issued in 2017 for on-grid areas and 2018 for off-grid areas.

35 percent RE in the generation mix by 2030 and 50 percent by 2040. DOE DC 2023-05-0014 revised the RPS off-grid rules and mandated the National Power Corporation-Small Power Utilities Group to prepare a multiyear RPS compliance plan. DOE DC 2023-05-0015 harmonized the development of department-level policies on RE by comprehensively amending the 2017 RPS rules for on-grid areas. The REM was initiated in 2022 through DOE DC 2022-06-0019, declaring the REM's interim commercial operation. The REM is a trading mechanism for RE certificates and a complement to the RPS policy, as it facilitates the mandated participants' compliance with the RPS requirements.[21]

DOE DC 2022-06-0026 amended some REM rules, particularly on extending the National Transmission Corporation's timeline of data provision, rules on RE certificate issuance, and obligations of the REM governance committee and the additional seats therein. While DOE DC 2022-06-0019 declared the interim commercial operation REM, it will not involve any financial transactions yet. Financial transactions[22] will begin upon the DOE's declaration of full commercial operation. The interim declaration prescribed the activities that the REM registrar, REM governance committee, mandated participants, and the ERC must do.

[21] On-grid mandated participants include distribution utilities, electric cooperatives, and retail electricity suppliers in on-grid areas and local electricity suppliers, suppliers of last resort, and generating companies supplying directly connected customers. Off-grid mandated participants include electricity suppliers to end-users in off-grid areas. Generation companies owning RE generation facilities must register in the REM to be eligible for RE certificates corresponding to their RE generation.

[22] Transactions are supposed to work such that the REM registrar administers the renewable energy certificate (REC) transactions and issues RECs to eligible trading participants. Every megawatt-hour (MWh) of actual RE generation is entitled to one unit of REC. A trader may transfer the REC to another trader and must disclose the price and volume to the RE registrar. RECs are deemed retired or no longer tradeable when a mandated RPS participant surrenders the RECs in compliance with the RPS requirements. However, the rules allow a trader to bank its RECs for up to three years, leaving room for price speculation. As of this writing, the DOE and the ERC have not determined the REC price cap.

Policies optimizing the integration of RE into the grid were also issued, such as DOE DC 2022-10-0031, which amends DOE DC 2015-03-0001 and declares all RE resources as preferential dispatch generating units in the wholesale electricity spot market (WESM); DOE DC 2023-04-0008, which prescribes the policy for energy storage systems needed for RE integration and grid stability; and DOE DC 2022-12-0039, which declares the commercial operation of the WESM in the Mindanao grid. The declaration of Mindanao WESM operation can help maximize RE utilization in the national grid given the interconnection of the Luzon-Visayas grid and the Mindanao grid.

The new policy issuance on the FIT system is ERC Resolution 2 (s. 2022), setting the reserve prices for the green energy auction. Improvements in the FIT started when the Green Energy Auction Program (GEAP) guidelines were issued in 2021. The GEAP uses auctions in determining the lowest FIT for RE generation. Fixed tariffs were prescribed per RE technology when the FIT system started in 2010.

Policies to improve consumer access to the retail supply market were also issued. ERC Resolution 4 (s. 2022) provided the implementation procedure for the retail aggregation of electricity supply to end-users with at least 500 kilowatts of total monthly average peak demand. ERC Resolution 1 (s. 2023) allowed contestable customers to switch to other retail suppliers or suppliers of last resort without the additional burden of securing clearances from current suppliers.

A policy declaration on nuclear energy development was also issued, particularly EO 164 (s. 2022), adopting a national position for a nuclear energy program. The national position declared that the Philippines should tap nuclear energy as an electric power source and commit to pursuing the highest standards of nuclear safety, security, and safeguards.

These policy issuances are aligned with the objectives of RA 9136 or the Electric Power Industry Reform Act (EPIRA) of 2001. The EPIRA introduced major reforms to ensure quality, reliable, secure, and affordable electric power supply; promote the utilization of RE resources; and achieve universal access to electricity. However, gaps in policy refinements to sustain the reforms and the EPIRA amendments remain. At this point, the DOE spearheads the EPIRA review and consultations to identify necessary amendments.

Environment and natural resources (ENR)

Institutional thematic policy augmentation best describes the current administration's focus on the ENR sector. Transitory bodies were established in the interim, as promised departments await legislative passage. Other issuances granted avenues for greater private sector participation, particularly on waste management, which eases off the investment load on the government's shoulders. Environmental protection takes on a more proactive stance in reviewing the regulatory landscape. The following discussion details recent policy movements in different ENR sectors.

Waste management

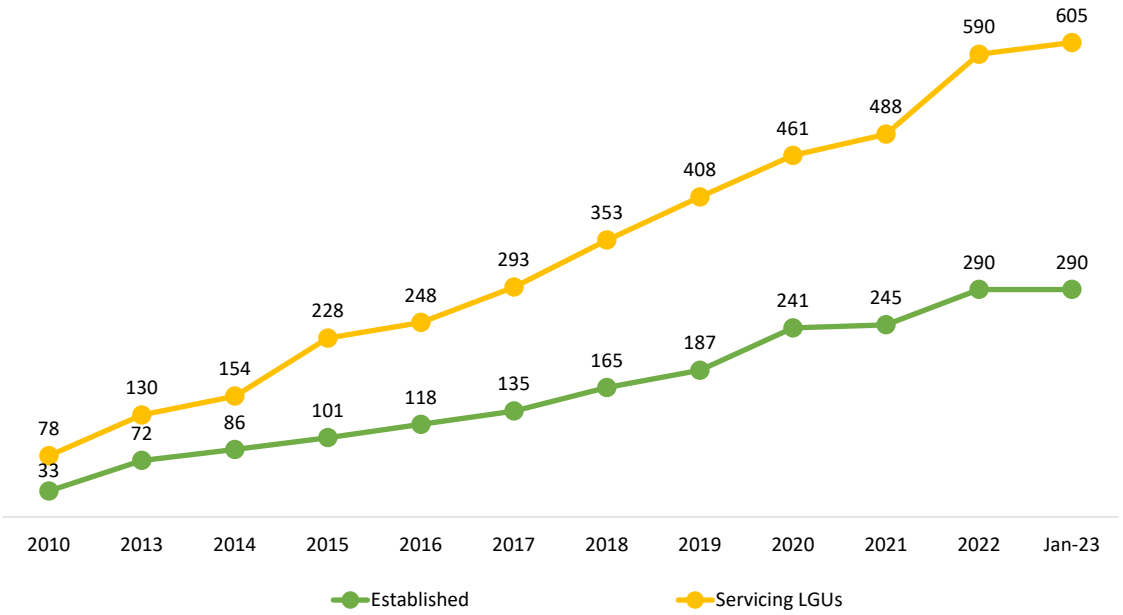
The National Solid Waste Management Commission (NSWMC) estimates the country's waste to reach 23.61 million tons in 2025. Currently, there are 290 sanitary landfills servicing 590 LGUs.[23] Despite this, the Philippines remains one of the biggest global contributors to marine pollution (GAIA 2020).

The enactment of RA 11898, or the Extended Producer Responsibility Act of 2022, and its implementing rules and regulations through the Department of Environment and Natural Resources (DENR) AO 2023-02 enhances waste management through a circular economy (CE)[24] approach. Large-scale enterprises now shoulder the responsibility for the life cycle of plastics and must register and establish extended

[23] The SLFs receive 20,413.23 tons of waste per day against a total capacity of 66 million cubic meters, the biggest of which is operated by Green Leap Solid Waste Management, Inc. in Rodriguez, Rizal, which covers 12 cities in Metro Manila, and Imus City, Cavite.

[24] The circular economy is an economic model of creating value by extending product lifespan through improved design and servicing and relocating ways from the end of the supply chain to the beginning.

Figure 2.5
Sanitary landfill coverage, 2010–January 2023



LGUs = local government units
Source: NSWMC 2023


https://ncr.denr.gov.ph

producer responsibility (EPR) programs, categorized into waste recovery or waste reduction strategies,[25] within six months of effectivity. These initiatives target the plastic footprint recovery rates in Section 44F of RA 11898.

The EPR Law recognizes thermal and other waste-to-energy treatments as recovery mechanisms and repeals the prohibitory clauses in the Clean Air Act and the Ecological Solid Waste Management Act. Allowable parameters are yet to be released, but narratives on the ground report that these mechanisms tend to encourage plastic waste generation to meet conversion caps. Stakeholders involved must balance reduction and recovery mechanisms.

The DENR has oversight through the NSWMC and the National Ecology Center, while the DTI secures coordination across establishments. Premised on transparency and accountability, the policy requires a solid waste management information database and an EPR Law Compliance Audit Report.

The issuance addresses pertinent concerns in the waste management landscape.[26] However, it remains silent on lacking designated waste or environment offices in LGUs. Efficient PPPs rest on capacitated technical offices. Nonetheless, this law opens opportunities for a circular economy. Its successful transition rides on the complete buy-in and engagement of a whole-of-society approach.

Five senate bills filed from January 2022 to June 223 echo similar objectives, particularly focusing on plastic management. Interestingly, bills banning single-use plastics have not emerged in the 19th Congress but have been replaced with disincentives (taxation). Notably, SB 1746, or the Waste-to-Energy Act, integrates WTE mechanisms into the Philippine Energy Plan and sees bigger participation from the DOE.

[25] Specific activities include the adoption of reusable products; inclusion of recycled content; ecolabeling; waste recovery schemes through redemption, buyback, offsetting or any method or strategy; diversion of recovered waste into value chains; and transportation and cleanup.

[26] Private sector engagement, capital outlay, institutionalization of informal sector, and collection and diversion targets

Table 2.3
Set targets for plastic footprint recovery

Date	Target
December 31, 2023	20%
December 31, 2024	40%
December 31, 2025	50%
December 31, 2026	60%
December 31, 2027	70%
December 31, 2028, and every year thereafter	80%

Source: RA 11898

DENR AO 2022-01 grants government agencies gratuitous[27] permits for special uses of forest lands. Special uses refer to "public infrastructure or utility systems" that promote a more balanced economic, environmental, and social development. Land use plans (i.e., Comprehensive Land Use Plan and Forest Land Use Planning) should reflect the proposed projects. For instance, if located within Palawan, proponents should secure an environmental impact assessment and clearance from the Palawan Council for Sustainable Development.

DENR AO 2023-01 introduces a geospatial database compiling information on the country's resources, their present conditions, boundary maps, inputs to the natural capital accounting program, and DENR interventions and other supporting data. This is a necessary pivot as big data (i.e., Google Earth and OpenStreetMap) becomes the norm. The National Mapping and Resource Information Authority is excluded from the provisions despite their existing geoportal website. There might be potential overlaps if the present tool is not used as a basis. Furthermore, the database should be open access to facilitate robust and collaborative work toward policy and program formulation.

EO 2023-22 created the Water Resources Management Office (WRMO) under the DENR. It serves as a transitory body as its department counterpart awaits Congressional approval. The issuance attaches to the department's relevant water agencies: the National Water Resources Board, Metropolitan Waterworks and Sewerage System, the Local Water Utilities Administration and local water districts, and the Laguna Lake Development Authority. Consolidating agencies with different mandates, ranging from conservation, management, and regulation, can facilitate the creation of an Integrated Water Resources Master Plan. This master plan can serve as the blueprint for the sector and streamline other development plans, such as the PDP, the Philippine Water Supply and Sanitation Master Plan, and the National Water Resources Board Security Master Plan. The WRMO has substantial functions and is critical in balancing conservation and utilization initiatives.

[27] A five-year permit authorizing a head of a government agency and/or the local chief executive to use portions of forest lands, free of charge, for the development of government-managed projects of national interest and infrastructures for public service and use and noncommercial projects of government-owned and controlled corporations.

The progress with the Sustainable Forest Management bill has been slow, although the PDP 2023–2028 includes it in its legislative agenda for Chapter 15.[28] The DENR's Environment Protection and Enforcement Bureau (HB 3991) remains pending with the Committee on Government Reorganization. The proposed bureau aims to address the mounting harassment concerns against environmental enforcers and ramp up their legal assistance.

DENR MC 2022-02 cascades utilization guidelines for the legal defense fund. The PHP 200-million fund appropriated for FY 2016–2021 can be used for actual expenses, including posting bail bonds and expenses incurred in defense of regular and contractual personnel cases. However, most forest rangers are on job order (JO), which has debilitating impacts on the supposed frontliners of environmental defense. They lack hazard pay, permanent security complement, and legal assistance. The JO designation with these functions should be phased out and replaced with positions qualified for these benefits.


https://www.flickr.com/photos/iloasiapacific

Extractive industries

Clarificatory guidelines follow the lifting of the open pit mining ban in 2021. AO 2022-03 amends the previous IRR of small-scale mining with salient additions on registration[29] and accountability mechanisms in line with formalization and improved visibility of the small-scale mining labor force. An annual safety and health program is formally integrated, but oversight agencies may consider a magna carta of miners or an umbrella legislation for jobs of similar nature (e.g., waste handlers) to enable the provision of hazard pay.

The policy includes several social and environmental safeguards parallel to those in large-scale mining: a two-year potential environmental impact management plan, a community development and management plan, and an environmental management and social development fund.

The amended IRR complies with the tenets of the Intergovernmental Forum on Mining, Minerals, Metals, and Sustainable Framework. It integrates informal activities into the legal and formal economic system and has taken strides in reducing social and environmental impacts by introducing regulatory checks. However, the provisions gloss over the presence of a task force or monitoring body, a national research plan, and a more defined classification fitting with international standards. Retaining the definition does not align the industry with international standards, and the lack of mining subtypes subjects artisanal miners to heavy requirements.

[28] Accelerate climate action and strengthen disaster resilience
[29] Registration and licensing required government-issued IDs, barangay clearance as proof of residency, and an application fee of PHP 300. The Mines and Geosciences Bureau is tasked to maintain a registry of small-scale miners.

Section 3 of MC 2022-05 expounds the base definition of mineral land into "any area where mineral resources are found and may include areas with projected mining tenurial right, active mining area, mineral reservation, and areas determined based on the final and executory decision of the Supreme Court." MC 2022-01 rolls out the implementation of a "use it or lose it" policy on all types of mining applications and tenements. Pending mineral agreement applications shall be converted into exploration permit applications, and failure to file for conversion will be a cause for denial. With 9 million ha exhibiting high mineral potential, the number of pending applications continues to rise.

As of 2020, the total tenement area has reached 769,900 ha, comprising 3,970 small-scale mining operations, 55 nonmetallic operations, and 50 operating metallic mines (MICC 2020). However, only 17.82 percent[30] are considered active. While the coverage seems minuscule compared to the country's land mass, the long-term and indirect impacts could be far-reaching.

Meanwhile, the current administration takes the opposite approach to quarrying. Presidential Directive 2022-016, a "strictly confidential" document accessible only upon request from the Presidential Management Staff, defers acceptance of new reclamation applications due to concerns about landfilling and lax compliance with legal requirements. This pronouncement does not cover the 22 ongoing projects in different application stages. The Mines and Geosciences Bureau AO 2022-08 builds on this policy and extends the moratorium to seabed quarry and special exploration permits, which collect nonmetallic minerals. The ban does not cover offshore metallic mining.

Site-specific assessment and the weak participatory value have been prominent criticisms in environmental impact assessments. DENR AO 2022-02 addresses the latter by improving public participation guidelines over proposed river restoration projects, broadening its scope to include "people whose socioeconomic welfare, business activities, industries that will be displaced or are projected to be affected as determined by LGU concerned"; parties that the project may directly or indirectly affect; and households possibly displaced. Consultation adopts virtual modalities, which, while innovative, also pose challenges for stakeholders with limited to no access to the internet and/or necessary equipment (e.g., laptop, cellphone). As a result, their decision powers might need to be coursed through the representation of advocacy groups.

Lifting open pit mining ban emphasizes the lack of sustainability indicators in monitoring metrics (Ludwig et al. 2022). DENR AO 2022-04 enhances biodiversity conservation and protection in all onshore and offshore mining operations stages. At least 5 percent of the tenement's area or an area 1 km away will be set aside as a reference ecosystem, forming the basis for biodiversity monitoring. This creates opportunities to conduct baseline assessments and proper accounting of ecosystem services before the disruption.

Social development management programs are expected to include conservation and protection-inclined programs (i.e., green parks, agroforestry, and native plant

[30] Active mine areas only cover 137,000 ha out of the total tenement area of 769,900 ha.


https://philippines.un.org/en/about/about-the-un

propagation). This facilitates the inclusion of the Biodiversity Management Bureau and the Ecosystems Research and Development Bureau in the Multipartite Monitoring Team, the Mine Rehabilitation Fund Committee, and other pertinent committees.

Disaster management and climate change

The proposed Department of Disaster Resilience continues to elude passage. In the interim, EO 2023-04 constitutes the disaster response and crisis management task force, a transitory body that strengthens disaster preparedness and response with emphasis on "clear unity of command" to lead the government's efforts. The EO creates quick response groups in support of regional and local Disaster Risk Reduction and Management (DRRM) Councils that can be deployed during or in anticipation of a disaster. The task force does not intend to replace the local councils but rather to add another layer to the current DRRM structure.

Other proposals related to DRRM include a national hazard mapping and the enactment of a gender-inclusive emergency management act. For climate change, 15 bills were filed by the first semester of 2023, covering several themes on the Philippine Ecosystem and Natural Capital Accounting System, resilient housing, sustainable transportation, low-carbon economy, and waste management. Specific to coastal resources are bills on Coast Guard Modernization and the Blue Economy, while some pertain to curriculum integration. HB 7705 further looks into climate change mitigation, focusing on low-carbon economy policy and emission trading. Among its general strategies are tempering fossil fuel dependencies, promoting a low-carbon economy, and scaling up financing and adaptation solutions. The bill allows for critical discussions, particularly on applicable local mechanisms and the dynamics between local and global carbon credit trade systems.

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CHAPTER 3

Green and Digital: Managing the Twin Transition toward Sustainable Development

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Introduction

The world is undergoing a green transition and rapid digitalization. The shift toward green transition is evident as countries adapt their development plans to incorporate strategies related to shifting to renewable energy, reducing carbon emissions, and strengthening green technologies. Meanwhile, digitalization was catalyzed by coronavirus disease 2019 (COVID-19), with countries continuing to integrate digital technology across various economic sectors. Moreover, the advent of the Fourth Industrial Revolution (Industry 4.0) has highlighted the multiple applications through which technology impacts human life.

However, these twin forces acting on economies should not be viewed as separate factors; rather, they are simultaneous influences that countries must navigate to ensure sustainable development. Green transition strategies increasingly rely on digital technology to ensure the efficient use of resources. Conversely, digitalization requires using renewable energy to reduce the energy consumption associated with digital infrastructure and digital transactions.

Countries across all income levels are engaged in this dual transformation: green transition and digitalization. For countries like the Philippines, which bears the brunt of climate change impacts, science, technology, and innovation offer pathways and strategies for greater resilience. These avenues present new ways to adapt and mitigate the negative impact of destructive storms, fires, droughts, and other calamities. Working toward a green economy is also important for the country as it strives to realize its 2040 vision of a future that is strongly rooted (*matatag*), comfortable (*maginhawa*), and secure (*panatag*) for all.

This paper begins by expounding on the twin transition, highlighting the simultaneous forces of the green transition and rapid digitalization occurring globally. It then discusses the concept of the twin transition and relates it to sustainable development while addressing issues and concerns. Moreover, it contextualizes the twin transition within the Philippines, highlighting important issues the country needs to address to make this shift work for its development. These challenges include the possible impact on trade and investment, the readiness of human capital, and the role of science and technology, including artificial intelligence, in the twin transition. Finally, it concludes by presenting the role of government and offers insights into how the government should manage the twin transition.

Background

The world is undergoing a green transition, and…

Faced with the issues surrounding climate change and disaster resilience,[1] countries have agreed to address the challenges posed by climate change collectively. In the 2021 Glasgow Climate Pact, commonly referred to as COP26, countries committed to dedicating 2020–2030 as a decade for climate action and support, aiming to reduce emissions and limit the global average temperature rise to 1.5 degrees.

As countries adapted their national policies with the 2030 Agenda for Sustainable Development and the Paris Agreement,

[1] The dramatic changes to the world's climate and the unprecedented temperature records have been linked to more frequent and disastrous weather phenomena, such as typhoons, heatwaves, snowstorms, and others. According to the World Meteorological Organization, economic losses from weather-related disasters have increased sevenfold from the 1970s to the 2010s.

they have also gradually transitioned toward "green" economies. Appendix 1 shows that countries, irrespective of geographic location and the size of their economies, have embraced the green transition within their development strategies. European countries (e.g., Germany, France, Spain) have notably allocated substantial resources to achieve carbon emissions reduction targets. In the region, members of the Association of Southeast Asian Nations (ASEAN) and their neighbors have pledged to reduce carbon emissions by 2050, incorporating these commitments into their updated development plans (Appendix 1).

Countries are also exploring the shift to smarter production and consumption and adopting renewable energy sources. As the cost-benefit ratio of nonrenewable energy rises, "green" energy projects have multiplied. With the rise in energy security concerns and new policies being developed, the International Energy Agency has observed an unprecedented momentum for renewable energy adoption. In 2012, the share of primary energy consumption from renewable energy technologies (e.g., hydropower, solar, wind, geothermal, wave, tidal, and modern biofuels) comprised 8.8 percent of global electricity generation. By 2022, the figure has increased to 14.21 percent of the world's total energy generation.

A fall in the cost of renewable energy is one of the biggest factors in its rapid adoption. Particularly in offshore wind, the global weighted average cost of electricity of new projects saw a 9-percent year-on-year decline in 2020 from USD 0.093/kWh to USD 0.084/kWh (IRENA 2021). On the other hand, the global weighted average of levelized cost of electricity of utility-scale solar photovoltaics recorded a 7-percent year-on-year decline from USD 0.061/kWh to USD 0.057/kWh (IRENA 2021). Together, solar and wind energy sources are now cost competitive with electricity generated from fossil fuels (Jaeger et al. 2021).

While reduced costs are a major factor in the rapid adoption of renewable energy technologies, policy support has also been essential for its growth. Policies such as renewable energy tax subsidies and credits have helped reduce costs and propel deployment. Government investment in research and development has also been fundamental in promoting innovation in renewable energy (Jaeger et. al. 2021)

…at the same time, facing rapid digitalization

In parallel to their green transition, countries have worked toward adopting digital technology, such as the digitalization of services and payment systems, to improve service delivery, support businesses, and combat corruption and tax evasion. Digital technologies have enabled access to more variety and choices of services at lower costs. Convenience and personalized services have also emerged due to new technologies. Consumers also benefit from efficient service delivery due to fewer intermediaries. Compared to the 6.8 percent global average in Asia and the Pacific, digitally deliverable services have increased by 9 percent annually (ADB 2022). Digital services have become essential sectors in Southeast and South Asian economies.

The COVID-19 pandemic has further heightened the trend and accelerated digitalization (ADB 2022). Mobility restrictions have brought about a surge in digital service delivery as well. Countries

pivoted toward digital technologies to continue business transactions, work, remote classes, and government assistance.

Countries have implemented policies fostering the emergence of a digital economy, including smart manufacturing, fintech, e-health services like telemedicine, and smart agriculture. Smart manufacturing has raised the competitiveness of firms in Asia-Pacific Economic Cooperation (APEC) economies and thus has led to various policy developments. Several APEC economies have established various plans and programs to strengthen the diffusion of Smart Manufacturing technologies. These include policy programs with fiscal and nonfiscal incentives for stakeholders to adopt Smart Manufacturing technology.

The United States' Advanced Manufacturing Partnership 2.0 is a collaborative initiative to accelerate the development and adoption of emerging technologies. Similarly, Singapore has launched the Research Innovation and Enterprise 2020 plan to establish the country as a global research and development (R&D) hub (APEC 2019).

To promote financial inclusion, several countries in the Asia-Pacific region have turned to technology and emerging mobile financial services. For instance, India has initiated banking operations on basic mobile devices, thus eliminating the burden of complex banking applications. Similarly, Viet Nam's central bank has developed a national strategy to enhance the legal framework of fintech for its development and expansion (Quimba et al. 2021). The Philippine government's concerted efforts have resulted in regulatory reforms to promote digital payments, such as the establishment of the National Retail Payment System. The interoperable payment infrastructure has laid the foundation for adopting digital payment solutions such as InstaPay and PESONet (DTI 2021).

The COVID-19 pandemic has also expedited the adoption of digital technologies for medical and healthcare services, such as remote diagnosis, treatment services, and medical training (UNCTAD 2022). The support of 5G technology, which enables high-speed transmission and sharing of medical information, can alleviate the lack of resources in underdeveloped and rural areas (UNCTAD 2022). In the Philippines, the Food and Drug Administration has promulgated FDA Circular 2020-007, which provides guidelines for issuing e-prescriptions.

Improved information and communications technology (ICT) and digital connectivity have also directly

affected agricultural productivity, adaptation to the impacts of climate change, and farmer's well-being. Furthermore, technological advancements in ICT have promoted the increasing adoption of digital delivery of agricultural extension and marketing services (UNCTAD 2022). Wefarm, the largest global farmer-to-farmer digital network, enables farmers in Kenya to access customized support and gain knowledge from peers (Kolk and Ciulli 2020; UNCTAD 2022)

The world has begun adopting advanced digital technologies, such as artificial intelligence (AI) and robotics, big data, the Internet of Things (IoT), and blockchain technology, which are converging with nanotechnology, biotechnology, and cognitive sciences to form the bedrock of Industry 4.0. Globally, productivity increases ushered by Industry 4.0 is forecasted to deliver between USD 1.2–3.7 trillion in value. According to McKinsey & Company (2018), ASEAN member states with substantial manufacturing components have the potential to capture productivity gains between USD 216 and USD 627 billion.

These two paradigmatic transformations have occurred simultaneously across countries and impacted global industrial systems and societies.

Synthesis of qualitative data and desk review

What characterizes this recent phenomenon of dual transformation?

The dual transformation or twin transition (Gigler 2020; UNESCO 2022; Diodato et al. 2023) refers to the mutually interdependent transformations of digitalization and adoption of green processes occurring simultaneously across countries. The digital transformation of the economy and society and the shift to a sustainable production model should be viewed as closely intertwined and simultaneous.

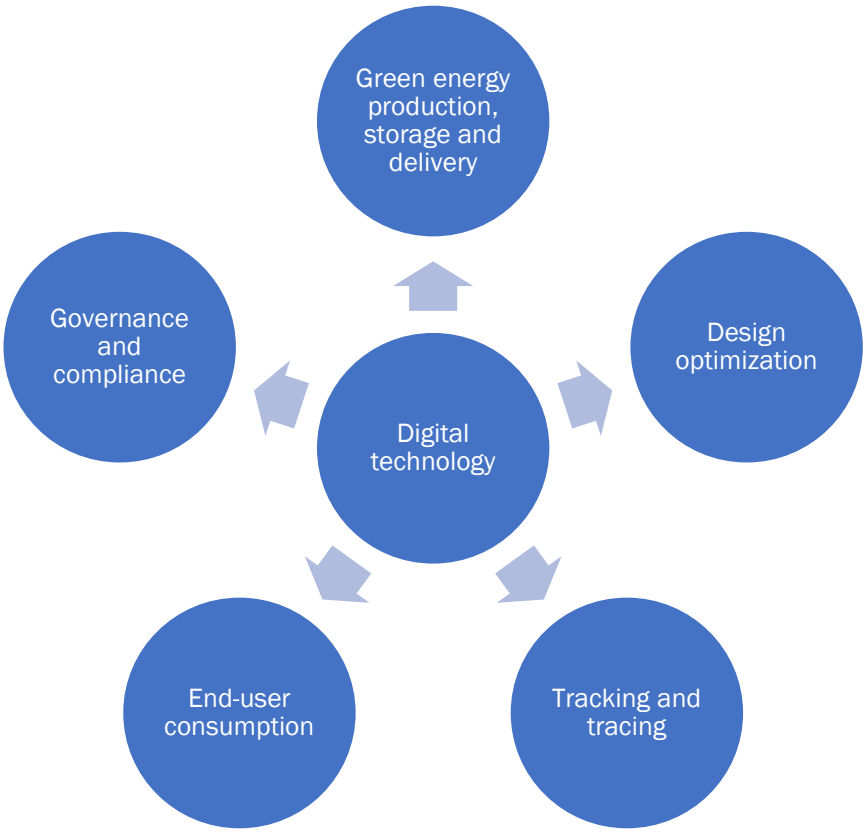
Adopting a cohesive strategy for the twin transition is pivotal to avoiding the pitfalls of pursuing digital and green agendas in isolation. While running concurrently, these transitions offer an opportunity for synergistic benefits and risk mitigation when interlinked. Considering the expansive impact of these transitions, a thorough examination of their complexities, potential outcomes, and interplay is crucial. The achievement of sustainable development targets hinges significantly on the effectiveness of our green and digital transition strategies. Thus, strategically aligning these transitions is not just beneficial but a necessity for optimizing a country's collective efforts toward sustainable and technologically advanced business practices.

Digital innovations are indispensable enablers of green transition.

Digital technology can accelerate the green transition across five main use classifications (Figure 1): green energy production, storage, and delivery; design optimization; tracking and tracing; consumer consumption; and governance and compliance (MIT Technology Review Insights 2023).

Green energy production, storage, and delivery deal with intermittent and unstable renewable energy sources. These would require smart, decentralized grids to become reliable replacements for hydrocarbon sources. An important technology that illustrates the dual transformation is using AI in the oil, gas, and electricity industries (Victor 2019).

Figure 3.1
How digital technology enables business transformation



Source: MIT Technology Review Insights (2023)

Machine learning significantly enhances the mapping and valuation of underground oil and gas deposits, enabling cheaper and more efficient extraction. Similarly, AI-assisted training improves the design and operation of wind and solar farms, leading to better use of capital and increased electricity production (Jaldi 2023).

Through digital twins and advanced simulations, design optimization solves complex problems like maximizing wind turbine energy output or minimizing industrial energy use and waste (MIT Technology Review Insights 2023). Global positioning system tracking systems, IoT, and sensors have been utilized for analyzing global supply chain data and identifying areas for reducing emissions (Mangina et al. 2020).

Tracking and tracing enable the verification of companies' sustainability claims. These claims often require fully traceable digitized supply chains and carbon and emissions tracking. Gigler (2020) explained how blockchain can be a powerful tool to improve the transparency, accountability, and traceability of greenhouse gas emissions. Blockchain can be catalyzed through smart contracts to better calculate, track, and report on the carbon footprint of processes across the value chain. Transforming into circular economies needs lifecycle tracking of materials, where blockchain can enhance transparency and

verifiability (MIT Technology Review Insights 2023).

End-user consumption is about consumers expecting transparent, personalized insights into choices and usage, with IoT sensors, digital dashboards, and analytics, boosting customer trust and loyalty (MIT Technology Review and Insights 2023). For example, apps such as Almond help users understand the carbon footprint of their daily activities, including their products. Almond provides information about the environmental impact of food and beverage products by scanning their barcodes. Such apps make users more aware of their environmental impact and can lead to more environmentally friendly purchasing decisions (Southey 2019).

Rising needs for data collection and analysis, along with vast data amounts and complexity, demand advanced reporting, data science, and audit tools (MIT Technology Review and Insights 2023). An example would be the use of advanced technologies, such as sensors and or satellite data that enable the gathering and reporting of precise information on tree species and biodiversity counts, utilized by international organizations to monitor the implementation of environmental standards in illegal logging and fishing (Gale et al. 2017).

Meanwhile, the greening of digital technologies has become a critical success factor for digital transformation and upgrading.

As concerns for sustainability and efficient resource use increase, companies become more conscious of their digitalization strategies. Companies now recognize that while digital technologies are helping their businesses achieve success, they must consider which digital technologies also support the green transition.

Digital technologies, though often seen as "clean", have a significant environmental impact, primarily through energy consumption and e-waste. Greening these technologies involves reducing their carbon footprint, making them more appealing in a climate-conscious market.

Digital technologies, though often seen as "clean", have a significant environmental impact, primarily through energy consumption and e-waste. Greening these technologies involves reducing their carbon footprint, making them more appealing in a climate-conscious market. Tech giants have been leading the way in transitioning their operations to more sustainable modes. Google has been working toward using 100 percent renewable energy for its data centers. As of 2020, they were offsetting all their electricity with renewable energy certificates and buying power directly from some projects, enabling them to claim 100 percent carbon-free electricity on paper. However, their data centers were only run on clean energy for an average of 65 percent of the day. Google announced a commitment to achieve 100 percent renewable power for its data centers and offices by 2030, planning to invest over USD 5 billion in 5 gigawatts of new clean-energy projects across its supply chain (Shankleman 2020).

Because of the ease of access to information on how goods are manufactured, consumers are increasingly becoming aware of environmental issues associated with the goods they use. This leads to a shift in preference for products and services from companies that demonstrate a commitment to sustainability. Companies that green their digital technologies can differentiate themselves in the market, appealing to both environmentally conscious consumers and business clients. Apple Inc. has been using recycled materials to appeal to eco-conscious consumers. In 2021, nearly 20 percent of all material used in Apple products was recycled, with 59 percent of all aluminum shipped in its products coming from recycled sources. Apple also introduced certified recycled gold in its products and has been working toward eliminating plastics from its packaging by 2025 (Apple 2022). Meanwhile, Fairphone, a smartphone manufacturer, differentiates itself by focusing on sustainable and ethical practices, appealing to a niche market of environmentally and socially conscious consumers (Fairphone 2023).

Companies that lead in adopting and developing green digital technologies can gain a competitive advantage, especially as environmental sustainability becomes a more prominent criterion in procurement decisions. Take the case of global value chains (GVCs). As the GVCs evolve and the governance of the lead firms shift to the use of more sustainable production processes, all stakeholders along the value chain would be forced to acquiesce to the change in policy and ensure technologies adopted support environmental goals. Only firms with the existing capability to adopt technology and innovate processes would be able to maintain participation in the GVC successfully. Khattak et al. (2015) cite the case of the apparel industry in Sri Lanka, in which lead firms following environmental standards (ISO 14001 and LEED) were able to induce a green transition to the suppliers engaged in the production process.

Another reason for integrating green principles into digitalization strategies is that incorporating green principles into digital transformation strategies helps in future-proofing businesses against upcoming environmental regulations and shifts in market preferences. In addition, it also helps companies mitigate risks associated with resource scarcity, regulatory changes, and reputational damage.

For example, IKEA's investment in renewable energy (e.g., wind farms, solar panels) mitigates risks associated with fluctuating energy prices and potential regulatory changes. The Ingka Group, which is a part of IKEA, has invested close to 2.5 billion euros in renewable energy, focusing on both onsite and offsite

wind and solar power. This substantial investment has enabled IKEA to generate more renewable energy globally than it consumes. Notably, IKEA now owns 416 wind turbines and 750,000 solar panels, contributing significantly to its energy usage and pushing toward a more sustainable future (IKEA 2023). The company aims to become climate-positive by 2030, and its investments are a critical step toward this objective (Chapman 2018).

Another example is Amazon's Climate Pledge, which demonstrates an effort to align long-term business strategies with environmental sustainability. This commitment aims for the company to reach net-zero carbon emissions a decade ahead of the Paris Agreement's goal. Amazon's dedication to this pledge is evident in its annual updates on sustainability programs, initiatives, and performance. Over 400 companies have joined Amazon in this pledge, highlighting its significance in stimulating investment in developing low-carbon products and services (Hurst 2023).

Reputation and corporate image are also key reasons for greening digital strategies. Companies seen as sustainability leaders often enjoy enhanced brand reputation and loyalty. Also, there's a growing recognition that corporations are responsible for going beyond profit-making and contributing positively to environmental and social issues. Patagonia, known for its environmental activism, extends this ethos to its digital practices, such as minimizing the environmental impact of its e-commerce platforms (Salois 2022). Unilever's Sustainable Living Plan outlines how the company integrates sustainability into its business model, enhancing its image as a socially responsible corporation (Khairunisa and Kusuma 2021).

Sustainable development and dual transformation

These transformations, once parallel and distinct, are converging. This convergence has implications for sustainable development. How the achievement of sustainable development is aligned with this dual transformation is reflected in the United Nations (UN) Sustainable Development Goals (SDGs), underscoring digital technology's potential in supporting the achievement of these goals, with emerging synergies across various sectors of the economy (Microsoft 2023).

The SDGs are linked to the digital and green transition as these are inevitable to achieve sustainable development. Specific SDGS may be directly or indirectly related to the SDGS, while some SDGs lie at the intersection of digital transformation and green transition (Box 1). The SDGs are related to the dual transformation and green transition, as achieving sustainable development requires a comprehensive and integrated approach that addresses all these goals.

Digital transformation, initially aimed at boosting economic competitiveness, is now recognized for its role in SDGs and for supporting a sustainable green transition. The merging of green and digital shifts with technologies like AI and IoT is seen as mutually beneficial. These technologies promise to enhance green efficiency, reduce carbon footprints, and introduce new green technologies and circular economy models, but they also pose environmental risks due to resource use and energy consumption (Lema and Rabelloti 2023).

Box 3.1
SDGs and the dual transformation

The links of the specific SDGs to the dual transition can be seen in the following:

1. SDG 1: No Poverty: This SDG is relevant to both the digital transformation and green transition, as poverty reduction is a critical aspect of sustainable development. Digital technologies can play a role in providing access to social services (education, healthcare, and financial services) and new job opportunities related to digital technology, while the green transition can ensure that the poor have sustainable livelihoods.
2. SDG 2: Zero Hunger: As sustainable agriculture and food production are critical to achieving zero hunger, this SDG is directly related to the green transition and digitalization through strategies for optimizing food production and distribution and reducing food waste.
3. SDG 3: Good Health and Well-being: This SDG falls into the intersection of digital transformation and green transition, as access to healthcare and healthy living environments are components of this SDG. Digital technologies can support the development of new healthcare solutions, while the green transition would include goals related to improving air and water quality and reducing exposure to harmful chemicals.
4. SDG 4: Quality Education: Digital transformation supports access to quality education as digital technologies are able to support distance learning and provide access to educational resources. The green transition can benefit from improvements in quality education as there is a need for green skills to be incorporated into the education and training curriculum.
5. SDG 5: Gender Equality: This SDG is relevant to both the digital transformation and green transition, as women and girls are often disproportionately affected by poverty, climate change, and environmental degradation. Ensuring gender equality is essential to achieving sustainable development, and digital technologies can be used to promote gender equality and empower women and girls.
6. SDG 6: Clean Water and Sanitation: This SDG is directly related to the green transition, as preserving water resources is critical to ensuring access to clean water and sanitation. The green transition can promote the sustainable use of water resources and the reduction of water pollution. Developing digital tools to monitor and assess water pollution is one way of relating digitalization to this SDG.
7. SDG 7: Affordable and Clean Energy: Ensuring access to affordable, reliable, sustainable, and modern energy for all is related to green transition. Digital transformation may affect the development and deployment of renewable energy sources and the optimization of energy consumption through data analytics, IoT, and artificial intelligence.
8. SDG8: Promotion of sustainable economic growth is related to the development of green industries and the promotion of decent and green jobs. Digital technologies may support the development of new industries and business models.
9. SDG 9: Industry, Innovation, and Infrastructure: Focusing on building resilient infrastructure, promoting inclusive and sustainable industrialization, and fostering innovation make this SDG relevant to the digital transformation and green transition. Investing in green infrastructure, such as green transportation systems, is an example of a strategy related to digital technologies and green transition.
10. SDG10: Reduced Inequalities: The use of digital technologies to provide access to services such as education, health care, and financial services ensures the achievement of this SDG, but there are concerns that digital technology access may be unequal in developing countries. The green transition also needs to ensure that the most vulnerable, typically involved in brown industries, are protected in the transition to green industries.
11. SDG 11: Sustainable Cities and Communities: This SDG is also relevant to both the digital transformation and green transition. It focuses on building sustainable, resilient, and inclusive cities and communities. Achieving this goal requires investments in digital technologies that enable smart and sustainable urbanization and promote sustainable transportation and infrastructure.
12. SDG 12: Responsible Consumption and Production: This SDG is closely linked to the green transition, as it promotes sustainable consumption and production patterns. Achieving this goal requires the optimization of resource use, the reduction of waste and emissions, and the promotion of sustainable production practices.
13. SDG 13: Climate Action: This SDG is directly related to the green transition, as it focuses on taking urgent action to combat climate change and its impacts. Achieving this goal requires the reduction of greenhouse gas emissions and the promotion of renewable energy sources.
14. SDG14: Life Below Water: Promoting sustainable fishing practices and reducing marine pollution can support the conservation of marine biodiversity and ensure the sustainability of marine resources. The use of digital technologies to monitor and manage marine resources, support sustainable fishing practices, and reduce marine pollution.
15. SDG 15: Life on Land: Promoting sustainable land use practices that support the conservation of biodiversity and natural ecosystems, including reducing deforestation, land degradation, and soil erosion, makes this SDG related to the green transition. Digital transformation is related to using digital technologies to support the monitoring and management of natural resources, including promoting sustainable agriculture and restoring degraded ecosystems.
16. SDG 16: Peace, Justice, and Strong Institutions. Digital technology has been documented to promote transparency, accountability, and participative governance. This would also provide avenues for the effective implementation of policies related to green transition.
17. SDG 17: Partnerships for the Goals: This SDG is relevant to both the digital transformation and green transition, as it focuses on strengthening partnerships to achieve sustainable development. Achieving this goal requires collaboration between stakeholders, including governments, civil society, and the private sector, to support the deployment of digital technologies and sustainable practices.

SDG = Sustainable Development Goal; IoT = Internet of Things
Source: Authors' compilation

There are concerns that the twin transition may deepen and widen inequalities along gender and spatial divides.

Along gender lines, evidence indicates that female work has a high risk of being automated (see, for example, Brussevich et al. 2019). The atomization of work through digital labor platforms has benefitted both men and women, although a nuanced look indicates disparities. Jobs on digital platforms follow gendered patterns observed in nonplatform work arrangements. More women are on platforms specializing in routine tasks (Ross et al. 2010; Kuek et al. 2015). More women are into clerical and support services, while more men are into science, technology, engineering, and math (STEM) and information technology (IT) jobs (Barzilay and Ben-David 2017; Churchill and Craig 2019). As a result of digitalization, clerical roles, cashiers and ticket clerks, and data entry clerks are expected to have the fastest declining roles in the workplace (WEF 2023). In the Philippines, around 60 percent of these workers are women.[2] In addition, uneven access to connectivity drives urban-rural inequalities in harnessing the benefits of digitalization. The move toward smart city development will likely magnify this digital-spatial divide, with heavy investments pouring into these sites and little investments in the countryside.

On green transformation, concerns are raised that the green transformation may be biased toward sectors where women are historically underrepresented. These concerns are tenable given that evidence (see ILO 2012) indicates that key sectors, including agriculture, forestry, fishing, energy, resource-intensive manufacturing, recycling, buildings, and transport, will transform more than others. Many men are engaged in extractive industries, energy, transportation, and construction. Thus, employment will decline in mining/quarrying, but increase in other sectors as efficient energy use, clean transportation, and green buildings become mainstream. More women and children are engaged in waste management and recycling, but jobs are mostly informal and pay low. A substantial number of women are also observed in agriculture, but they are performing lighter tasks. Even for similar manual functions in the agricultural sector, evidence of the gender pay gap favoring men was observed in the Philippines (Briones 2018).

Gendered disparities are also observed in the country's STEM enrollments and engineering graduates. Based on the PSA data in the academic year 2014–2015, the share of female enrollment in STEM courses was 37 percent. Meanwhile, the share of female graduates in Engineering in 2018 was 24.5 percent (Bello et al. 2023). As the country advances its twin agenda, these disparities can substantially affect women's labor market prospects. Cleaner energy and more efficient resource use require innovations in technology and engineering. Smart systems like smart cities and smart grids require big data analytics. Thus, how these existing inequalities will deepen in the green economy is a valid issue if sustainable and equitable development is to be achieved.

[2] Based on the Labor Force Surveys, July round 2016, 2017, 2018, and 2020.

Another concern is that the twin transition's demand for skills and talent will outpace supply.

This dual transformation is the key driver of job destruction, creation, complementation, and transformation. In the digital front, the fastest growing roles are AI and machine learning, and in the green economy, Sustainability Specialists and Renewable Energy Engineers (WEF 2023). However, as jobs are created due to the transition, available talents are not enough to take on new roles. This scenario can inhibit the full transformation of economies, especially because the intersection of digital jobs in green economies is becoming clear. ADB and LinkedIn (2022) find that digital skills like visualizing and interpreting data are critical to energy forecasting and engineering innovations for clean energy. The same document finds that digital talents in e-learning and smart cities are 75 percent and 70 percent, respectively.

Remaining questions to ensure the dual transformation supports the achievement of a sustainable future in the Philippines

What might be the impact on the production and trade of local industries?

For developing countries, the dual transformation of green transition and digitalization involves accelerating a process of industrialization that would normally take decades, so industries are now undergoing these two transformations in parallel (Ezzat 2023). Digitalization entails businesses using digital technology (data, cloud, Artificial intelligence, internet of things, edge computing) for all aspects of business processes—from product development, production, operations, sales, and even materials recovery. Meanwhile, green transition entails designing, building, and scaling products and operations to become more efficient, sustainable, and resilient. Sustainable design or circular practices not only reduce a product's environmental footprint but also improve resource-use efficiency, making manufacturers more resilient to supply chain shocks.

The intersection of digitalization and the green transition also results in opportunities for servicification. E-invoicing and two-way communication platforms have customized services to meet unique customer needs, encouraging more conservation. Smart water metering has enhanced water infrastructure, aiding in mitigating droughts and shortages.

In terms of trade, the dual transformation may disrupt international value chains in four stages. First, it will lead to new patterns of consumer behavior, demand preferences, and change consumption

patterns. This will also change the demand for less resource-intensive and more environmentally friendly products and services. Second, these changes in consumption would be enforced in the value chain through various types of new designs, standards, and specifications. Third, changes in the governance regime of the GVCs will create green entry barriers and green windows of opportunity. On the one hand, green entry barriers are created because greening governance may create constraints for suppliers in GVCs, making participation harder or forcing exits. On the other hand, windows of opportunity exist for certain suppliers who can develop sustainability capabilities, leveraging them to their advantage. Finally, firms would undergo various innovations to reduce their ecological footprint. Thus, the impact of the twin transition to firms would depend on their location in the GVCs.

Another aspect that needs to be addressed is digital trade and servicification. Digital trade and servicification have reshaped international trade and created greater trade participation and firm growth opportunities. Incorporating services could enhance the productivity levels of manufacturing firms, as they could utilize services to increase the value of their products and gain access to new technologies and production processes (National Board of Trade 2016). Digital platforms such as online marketplaces have enabled more firms to participate in digital trade, mainly through cross-border e-commerce, as search communication costs are reduced, and e-payment systems provide easy and secure money transfers (ADB 2021).

Given this, digital platforms and servicification,[3] which have been important factors in facilitating GVCs through an intensified flow of intermediate inputs across different GVC segments (Ladrière et al. 2020; Baldwin et al. 2021), would also be affected by the dual transformation. One direct impact would be the development of new tasks related to green transition facilitated by digital technology. Digital platforms have become another governance avenue (aside from lead firms in GVCs) that can facilitate the greening of firms and their production processes.

What would be the impact of the dual transition to investment?

The twin transition requires further strengthening the avenues for funding green technologies, particularly renewable energy projects. The early stages of most renewable energy projects involve substantial costs, with limited local financing available. To address this, local banks like the Land Bank of the Philippines and the Development Bank of the Philippines have devised special packages to assist developers during this phase. The debt capital market, especially green bonds, offers another financing avenue suitable for large projects or portfolios, with various structuring options like project bonds and asset-backed securities (Davidson et al. 2020).

The country has multiple instances of green bond issuances for renewable projects. Examples include AboitizPower's 2016 green bond for its geothermal project, supported by the Asian Development

[3] The emergence of GVCs has also been closely linked with services, as firms were able to leverage advancements in transportation and communications to divide their production processes across geographical locations and sectors.

Bank, and BDO Unibank's 2017 green bond for financing multiple renewable projects. AC Energy has been active in green bond issuances, with a significant 2019 issuance for regional projects. Similarly, Chinabank's 2018 green bond focused on various climate-smart initiatives.

Renewable energy funding in the Philippines is diverse, ranging from bank loans to green bonds in capital markets. This variety supports both large-scale and innovative greenfield projects. Smaller projects can leverage funding through securitization or green loans, while local governments might aggregate debt for lower-cost green financing.

ADB released a report on green opportunities for the Philippines. The report lists a number of projects with varying stages of completion. Table 1 presents the projects that have been completed and are operational. In total, USD 6.3 billion has already been invested to complete these projects.

While the Philippine experience in the rise of investment in green energy and green infrastructure is laudable, Gigler (2020) also raises the issue of the investment gap for clean climate technologies. The venture capital funding for climate technologies has been declining since 2011. Renewable energy startups founded in Silicon Valley have shut down, and a mere 2.5~6 percent of US venture capital funding is going to climate technologies.

Other projects in renewable energy involve solar energy, hydropower, and wind. In 2018, the Board of Investment approved eight solar projects worth USD 1.65 billion through the Solar Philippines Commercial Rooftop Projects Inc. The enormous scale of investment is projected to lower the cost of electricity and trigger additional investments. The government is also exploring potential sites for hydropower. In 2019, more than 50 wind projects were registered with the Department of Energy.

Table 3.1
Completed green projects in the Philippines

Sector	Project Name	Cost (USD)	Greenness	Pipeline Source
Transport	Light Rail Transit Line 3 (MRT3)	655M	Green	PPP Center
Transport	Southwest ITS Project	51.5M	Green	PPP Center
Transport	Automatic Fare Collection System	35M	Green	PPP Center
Hydropower	Bakun A/B and C Hydroelectric Power Plant	83M	Potentially green	PPP Center
Sustainable water management	Bulacan Bulk Water Supply Project	502.6M	Potentially green	PPP Center
Sustainable water management	Clark Water Supply and Sewerage Project	4.9B	Potentially green	PPP Center
Sustainable water management	Subic Water and Sewerage Project	120M	Potentially green	PPP Center

USD = United State dollar; PPP = Public-Private Partnership; ITS = Integrated Transport System; MRT = Metro Rail Transit; M = million; B= billion
Source: ADB (2020)

How will the dual transformation affect work?

In the Philippines, the dual transition is also occurring in different phases. Digitalization has gained more traction in the country since it dovetails with Industry 4.0 and the significant advancements in ICT. Thus, plans and programs are in place to support digital transformation (see Bayudan-Dacuycuy and Serafica 2023; Serafica and Oren 2023 for a more comprehensive list). For example, the DICT identifies strategies to improve the broadband environment through its National Broadband Plan and Connect, Harness, Innovate, and Protect strategic framework and provides access to underserved communities through the Technology for Education, Employment, Entrepreneurs, and Economic Development Project. Focusing on enterprises, the Department of Trade and Industry (DTI) promotes e-commerce through its E-Commerce Philippines 2022 Roadmap and various skills and training development services for entrepreneurs. The Technical Education and Skills Development Authority (TESDA) and the Department of Science and Technology (DOST) also have their initiatives, including the Go Digital ASEAN and the League of Developers Initiative project, respectively. Digitalization of public services is also underway. *Paspas Pilipinas Paspas* project, a collaboration of various government agencies, is a key step to implementing the Ease of Doing Business Act through the electronic business one-stop shops in local government units.

Despite digitalization being heavily embedded in the blueprints, roadmaps, and legislative agenda, much remains to be hurdled in infrastructures, including poor digital infrastructures, expensive ICT, and few secured internet servers, and human resources, including the lack of skills and low digital adaptability (Bayudan-Dacuycuy and Serafica 2023). Indeed, evidence indicates that around 25 percent of Filipino online workers are into clerical and data services (at least 15 percentage points higher than other Asian countries), and about 14 percent are into software development and technology (at least 31 percentage points lower than other Asian countries) (Bayudan-Dacuycuy et al. 2020). ADB and LinkedIn (2022) also reported disparities in digital skills in Asia, with India and Singapore demonstrating expertise in advanced and intermediate programming skills and Indonesia, Malaysia, and the Philippines demonstrating digital literacy and skills for graphic design.

Meanwhile, the concept of a green economy and green jobs is relatively nascent. The Green Jobs Act (Republic Act 10771) in 2016 is the legal basis for promoting and protecting workers in a green economy. Based on its Implementing Rules and Regulations, fiscal incentives and assistance programs will be provided to enterprises to generate and sustain green jobs. Government agencies like the Department of Education, Commission on Higher Education (CHED), TESDA, DOST, and Professional Regulation Commission are mandated to promote skills and curriculum development aligned with the green agenda. TESDA has integrated green competencies in some of its curriculum and training, although only 20 training regulations (TRs) (around 7.5 % of the total TRs) have green competencies (TESDA 2018). TESDA (2018) acknowledges several challenges in greening technical and vocational education and

training (TVET), including inadequacies in personnel's skills (i.e., lack of knowledge on greening, lack of research capability, inability to anticipate green skills), human resources (i.e., lack of green champion, experts on greening training regulations, curricula, and learning materials), and lack of standards and monitoring and evaluation framework. Meanwhile, the National Green Jobs Human Resource Development Plan 2020–2030 outlines strategic action plans to promote green jobs in the following areas: awareness campaigns, education and skills development, employment facilitation, productive workplace, social protection, industry resilience, green financing, and policy coherence.

The shift toward low-carbon, environmentally friendly economic growth has been pushed earlier but has gained traction in the discourses about the world of work only in recent years. The push was made at the first global UN Conference on Human Environment in 1972 when the then ILO Director-General called for comprehensive environmental policies amid growth and innovation (van der Ree 2017). However, it took almost two decades before environmental challenges in the world of work figured into serious discourses due to the perceived incompatibility of environmental protection and economic growth. Fossil fuel is the engine of every nation's economic growth. Unfortunately, carbon emissions contribute to global warming and climate change. With fears of worker displacement and economic slowdown, developing economies, whose emissions are smaller than those of developed nations, find it unfair to commit to lowering their fossil fuel consumption. Thus, initiatives to reduce these emissions, often facing opposition, are not at the top of funding priorities. For example, in 2013, funding for environmental sustainability was substantially lower than for industry, innovation, and infrastructure (less than USD 25 billion versus USD 147 billion, respectively) (UNESCO 2021). However, the adverse implications of climate change for agricultural yields and food security (see, for example, Burgess et al. 2011) and global warming for job quality and productivity (see, for example, UNDP 2016) have renewed calls on environmental agenda.

One of the biggest challenges to achieving the green transition and digital transformation is the lack of skilled green workers (LinkedIn 2023; Lema and Rabelloti 2023). A scoping of the labor

market conducted by LinkedIn (2023) analyzed the current trajectory of green skills[4] growth in the labor market and found that the human capital needed to meet sustainability targets is insufficient. Although the number of workers moving into green and greening jobs exceeds those leaving, the overall count of transitioning workers remains quite low.

The transition to a greener economy and the increased use of digital technologies will require new skill sets and competencies currently in short supply in developing countries. Examples of skill sets and competencies related to the dual transformation include digital literacy, data analysis, understanding of renewable energy, sustainable design, project management, adaptability, communication skills, and green entrepreneurship (LinkedIn 2023).

How the green transition will result in the loss of jobs in the "nongreen" (also called brown) activities is also a major concern. Workers engaged in fossil fuel extraction, production of single-use plastics, and high greenhouse-gas-emitting industries are particularly at risk as they are the first ones affected by climate policies and regulations. Workers and trainees in other sectors will eventually be affected as the economy's decarbonization expands (Linkedin 2023).

Globally, nations face challenges adapting labor market skills for the green transition and digital transformation. New green energy and sustainability technologies necessitate new and updated skills due to evolving professions. Education and training systems must be reformed to equip everyone with the necessary skills for these societal changes. Additionally, specific measures are required to make green and digital transition opportunities accessible to women, youth, and other potentially marginalized workers.

What is the role of science, technology, and innovation?

For this dual transformation to support the achievement of a sustainable future, countries will need to increase their commitment to science, technology, and innovation, including R&D. Recent figures from the United Nations Educational, Scientific and Cultural Organization (UNESCO) show that advanced economies dominate research spending, number of researchers, and R&D outputs such as publications and patents. Despite increased research expenditure in many regions from 2014 to 2018, 80 percent of countries invest less than 1 percent of gross domestic product (GDP) in R&D. With researcher numbers growing faster than spending in some areas, less funding becomes available to each researcher. (UNCTAD 2022; UNESCO n.d.).

Science, technology, and innovation are important in developing smart cities as technology and innovation are woven into the regular operations of a city. Smart cities leverage digital technologies for better urban management. This includes IoT devices, big data analytics, AI, and other digital tools to improve city services, infrastructure management, and citizen engagement. These technologies enable

[4] Green skills facilitate the environmental sustainability of economic sectors, whereas green jobs necessitate comprehensive green skills knowledge. Jobs that are greening may not always require green skills, yet often benefit from some level of these skills. Conversely, jobs with greening potential might occasionally require green skills but can typically function without them. In contrast, nongreen jobs do not require green skills. Green talent refers to LinkedIn members who have specifically included green skills in their profiles or are employed in green or greening roles.

more efficient resource management, better traffic control, enhanced public safety, and improved quality of life. Smart cities prioritize sustainability and environmental stewardship. Smart cities also require innovation in features like green buildings, sustainable transport systems, and urban green spaces, contributing to reduced carbon footprints and enhanced environmental health.

For the Philippines, developing smart cities requires digital competencies in processing, monitoring, and communicating information culled from big data (Ballesteros and Ancheta 2023). A binding constraint is the lack of skilled IT personnel to manage and maintain smart systems. Indeed, based on the Department of Labor and Employment's (DOLE) Labor Market Information Report 2017–2022, Data Scientists and Researchers (on big data) are both in-demand and hard-to-fill jobs. These are jobs advertised repeatedly by industries but unfilled for a period of time due to the lack of qualified applicants.

What is the role of AI in a world of dual transformation?

The increasing use of AI and other advanced technologies presents both opportunities and challenges. While AI has the potential to revolutionize many industries and improve efficiency, it also raises concerns about job displacement, privacy, and ethical use of data.

AI is expected to have the most significant impact of all the Industry 4.0 technologies. Considered a general-purpose technology, AI will not only affect all industries in the economy but will increasingly influence everyday life (ITIF 2018; PwC 2018; Statista 2023). See Table for various descriptions of AI.

In the last decade, the functionality of AI has improved significantly with advanced hardware, increasingly powerful computing capacity, the availability of massive amounts of data for training AI models, and more sophisticated algorithms and software enabling the development of many new applications (UNESCAP 2017). Given its sophisticated functionalities, AI can predict and provide personalized recommendations, discover new solutions through simulations, facilitate interactions between humans, computer systems, and objects, and coordinate machine-to-machine interactions (ITIF 2018). AI allows systems to interact with humans in a conversational manner and is employed in various industries. In financial services, AI automates customer support, provides personalized recommendations, and detects fraud in financial transactions (Statista 2023).

Table 3.2
Various definitions of artificial intelligence

A branch of computer science devoted to creating computer systems that perform tasks characteristic of human intelligence, such as learning and decisionmaking. AI overlaps with other areas of study, including robotics, natural language processing, and computer vision. ITIF (2018 p.1)
The ability of machines and systems to acquire and apply knowledge and to carry out intelligent behavior. This includes a variety of cognitive tasks (e.g., sensing, processing oral language, reasoning, learning, making decisions) and demonstrating an ability to move and manipulate objects accordingly. Intelligent systems use a combination of big data analytics, cloud computing, machine-to-machine communication, and the Internet of Things (IoT) to operate and learn. ESCAP (2017, p.1)
AI is a term for computer systems that can sense their environment, think, learn, and act in response to what they sense and their programmed objectives. PwC (2018, p. 3)
An interdisciplinary branch of computer science, AI focuses on developing intelligent systems and machines that can solve complex problems, specifically those that typically require human intelligence. Statista (2023, p.8)

AI = artificial intelligence
Source: Authors' compilation

Contributing to the green agenda

Digital technologies can accelerate the green transition in various ways (Muench et al. 2022):

i. ***Monitoring and tracking*** – facilitate the monitoring of material flows, emissions, and the condition of the environment by providing accurate and real-time data. Such a tracking system is critical to the operation of a circular economy involving the recycling and reuse of materials.
ii. ***Simulation and forecasting*** – enhance efficiency by providing information about the life cycle of a product or process, which improves reparability and upgradability. Weather or electricity demand forecasting aids in preparing for crisis events.
iii. ***Virtualization*** – minimizes the environmental impact of industries with digital alternatives (e.g., ebooks) or by moving certain economic activities online (e.g., meetings via videoconferences, e-commerce, online events). To be consistent with the green transition, the digital technologies that are utilized must be both energy-efficient and circular.
iv. ***Systems management*** – combines various digital technologies so that systems management can cope with increasing complexity while optimizing operations (e.g., smart cities, smart electricity grids, smart manufacturing).
v. ***Enabling new levels of interaction*** – facilitates data collection and dissemination while creating new levels of interaction (e.g., smart packaging and labeling can determine a product's environmental footprint, while digital platforms are intermediaries between buyers and sellers).

PwC (2018) examined the application of AI for SDGs related to the environment, including fighting climate change, using ocean and marine resources properly, developing smart and sustainable cities, and making clean, affordable energy available.

A review of over 80 existing AI use cases indicates that the majority were powered by ***automated*** and ***assisted*** intelligence systems to gain insights and extract value from massive amounts of unstructured real-time data. The report notes that more ***autonomous AI applications*** will likely emerge, providing more opportunities and threats.

AI can enable the achievement of the SDGs, specifically in addressing environmental challenges. Vinuesa et al. (2020) examine how AI can help or hinder achieving the 17 goals and 169 targets identified in the 2030 Agenda for Sustainable Development. In their study, AI is defined as "any software technology with at least one of the following capabilities: perception—including audio, visual, textual, and tactile (e.g., face recognition), decisionmaking (e.g., medical diagnosis systems), prediction (e.g., weather forecast), automatic knowledge extraction and pattern recognition from data (e.g., the discovery of fake news circles in social media), interactive communication (e.g., social robots or chatbots), and logical reasoning (e.g., theory development from premises)" (pp. 1–2). Following a consensus-based expert elicitation process, they find that while achieving 134 targets can be facilitated using AI, 59 targets can be inhibited by AI. For the environment-specific goals, which include Goals 13 (Climate action), 14 (Life below water), and 15 (Life on land), 25 targets (or 93% of the targets) could be achieved using AI. The benefits of AI are largely due to its ability to analyze large-scale interconnected databases that can help develop joint actions to protect the environment.

The benefits of using AI for sustainability must be weighed against the cost by quantifying the environmental impact of generating and using AI models, such as carbon footprints and processing power required to train algorithms.

Risks and challenges of AI

Van Wynsberghe (2021) argues that while AI can address environmental problems such as those identified in the SDGs, the sustainability of AI itself must be examined. The benefits of using AI for sustainability must be weighed against the cost by quantifying the environmental impact of generating and using AI models, such as carbon footprints and processing power required to train algorithms. Vinuesa et al. (2020) noted that the high energy requirements of AI applications could undermine climate action, especially if the energy sources used are not carbon neutral. Also problematic is the possibility that increasing access to AI-related information on ecosystems could lead to increased exploitation of natural resources. There is also the potential tension between the need for vast amounts of detailed information to enhance AI algorithms versus more transparent handling and protection of personal data. Biases in the data used to train AI models could also worsen discriminatory practices. At the global level, the uneven distribution of computer and educational resources might exacerbate economic inequalities. See Table 3 for examples of various AI-related risks by category.

Table 3.3
Artificial Intelligence risks by category

Types of Risks	Examples
Performance risks	Risk of errors; Risk of bias; Risk of opaqueness or "black box" risk; Risk of explainability; Risk of stability of performance
Security risks	Cyber intrusion risks, Privacy risks, Open-source software risks
Control risks	Risks of AI going "rogue"; Inability to control malevolent AI
Ethical risks	"Lack of values" risks; Value alignment risk; Goal alignment risk
Economic risks	Job-displacement risks; "Winner-takes-all" concentration of power risk; Liability risk; Reputation risk
Societal risks	Risk of autonomous weapons proliferation; Risk of "intelligence divide"

AI = artificial intelligence
Source: PwC (2018)

AI and other new technologies risk widening the gap between rich and poor countries by shifting more investment to advanced economies where automation is already established.

A recent article by *The Economist* (2023) shows that 80 percent of Americans could have at least 10 percent of their work tasks done by AI tools. For some workers, as much as 50 percent of their work tasks can be accomplished without loss in quality by AI tools. These workers belong to industries heavily relying on programming and writing skills, such as legal, financial, and insurance services. Telemarketers could also be made redundant, and teachers, especially those in languages, history, and literature, are next in line. However, there is some glimmer of hope as these studies overlook jobs that need essential human qualities such as empathy and charisma. AI tools will also need handlers, which may create new jobs.

To help ensure sustainable development and prevent gaps in ethical standards, transparency, and safety, Vinuesa et al. (2020) stressed the need for regulatory insight and oversight. They add that insight must precede oversight, as policymakers must have a sufficient understanding of the challenges of AI before formulating policies to ensure these will be effective and are not counterproductive.

Strategies for the twin transition

Dual transformation strategies in the Philippine Development Plan (PDP) 2023–2028

Recognizing the emerging global and regional trends pushing the Philippines toward this dual transformation. The PDP has identified strategies related to this dual transformation.

The 2023–2028 PDP recognizes the environmental forces and digital trends as factors shaping the future of the Philippines. To this end, the underlying theme of "transformation" has been adopted by the PDP. Strategies related to digitalization and green transition of production sectors have been identified in the various chapters of the PDP 2023–2028 (NEDA 2023).

For the production sectors, farms utilizing modern technologies such as

location-specific, sensor-based, precision agriculture, smart greenhouses, and controlled environment agricultural techniques will be promoted. Farmers are also encouraged to use mobile platforms and channels for marketing, payment, and product delivery of agricultural and fish products. Businesses will be colocated with other industries, service enterprises, and academic institutions to promote the adoption of Industry 4.0 technologies. Businesses will also be encouraged to develop green technologies and establish facilities for waste recovery, reuse, and recycling.

Communities are also encouraged to adapt to the dual transformation. One strategy is the adoption of green features in housing and community design, such as renewable energy, green roofs, rainwater harvesting systems, rain gardens, permeable pavement, green construction materials, nature-based storm drainage systems, gray water recycling systems, and energy-efficient windows (with reference to the Green Building Code).

Construction companies are also encouraged to conduct R&D to adopt green architecture and additive manufacturing, which would reduce production costs.

Strategies related to labor and employment include the government creating a database of green jobs, implementing the Green Jobs Human Resource Development Plan, and intensifying the integration and mainstreaming of green competencies in TVET and education programs.

Other government plans for green transition

Aside from the PDP, other government documents have also acknowledged the role of technology in the green transition. The *Pagtanaw 2050* ("looking ahead") is the first interdisciplinary initiative focused on Philippine science, technology, and innovation foresight. This government document aims to create a strategic roadmap by proactively identifying the variables that will shape the growth of scientific advancements in the Philippines leading up to 2050 (NAST 2021). The plan has identified specific technologies for the environment and climate change operational area. Many other technologies were identified in related operation areas (See Appendix 2).

The National Economic Development Authority has promulgated the National Innovation Agenda and Strategy Document, which outlines the nation's vision and long-term objectives for innovation. Additionally, it provides strategies for enhancing innovation governance, intensifying and accelerating innovation initiatives, and focuses on integrating and cultivating public-private partnerships. The National Innovation Agenda Framework

notes that having an efficient, clean, and sustainable environment is one of the key pillars to achieving a smart and innovative country. To this end, the government aims to support the development of innovative products and processes to ensure that natural resources are used sustainably for optimum productivity levels (NIC Secretariat 2023).

Other sector-specific plans developed by national government agencies promote the use of innovation to achieve sustainable goals of their industries. The Department of Energy, in its Philippine Energy Plan (PEP) 2018–2040, stipulates the promotion of an innovation culture to support emerging renewable technologies and business models (DOE 2018). In addition, the Philippine Export Development Plan (PEDP) 2023–2028 recognizes that to develop the Philippines as an agile export powerhouse in key industries, it must develop, among others, technology-driven and sustainable exporters. Technology is critical for companies to stay ahead of emerging trends and remain competitive globally. The PEDP also promotes the adoption of sustainable business practices to minimize the degradation of the environment. Among key areas, the plan identifies the important role of digitalization and sustainability in agricultural and agri-based exports (EDC 2023). In 2017, the Department of Information and Communications Technology published the National Broadband Plan, a blueprint to expedite the deployment of fiber optic cables and wireless technologies, ultimately enhancing the country's Internet speed.

National government agencies have also developed plans to create a globally competitive workforce. The Department of Labor and Employment has formulated the Labor and Employment Plan 2023–2028. Among its three focal areas, the plan aims to increase employability and promote sustainable and resilient enterprises among micro, small, and medium enterprises. Additionally, the National Technical Education and Skills Development Plan (NTESDP) 2023–2028 serves as the national blueprint for the TVET sector. The NTESDP focuses on digitalization in response to Industry 4.0 and shall collaborate with priority sectors such as manufacturing, transportation, and logistics; health, Information Technology and Business Process Management (IT-BPM); creative industries; energy; and construction (TESDA 2023).

Conclusion and recommendations

The emergence of twin transformation, signifying the simultaneous development of technological and environmental factors, has inaugurated a new era in policy formulation. This dual process presents policymakers with distinct challenges and prospects. The rapid advancement of technology, alongside the pressing need to address environmental issues, requires policy frameworks that are not only flexible but also comprehensive. Policymakers face the intricate task of balancing the promotion of innovation with environmental impact management. This complexity necessitates policies that not only promote sustainable technological progress but also provide a unified approach to mitigate ecological consequences.

Implementing a whole-of-government approach is crucial when formulating policies to tackle twin transformation. The simultaneous evolution of technological and environmental factors demands a comprehensive and integrated response from various government agencies and local government units. By pooling expertise and resources across government departments, policymakers can develop strategies that address the dual dynamics of technological innovation and environmental sustainability in a coordinated and synergistic manner. This approach not only promotes policy coherence but also enhances the government's ability to respond effectively to the interconnected challenges of our time, creating a more sustainable and resilient path forward.

Governments must critically assess their current position in implementing twin transformation to effectively navigate the complex challenges of this dual evolution of technology and environmental concerns. This assessment serves as a crucial benchmark, providing insights into progress, identifying gaps, and highlighting areas that require immediate attention. By conducting a comprehensive evaluation, policymakers can discern whether existing policies align with the goals of twin transformation or if adjustments are necessary. Moreover, such an assessment enables governments to gauge their capacity for innovation and environmental sustainability and how they can integrate these efforts into policy frameworks. Understanding their standing in the realm of twin transformation empowers governments to make informed decisions, reallocate resources strategically, and implement targeted initiatives.

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Policy implications

Evaluate the government's role in the twin transformation.

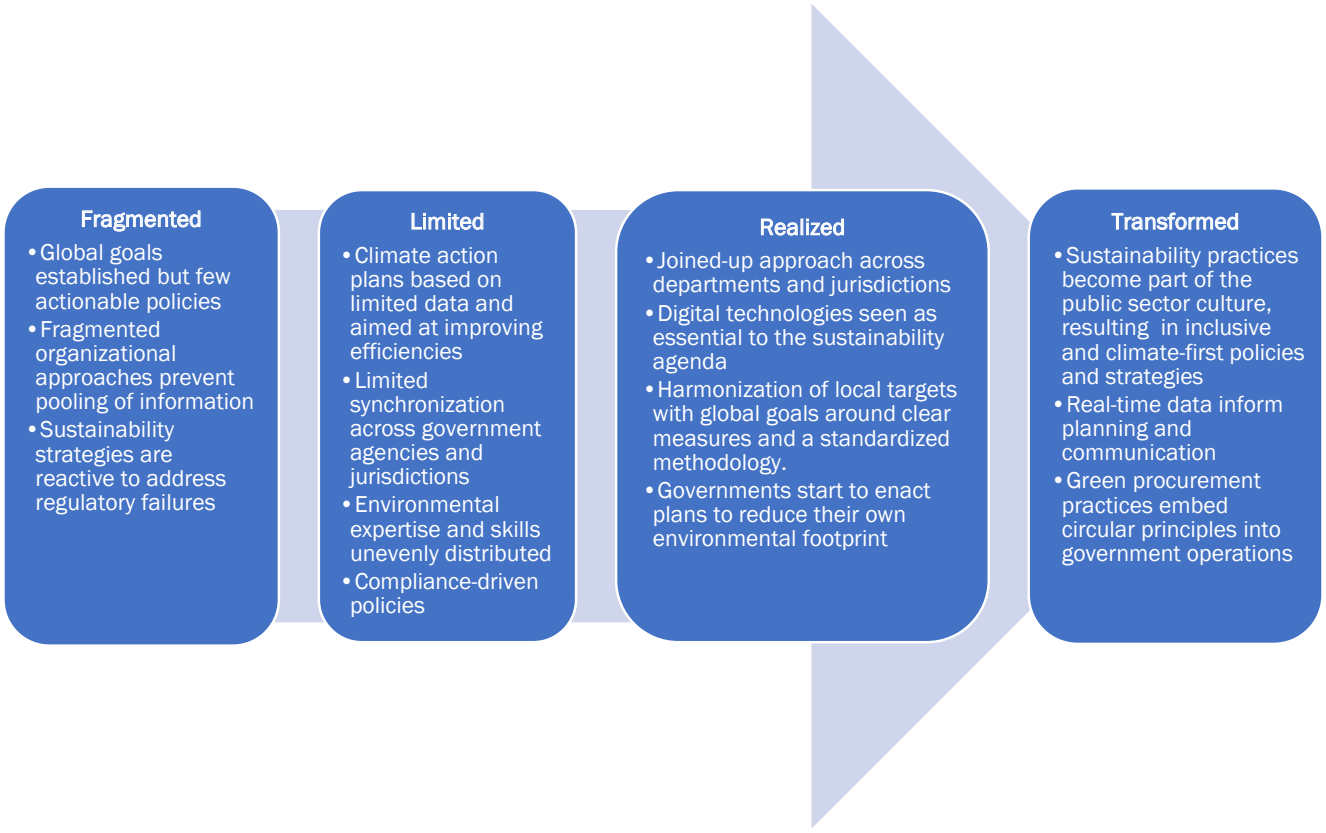
One of the key functions of government is to ensure that the public sector perceives the dual transformation not as mutually exclusive events (Gigler 2020; Microsoft 2023) to ensure that progress can be achieved on both fronts. It would

also allow cross-government synergies addressing issues of equity. Microsoft (2023) has identified a diagnostic framework to describe the progress of governments and economies in their dual transition (Figure 1).

The framework has four stages. The first stage is "Fragmented", characterized by governments setting ambitious targets aligned with SDGs and the Paris Climate Agreement. However, detailed plans have not been laid out, and standardization for integrating climate and environmental risks into strategic planning is lacking, with government action focusing more on regulatory failures and disaster response than proactive resilience planning. Policies are often in the early stages, with unclear implementation paths. Leaders are generally unaware of their organization's environmental impact and how to use digital technology for sustainability challenges (Microsoft 2023).

The second stage is "Limited", characterized by governments' progress in sustainability targets, yet innovation is fragmented with isolated areas of excellence rather than holistic planning. Some consider unified sustainability definitions and resources, with a few establishing climate and sustainability units to fill gaps. Leaders promote digital methods but lack clear tactical plans and have limited insight into their operations' climate impact (Microsoft 2023).

Figure 3.2
Stages of dual transition



Source: Lifted in full from Microsoft (2023)

The third stage is "Realized". Some governments have aimed to reach this phase during the recovery from the COVID-19 pandemic as strategies for inclusive recovery are related to the clean transition and digital transformation. At this stage, governments adopt a unified sustainability strategy, connecting various agencies and linking central with local governments. Top leaders advocate for digital technologies in sustainable development strategies, and efforts to assess the government's own environmental impact start taking shape.

The final stage is the "Transformed", characterized by governments integrating sustainability into their departments, fostering a culture of eco-consciousness in their services and among stakeholders. This leads to policymaking that prioritizes inclusivity and climate concerns. Senior leaders actively participate in planning and implementing green technologies, emphasizing the advantages and vision for the government's sustainability path. To exemplify this commitment, governments adopt measures to mitigate the environmental effects of their operations.

Create and strengthen the protection and promotion of human capital development. Given that three out of the Philippine government's eight-point agenda are on jobs (more jobs, quality jobs, and green jobs), key players in the country must create and strengthen the protection and promotion of human capital development.

Government: The government needs to prepare the workforce for disruptions through strategic investments in human capital, infrastructures, and research and development. Sectoral policies and resource use must be cohesive, working toward the vision of where the country will be in the long run and what needs to be done in the short and medium run should be in place. Thus, as a facilitator and driver of the dual transition, the government needs to:

- Identify strategic sectors where the country sees itself harnessing or developing its comparative advantage. Leverage the fiscal incentives in the Green Jobs Act to support the development of these sectors. There are two important aspects to note, however. First, a skilled workforce to match the job creation is crucial. People who can assess, audit, and certify compliance are also needed to provide incentives. Thus, skills and training development programs that focus on strategic sectors are crucial. These can serve as building blocks for the skills development of nonkey strategic sectors. Second, support and incentives should not be limited to firms that create jobs but should also include firms that integrate green processes into their businesses.
- Explore establishing a labor market information system that integrates existing information systems and planned skills initiatives. Currently, skills initiatives and information systems are sectoral-led. These include the TESDA's Registry of Certified Workers[5] and DOLE's job matching portal and labor market information.[6] Meanwhile,

[5] https://www.tesda.gov.ph/Rwac

[6] https://philjobnet.gov.ph

the DOLE's National Green Jobs Human Resource Development Plan 2020–2030 aims to develop a national registry of all green jobs in the country by launching the Career Information System (CIS). The National Technical Education and Skills Development Plan 2023–2028, the TVET's roadmap, is currently being developed and will likely include digital and green skills. The DTI's Philippine Skills Framework Initiative develops sector-specific and cross-sectoral skills frameworks to guide employers' and training providers' talent development plans. Its priority sectors include Logistics and Supply Chain, Creatives, Construction, Manufacturing, Health and Wellness, IT-BPM, Tourism, and Food Agriculture.[7] These initiatives have overlaps and complementarities. Assessing how plans can build on one another or how initiatives can harness the synergy of various agencies will maximize the use of resources, bringing better services and outcomes coherent with the country's vision of sustainable development.

- Explore the establishment of the Commission on Skills and Lifelong Learning that will craft plans, spearhead research, and harmonize the country's skill and lifelong learning initiatives, including the integration of labor market, career, and skills information systems. Advanced programming/coding and big data analytics are already identified as requisites for automation and digitalization. These skills intersect with a green agenda involving innovations in engineering and technologies to manage smart systems like smart grids, smart agriculture, and smart cities. The country's digital skills portfolio enables workers to harness opportunities in clerical tasks and creative and multimedia services. How these skills can be upgraded to serve the country's vision of dual transition is a challenge that needs a longer-term planning horizon and the synergy of various agencies. Doing so will enable stakeholders like the academe, training institutions, and businesses to align their visions, goals, and action plans.
- Revise the Philippine Standard Occupation Codes (PSOC) to include digital and green occupations. Use the PSOC in the labor market and career information systems and skills framework initiatives. Currently, the 2012 PSOC does not identify green occupations, although green jobs can be extracted from its manual by looking at the occupation descriptions. For example, around 5 percent of the listed jobs in the PSOC manual have tasks related to the term "environment/environmental". However, new jobs are yet to be integrated into the occupation codes. For example, 35 percent of green jobs in O*NET, as listed in

[7] https://innovate.dti.gov.ph/resources/ph-skills-framework

Peters (2014), are not in the PSOC (e.g., Green Marketers, Water Resource Specialists, Hazardous Materials Removal Workers, Hydroelectric Production Managers, Solar Energy Installation Managers, Solar Photovoltaic Installers, Energy Auditors). Green jobs identified by DOLE[8] are also yet to be reflected in the PSOC. The statistical system must be updated to harmonize monitoring and planning activities and strengthen research capacities.

- Integrate affirmative action into strategic plans and agenda. The digital and green economy will adversely affect some segments of society. These can include the historically marginalized, such as women, persons with disabilities, and the Indigenous Peoples. Affirmative actions do not mean creating new or separate programs. Rather, these entail designing programs that account for access, exposure, and opportunity disparities.
- Expand social protection products and services. With or without transitioning toward a digital and green economy, unemployment insurance (UI) must cover both formal and informal workers. A UI that covers training costs while workers are in between jobs is desirable. Encourage UI enrollments by offering various payment structures and channels and shortening the eligibility period.

Academe and training institutions: A successful transition to a digital and green economy requires a training system that quickly adjusts to the evolving skills needs of the labor market. Thus, the following are desirable:

- Improve the agility of higher education institutions (HEIs) in responding to the labor market and industry needs. Most HEIs (around 95%) are regulated and need the CHED's approval when offering new courses/programs. Only 5 percent (autonomous universities) can do so without undergoing bureaucratic processes. Thus, the challenge of how the tertiary education sector can be more responsive to innovations and developments without sacrificing quality in education must be addressed.
- Leverage labor market information systems in developing programs/ courses.
- Strengthen the TVET workforce. Commit resources to get the best practitioners abroad to train the trainers in the country. Send scholars abroad to learn about new technologies and best practices to transform the identified sectors. The shortage of competent practitioners who can help develop training regulations and curricula can stall any well-planned digital and green agenda.
- Strengthen partnerships of TVET institutions with firms and the industry. Active collaboration with these sectors enables the training system to become more responsive to changes in the needs of the labor market.

[8] See https://cip.philjobnet.gov.ph/?page_id=3189 (accessed on June 1, 2023).

Firms: Firms have stakes in ensuring their workers have the correct skills. In the Philippines, there are efforts to provide digital skills training to their existing workforce (58%), but very few collaborate with external trainers (33%).[9] To reskill/retool their existing workforce, firms can explore TESDA's enterprise-based training (EBT) programs. Firms can explore putting up necessary measures to recover their investments. Tap the EBT programs to obtain skilled workers.

To foster ownership, firms must be proactive in selecting participants and putting up the terms and conditions of the initiative.

Workers: Evidence indicates that employers see the complementation of traditional and digital credentials in the future (ADB and LinkedIn 2022). To enhance mobility, workers must be proactive in obtaining digital credentials (e.g., certificates for short-term courses, nanomasters).

Harness AI and other technologies to face the twin transition.

The twin transition involves integrating the green and digital transitions to exploit synergies while managing the risks (Muench et al. 2022). The various technologies employed for the green and digital transitions have their respective environmental impacts. Research and innovation could reduce the resource footprint of the technologies over time. Regulation could also require or incentivize the adoption of more environmentally friendly technologies. The promotion of green-digital solutions, however, could have unintended consequences. For example, due to the switch to green products, the prices of carbon-intensive products could decline, making them more competitive, or housing space requirements could increase due to teleworking. Rebound effects could be avoided by intensifying education and awareness about the environmental impacts of changes in consumer behavior (Muench et al. 2022).

Interdisciplinary collaboration and multistakeholder participation are essential in developing shared principles and governance frameworks.

On the various risks associated with AI, the government must proactively address the possible social, ethical, and environmental implications. Better governance, especially with respect to data and algorithms, is necessary to support an AI-enabled digital economy (PwC 2018). In addition to setting parameters for the use of AI, social and environmental principles and standards could be embedded in national digital programs and strategies. The government could adopt a "responsible technology policy" to guide innovators and ensure alignment with national and global commitments such as the SDGs (p.27). To ensure that AI contributes to achieving all the SDGs, the development of rules and regulations must be driven by science (Vinuesa et al. 2020). At the same time, interdisciplinary collaboration and multistakeholder participation are essential in developing shared principles and governance frameworks, both national and global (Vinuesa et al. 2020, PwC 2018, UNESCAP 2017).

[9] Based on the data in ADB and LinkedIn (2022).

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Appendices

Appendix 1
Examples of countries adopting green transition in their development plans

Country	Location	Details of Green Economy Plans/Policies
Uzbekistan	Central Asia	Uzbekistan has identified priorities for the transition of the economy to a green development path and adopted the Strategy for Transition of the Republic of Uzbekistan to a Green Economy for 2019-2030 (Resolution of the President of the Republic of Uzbekistan PP-4477 dated 04.10.2019) Source: Republic of Uzbekistan (2021)
China	East Asia	According to the 14th Five-year Plan, China will accelerate efforts to build and improve an economic structure conducive to green, low-carbon, and circular development in its ongoing antipollution fight to achieve its carbon peak and neutrality goals. The plan targets that by 2025, the country will have reduced its energy consumption per unit of GDP by 13.5 percent from 2020 while keeping total energy consumption at reasonable levels. Source: https://english.www.gov.cn/
Japan	East Asia	Japan's Clean Energy Strategy aims for carbon neutrality by 2050 and a 46 percent reduction in greenhouse gas emissions by fiscal 2030. The plan has the following key components: Decarbonization and Energy Security (renewable energy and nuclear power), Green Transformation (GX), GX League, and Hydrogen Focus. Source: https://www.japan.go.jp
South Korea	East Asia	The Korean New Deal: National Strategy for Great Transformation, released in July 2020, is based on two main policies: the Digital New Deal and the Green New Deal. To accelerate the achievement of a low-carbon green economy, Korea has allocated an investment of approximately USD 143 billion for carbon reduction projects and creating 1.9 million green jobs by 2025. Source: https://english.moef.go.kr/pc
Brunei Darussalam	Southeast Asia	Brunei Darussalam has implemented the National Climate Change Policy, incorporating 10 key strategies for 2035 as a general target year. This policy is pivotal in guiding the country's green transition efforts. A significant part of this strategy is to increase the total share of renewable energy to at least 30 percent of the total capacity in the power generation mix, focusing primarily on solar photovoltaic (PV) technology. This move indicates a strong commitment to reducing dependency on fossil fuels. Source: Climatechange.gov.bn
Cambodia	Southeast Asia	Cambodia has released several strategic plans for green growth, including the National Strategic Plan on Green Growth 2013–2030, the Cambodia Climate Change Strategic Plan 2014-2023, and the National Environment Strategy and Action Plan 2016–2023. In addition, Cambodia has launched its Long-term Strategy for Carbon Neutrality by 2050, which focuses on several key areas, such as emphasizing the continuation of the Reducing Emissions from Deforestation and Forest Degradation (REDD+) Strategy, gradually decarbonizing the power and transport sectors while improving energy efficiency and promoting low-carbon approaches in agriculture, industrial processes, and waste management to reduce overall greenhouse gas emissions. Source: MOE
Indonesia	Southeast Asia	Indonesia's first-ever sustainable development plan, RPJMN 2020-2024, integrates low-carbon, green growth into Indonesia's national development strategy. The Low Carbon Development Initiative (LCDI), which aims to put low-carbon development at the core of Indonesia's development plan, is central to this strategy. It includes greenhouse gas emissions reduction as a key macroeconomic indicator, aligning it with other crucial indicators like GDP growth, poverty reduction, and employment. This plan represents a shift in governmental perspective, moving away from viewing climate action and growth as trade-offs and toward recognizing the benefits of climate action. Source: https://www.wri.org/outcomes/indonesia-adopts-its-first-ever-sustainable-development-plan

Appendix 1 (continued)

Country	Location	Details of Green Economy Plans/Policies
Lao PDR	Southeast Asia	The National Green Growth Strategy of the Lao PDR focuses on (1) encouraging and promoting economic growth and poverty reduction in a comprehensive, inclusive, and fair manner, allowing all persons in the society to receive the benefits from such development; (2) raising the efficiency and effectiveness of the utilization of limited natural resources of the country to ensure optimal benefits; (3) economic growth that is clean and environmentally-friendly and that decreases wastes and greenhouse gas emissions; and (4) increasing the economic resilience to climate change, natural disasters and of global economic uncertainties. Source: UNEP
Malaysia	Southeast Asia	Malaysia implemented the Green Technology Master Plan to promote green technology adoption across various sectors, aiming for sustainable development by reducing carbon emissions and enhancing energy efficiency. In addition, the National Energy Transition Roadmap provides a sustainable energy pathway toward a high-value green economy. It includes initiatives and projects based on energy efficiency, renewable energy, and hydrogen, aiming for a 32% reduction in GHG emissions by 2050 compared to 2019. Source: https://www.state.gov/; dfdl
Myanmar	Southeast Asia	Myanmar Climate Change Strategy (2018 – 2030) was formulated to address the challenges posed by climate change, considering Myanmar's vulnerability to climate-related events such as floods, cyclones, and droughts. This plan includes ecosystems-based adaptation and nature-based solutions at the township level. An institutional structure was also established to coordinate national-level action on climate change. The plan also developed Myanmar's Intended Nationally Determined Contributions under the Paris Agreement. Source: UNEP
Philippines	Southeast Asia	Chapter 15 of the Philippine Development Plan specifically focuses on accelerating climate action and strengthening disaster resilience. This chapter sets the objective for communities, institutions, and both natural and built environments to become more resilient to the impacts of natural hazards and climate change by 2028. The strategies to achieve this include increasing communities' and institutions' climate and disaster risk resilience, enhancing ecosystem resilience, and enabling the transition to a low-carbon economy. Additionally, to support and operationalize the PDP 2023-2028, the Climate Change Commission (CCC) is updating the National Climate Change Action Plan (NCCAP) and the Nationally Determined Contribution (NDC), strengthening the implementation of the National Climate Risk Management Framework (NCRMF), and developing the National Adaptation Plan (NAP). These plans and frameworks provide a basis for working with relevant government agencies to enhance ecosystem resilience and enable a low-carbon economy transition. Source: https://pdp.neda.gov.ph/philippine-development-plan-2023-2028/#:~:text=Chapter%2015%3A%20
Singapore	Southeast Asia	The Singapore Green Plan 2030 is a whole-of-nation movement to advance Singapore's sustainable development, aligning with the UN's 2030 Sustainable Development Agenda and the Paris Agreement. The plan's key targets include planting 1 million more trees, quadrupling solar energy deployment by 2025, and ensuring all newly registered cars are cleaner-energy models from 2030. The Green Plan comprises five pillars: City in Nature, Energy Reset, Sustainable Living, Green Economy, and Resilient Future.
Thailand	Southeast Asia	Thailand's latest development plan is the "Bio-Circular-Green Economy" (BCG) model, which focuses on sustainable growth and carbon emission reduction through technology and innovation, leveraging natural resources and cultural diversity. Key strategic sectors in the BCG Economy include agriculture and food, energy, materials and biochemicals, wellness and medicine, and tourism and the creative economy. The BCG plan includes ambitious goals like recycling 100% of certain plastics by 2030 and cutting food loss from 30% to 10%

Appendix 1 (continued)

Country	Location	Details of Green Economy Plans/Policies
Viet Nam	Southeast Asia	National Strategy for Climate Change 2021-2030 envisions a significant reduction in emissions, with a goal to phase out coal power by the 2040s and achieve net-zero carbon emissions by 2050 Source: https://www.mckinsey.com/capabilities/sustainability/our-insights/charting-a-path-for-vietnam-to-achieve-its-net-zero-goals
Bangladesh	South Asia	The Mujib Climate Prosperity Plan has a strategic investment framework to mobilize financing, especially through international cooperation, for implementing renewable energy and climate resilience initiatives. The plan identifies several key initiatives that focus on renewable energy, energy storage infrastructure, power grid modernization, Established carbon market regime, Bangladesh Delta Plan 2100 resilience bonds, training and skills development for the future, Future-proof Bangladesh's industries, locally-led adaptation outcomes, Micro, Small, and Medium Enterprise financial protection and productivity enhancement, Climate-Resilient and Nature-Based agricultural and fisheries development, environment-friendly transport, climate resilient well-being programs and Accelerated digital revolution. Source: https://unfccc.int/sites/default/files/NDC/2022-06/NDC_submission_20210826revised.pdf
United States of America	North America	Under President Joe Biden, the federal administration aims for net-zero emissions by 2050, with a national climate agenda including tax incentives, energy innovation funding, and climate-related programs. Source: https://www.mckinsey.com/capabilities/sustainability/our-insights/america-2021-renewing-the-nations-commitment-to-climate-action
Australia	Oceania	The Australian Government is implementing a substantial and rigorous suite of new economic policies to drive the transition to net zero. Australia's new 2030 target (i.e., reduce greenhouse gas emissions to 43% below 2005 levels by 2030) is based on the modeled impact of these policies. Examples would include a USD 20-billion investment in renewable energy, passage of the National Electric Vehicle Strategy to reduce emissions and accelerate the uptake of electric vehicles, and a commitment to reduce the emissions of Commonwealth Government agencies to net zero by 2030 Source: https://www.globalaustralia.gov.au/industries/net-zero#:~:text=The%20Australian%20Government%20has%20made,and%20net%20zero%20by%202050
New Zealand	Oceania	The Climate Change Response Act (2019) provides an enduring framework by which New Zealand can develop and implement clear and stable climate change policies. It achieves this purpose by enshrining in legislation a domestic emissions reduction target by 2050, a system of emissions budgets and emission reduction plans, a climate change commission, and adaptation measures. Source: https://unfccc.int/sites/default/files/NDC/2022-06/New%20Zealand%20NDC%20November%202021.pdf
Germany	Europe	Germany presented a package in 2021 to speed up the expansion of renewable energy. This includes new climate legislation in 2021, setting higher national emissions reduction targets for 2030 and 2040, and aiming for net greenhouse gas neutrality by 2045. Germany also plans to roughly double onshore wind capacity to 115 gigawatts by 2030 and to increase solar PV installations to 215 gigawatts by 2030. Around a third of Germany's $145 billion spending pledges aim to reduce emissions. Source: https://www.reuters.com/world/europe/germany-present-renewable-energy-expansion-measures-2022-04-05/#:~:text=BERLIN%2C%20April%206%20%28Reuters%29%20,the%20need%20to%20reduce%20the
France	Europe	Launched in 2021, The France 2030 Investment Plan is a 54-billion-euro plan focusing on improving the industrial sector's competitiveness and supporting the low-carbon transition. France's Green Hydrogen Plan aims to position the country as a competitive and decarbonized economy through innovations in green hydrogen. The plan also includes investing EUR 30 billion to reduce carbon footprint and develop sectors like green hydrogen. Source: Journalism for the energy transition; Green hydrogen plan

Appendix 1 (continued)

Country	Location	Details of Green Economy Plans/Policies
Spain	Europe	Spain's recovery and resilience plan emphasizes sustainable mobility, energy efficiency, renewables, climate change adaptation, circular economy, and biodiversity. Over EUR 12 billion has been allocated for the energy efficiency of buildings and EUR 13.2 billion for sustainable mobility, including green public buses and electric charging stations. Spain also plans to invest EUR 6.1 billion in clean technologies and infrastructure to accelerate the development and use of renewables. Source: https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/spains-recovery-and-resilience-plan_en
Italy	Europe	Italy's recovery plan includes EUR 15.3 billion for energy efficiency in buildings and EUR 34 billion for sustainable mobility. It also includes investments of EUR 11.2 billion in the development of renewable energies and the circular economy. Environmental policy reforms are underway to improve water resource management, increase recycling rates, and deploy electric vehicle charging points. Source: https://commission.europa.eu/business-economy-euro/economic-recovery/recovery-and-resilience-facility/country-pages/italys-recovery-and-resilience-plan_en

Source: Authors' compilation

Appendix 2
Specific Technologies for the Environment and Climate Change Operational Area

Agricultural lands	• Precision agriculture (i.e., precision fertilization, irrigation, and pest and disease detection and management) • Site-crop suitability matching tools • Remote Sensing for the monitoring of soil conditions. • GIS-Aided Pesticides and Fertilizer Use Information system to keep track of the amount and location of application of pesticides and fertilizers for the assessment of environmental impacts
Watershed	• Comprehensive long-term watershed and ecosystem observation systems–continuously track down the changes in its functions and services, along with the associated changes in the natural (e.g., climate) and socioeconomic drivers (e.g., land use). • Philippine Ecosystem and Watershed Observation Network–adopt protocols of existing international observation networks such as NEON (National Ecological Observation Network of USA), TEAM (Tropical Ecology Assessment and Monitoring), and ILTER (International Long-Term Ecological Research Network). • Philippine Ecosystem and Watershed Observation Network–adopt protocols of existing international observation networks such as NEON (National Ecological Observation Network of USA), TEAM (Tropical Ecology Assessment and Monitoring), and ILTER (International Long-Term Ecological Research Network). • Environmental and biological sensors–monitor hydrological processes and soil conditions. • Remote sensing, drones, and related technologies facilitate real-time data collection concurrently over many watersheds and ecosystems, allowing for comparative and relational studies across watersheds and ecosystems in different biogeographic zones. • Watershed decision support systems–process real-time and quasi-real-time datasets into information that are vital to making sound science-based management and policy decisions • Watershed and ecosystem models–projection and simulation of watershed and ecosystem responses to changes in climate and development activities • Land use scenario builders–projection of expansion of urbanization, agriculture, land degradation, and deforestation
Coastal and marine resources	• Subsea engineering and technology • Sensors and imaging • Satellite technologies • Computerization and big data analytics • Autonomous systems • Biotechnology • Nanotechnology • Drones • Autonomous underwater vehicles (AUVs) • 3D mapping and modeling tools • High resolution and nanosatellite imagery, • Suite of monitoring and surveillance tools • Geospatial technology. e.g., remote sensing, geographic information science, and spatial statistics
Soil	• Nationwide reassessment of soil resources and setting in place of an integrated decision support system (DSS) consisting at the least of systematic and continuous monitoring of soil health. • Web-based soil and related dataset management system • Widely and readily accessible multiple platform-based soil health assessment tool

Appendix 2 (continued)

Land	• Application of landscape-based (i.e., watershed and ecosystem-based, and ridge to reef approach) local and regional land use planning and development, agricultural development, and landscape/ecosystem-based. • Practice of sustainable land management (SLM), sustainable forest management (SFM) and multifunction forest landscape restoration, landscape-seascape management, and sustainable agriculture (SA), including precision agriculture. • Inherent to the integrated approaches to land use planning and management for robust tradeoff analysis between competing land uses in terms of individual and combined net impacts on ecosystems, environment, economy, and social welfare. Timber • Robust timber resources tracking system • RFID-aided forest product tagging and tracking technology
Forest and biodiversity	• Remote sensing and GIS-aided precision tools for the stratification of areas • ICT for general or targeted IEC programs. (e.g., cellular phones, tablets) • Personal digital assistants • Electronic diaries • CyberTracker • Species distribution models • Habitat fragmentation analytical tools • Animal Camera Trapping Technology
Climate change	• Technologies for adjusting the cropping calendar, developing flood-tolerant rice varieties, and diversifying crops and livestock. • Tailor-made adaptation tools and technologies focused on food security, soil and water conservation, the resilience of terrestrial, coastal, and marine ecosystems, biodiversity and land productivity, and human security. • Nature-based solutions • The real-time online climate monitoring and forecasting dataset and information system of PAGASA is freely accessible to the public for informed response actions to climate-related risks.

Source: NAST (2021)

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This issue of the *Economic Policy Monitor* (EPM) examines the intersection of green transformation and digitalization, which are key drivers for sustainable, tech-centered growth. It evaluates how investments; labor; science, technology, and innovation (STI); and artificial intelligence contribute to this dual transformation. The EPM highlights relevant initiatives and technology-related risks, while offering recommendations to boost capabilities, bridge existing gaps, and remove barriers to maximize the potential of this twin transition. Furthermore, it gives policy updates on poverty reduction and social protection; gender; health; education; labor and employment; housing; agriculture; trade and industry; services; STI; land, air, and marine transport; energy; and the environment and natural resources. The EPM also provides a comprehensive review of the country's macroeconomic performance in 2022 and 2023, while presenting economic projections for 2024.

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