

Delivering on the Sustainable Development Goals through Solutions at the Energy, Food and Finance Nexus

2023 Asia-Pacific
SDG Partnership Report



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Delivering on the Sustainable Development Goals through Solutions at the Energy, Food and Finance Nexus

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Foreword

The convergence of multiple global crises has further derailed the Asia-Pacific region from achieving the Sustainable Development Goals (SDGs) by 2030. The coronavirus disease (COVID-19) pandemic, the Russian invasion of Ukraine, a worsening climate crisis and underlying structural weaknesses have caused the worst cost-of-living crisis in a generation in the region. The crises have caused enormous disruptions to energy and food markets, and have driven food, energy and commodity prices to record highs. Their impacts have been felt globally, especially among vulnerable groups: millions of people have been pushed into poverty. At least a decade of development progress has been erased.

The recent economic and social turmoil, and the consequences of the polycrisis have put immense pressure on public finances and reduced financial resources available to achieve the SDGs. Even before the COVID-19 pandemic and the Russian invasion of Ukraine, the Asia-Pacific region was off track to meet the 2030 SDGs and would have needed until 2065 to achieve all 17 goals. This delayed timeline could get pushed out further unless the urgent need for sustained investment is met and policies move in the right direction.

While fiscal conditions have recently improved in some countries in the Asia-Pacific region, significant risks remain. Many countries face the difficult choice of having to balance medium- to long-term development interests with short-term recovery needs. Moreover, the crises have demonstrated that we must endeavor to better understand the interconnectedness of energy, food and finance security, and the complex interactions between them, as this is a potent mix that has destabilized economies and can jeopardize longer-term development.

This 2023 Asia-Pacific SDG Partnership Report—*Delivering on the Sustainable Development Goals through Solutions at the Energy, Food and Finance Nexus*—goes to the heart of this nexus and examines the role of energy, food and finance in amplifying shocks, while also highlighting their role in providing synergistic solutions. The report analyzes how the cascading energy–food–finance crises have impacted economic, educational, employment and health outcomes of people, particularly the most vulnerable. It also explores how innovations in food, energy and financial systems are vital to the solutions we urgently seek to renew development momentum and improve resilience in the region.

We are pleased to issue this joint report as we work together to turn this unprecedented polycrisis into green, inclusive transitions for a sustainable future across countries in the Asia-Pacific region.



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Key messages

Chapter 1. SDG stocktaking in times of compounding crises: new shocks and stresses from energy, food and finance

- ▶ The polycrisis has severely disrupted energy, food and finance systems in the region and set in motion new shocks and stresses that are especially devastating for the most vulnerable groups. The crisis is plunging millions more people into poverty and setting back the progress towards the SDGs even further. This situation threatens to slow down the post-COVID-19 transition towards a greener, more inclusive economy and society. Disasters triggered by natural hazards, an acute climate crisis, and political and economic turmoil have further hampered progress towards sustainable development in the region.
- ▶ Asia and the Pacific is at a crossroads, with a series of overlapping crises exposing vulnerabilities in the critical interlinked systems of energy, food and finance and potentially undermining longer-term sustainable development. In the polycrisis, however, also lies hope and opportunity for change. It can be seen as an important turning point towards a cleaner and more secure future, initiating renewed momentum to transform energy and food systems. Recovering from the polycrisis will require countries to address these immediate vulnerabilities whilst not losing track of longer-term development objectives.
- ▶ Without substantial progress on climate change mitigation in line with international agreements, climate-related disasters will become more frequent and extreme. Preparing the Asia-Pacific region to navigate ongoing and future crises will require coordinated and inclusive transformations of the energy, food, and finance systems at regional, subregional, national and local levels.

Chapter 2. Energy, food and financing solutions for the SDGs

- ▶ Innovation—including through new technologies, business models, policy frameworks, and social advances—in energy and food production offers sustainable and cost-effective solutions to meet energy and food needs and ensure a more equitable distribution to the marginalized and vulnerable people in the region.
- ▶ The region is witnessing promising practices on smart and low-carbon farming and technological advances that are accessible to all and offer the opportunity to optimize the use of inputs, raise agricultural yields and reduce environmental impact. Emerging approaches to making energy and food systems more efficient and less wasteful, along with the promotion of sustainable consumption, can further reduce environmental degradation and benefit both farmers and consumers.
- ▶ Replicating and scaling up existing innovations and solutions will promote more sustainable and inclusive energy and food systems, capitalizing on opportunities to overcome the polycrisis and advance the SDGs.

- ▶ Recalibrating public financial management is vital to protecting fiscal space and boosting public investment towards the SDGs amid worsening fiscal conditions. Good practices from countries in the region indicate the need to integrate SDGs in the budgeting process, explore new approaches to revenue mobilisation and reform wasteful agricultural, food and fossil fuel subsidies.
- ▶ Scaling up private sector investment would accelerate the transition to sustainable energy and food systems. Broad opportunities exist for stakeholders to explore innovative financial solutions towards sustainability, including by better linking products to the SDGs to address the energy-food-finance nexus.
- ▶ Regional and subregional initiatives must complement technical and country- or community-level interventions. Amid the polycrisis, redoubling commitments to lower trade barriers and support a just energy transition through closer and stronger cooperation will help promote food and energy security.

Chapter 3. Reclaiming the decade of action on the SDGs

- ▶ The polycrisis calls for multinational and multisectoral responses to address the stalling of progress on SDGs and build back better. Strengthening regional and subregional partnerships across the energy-food-finance nexus is vital to help countries become more resilient in the face of current and future shocks. National strategies that make use of cross-sector and cross-agency collaborations can foster coherent and cohesive policy solutions.
- ▶ Data-driven and adaptive institutions can enable countries in Asia and the Pacific to better respond to crises and build resilience of the energy, food and finance systems over the medium to long term. New technologies, when well designed and implemented, present an extraordinary opportunity to shape more effective public policy and private sector solutions across the three systems. Applying agile governance and participatory scenario planning can enable national institutions to adapt to changing circumstances through more responsive policymaking.
- ▶ Financing robust, inclusive and adaptive social protection systems is critical to address multi-dimensional risks and improve the energy and food security of vulnerable groups in the face of the recent crises, promoting long-term resilience.
- ▶ Encouraging private enterprises to use SDG impact frameworks and develop bankable projects for SDG-aligned financing will help channel more capital towards the 2030 Agenda for Sustainable Development. It is therefore crucial to ensure financial market regulators are well placed to manage climate change risks and smooth the low-carbon transition.

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Abbreviations

ADB	Asian Development Bank	MTEF	Medium Term Expenditure Framework
AI	Artificial Intelligence	NEET	Not in Employment, Education or Training
APEC	Asia-Pacific Economic Cooperation	NGO	Non-governmental organization
APFSD	Asia-Pacific Forum on Sustainable Development	ODA	Official Development Assistance
ASEAN	Association of Southeast Asian Nations	OECD	Organisation for Economic Co-operation and Development
CCBII	Climate Change Budget Integration Index	OOF	Other Official Flows
CFF	Climate Fiscal Framework	PAYG	Pay-as-you-go
CIF-ACT	Climate Investment Fund – Accelerated Coal Transition	PFM	Public Financial Management
COP	Conference of the Parties	PGE	Pertamina Geothermal Energy
CSO	Civil Society Organization	PIFR	Pacific Island Food Revolution
DPR	Democratic People’s Republic	PLN	Perusahaan Listrik Negara
ESCAP	Economic and Social Commission for Asia and the Pacific	PPFS	Policy Partnership on Food Security
ESCO	Energy Service Company	PV	Photovoltaic
ETM	Energy Transition Mechanism	RPTCC	Regional Power Trade Coordination Committee
FAO	Food and Agriculture Organization of the United Nations	SAREM	South Asia Regional Electricity Markets
FDI	Foreign Direct Investment	SARI/EI	South Asia Regional Initiative for Energy Integration
GDP	Gross Domestic Product	SDG	Sustainable Development Goal
GNI	Gross National Income	SIDS	Small Island Developing States
IMF	International Monetary Fund	SIO-GFF	SDG Indonesia One – Green Finance Facility
IPP	Independent Power Producer	SME	Small and Medium-sized Enterprise
LDC	Least Developed Country	UNCDF	United Nations Capital Development Fund
LLDC	Landlocked Developing Country	UNCTAD	United Nations Conference on Trade and Development
LPG	Liquefied Petroleum Gas	UNDP	United Nations Development Programme
LNG	Liquid Natural Gas	UNICEF	United Nations Children’s Fund
IBFCR	Inclusive Budgeting and Financing for Climate Resilience	USAID	United States Agency for International Development
ICT	Information and Communications Technology	WFP	World Food Programme
IDCOL	Industrial Development Corporation of Odisha Limited	WTO	World Trade Organization
IEA	International Energy Agency	ZBNF	Zero Budget Natural Farming
ILO	International Labour Organization		
IRENA	International Renewable Energy Agency		

Explanatory notes

The Asia-Pacific region, unless otherwise specified, refers to the group of members and associate members of the Economic and Social Commission for Asia and the Pacific (ESCAP) that are within the Asia and the Pacific geographic region (the Asian Development Bank and the United Nations Development Programme, partners in this publication, have differing regional compositions). Some countries are referred to by a shortened version of their official name in the figures, as indicated in brackets in the listing below.

Geographic subregions in this report are defined (unless otherwise specified), as follows: East and North-East Asia: China, Democratic People's Republic of Korea (DPR Korea), Japan, Mongolia, and Republic of Korea; South-East Asia: Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic (Lao PDR), Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam; South and South-West Asia: Afghanistan, Bangladesh, Bhutan, India, Islamic Republic of Iran, Maldives, Nepal, Pakistan, Sri Lanka, and Türkiye; North and Central Asia: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, the Russian Federation, Tajikistan, Turkmenistan, and Uzbekistan; Pacific: American Samoa, Australia, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Federated States of Micronesia, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

Least developed countries: Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands, Timor-Leste and Tuvalu.

Landlocked developing countries: Afghanistan, Armenia, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, Lao People's Democratic Republic, Mongolia, Nepal, Tajikistan, Turkmenistan and Uzbekistan.

Small island developing States: Cook Islands, Fiji, Kiribati, Maldives, Marshall Islands, Federated States of Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Singapore, Solomon Islands, Timor-Leste, Tonga, Tuvalu and Vanuatu.

Developing Asia and the Pacific: ESCAP region, excluding Australia, Japan and New Zealand.

Developed Asia and the Pacific: Australia, Japan and New Zealand.

The classification of countries into income groups is from the World Bank.

Symbols and units

References to dollars (\$) are to United States dollars, unless otherwise stated. The dash (–) between dates signifies the full period involved, including the beginning and end years.

Introduction

The convergence of multiple global crises has further derailed efforts to achieve the Sustainable Development Goals (SDGs) by 2030. The Russian invasion of Ukraine that started in February 2022 came at a time when the global economy was already under severe stress, struggling to recover from the COVID-19 pandemic and facing the strains of an increasingly severe climate crisis. These multiple, compounding crises have combined to create a “polycrisis” (box 1) that has caused enormous disruption to the highly interlinked global energy, food, and finance markets and driven the prices of some commodities to record levels. The impacts are being felt across the Asia-Pacific region and the world, especially

among the poor and other vulnerable groups. The worst cost-of-living crisis in a generation has plunged millions more people into poverty, reversed at least a decade of progress towards the SDGs, and threatened to stall progress towards the green transition. Even before the Russian invasion of Ukraine, the United Nations had observed that the region was off course and would need until 2065 to achieve all 17 goals. The polycrisis has made the situation even more challenging. Many countries in the region—especially least developed countries and small island developing States—are greatly exposed and highly vulnerable to energy and food market disruptions, the impacts of climate change, and wider global economic turmoil.

Figure 1: Status of Asia-Pacific region's poverty, hunger, climate change and energy consumption



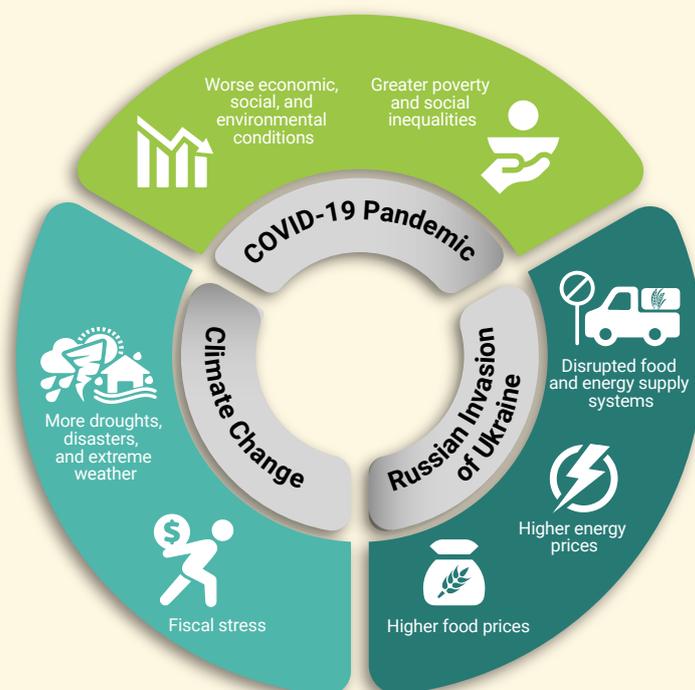
Sources: Data is based on World Bank. *Poverty Calculator*, (February 2023); FAO, *The State of Food Security and Nutrition in the World: Repurposing Food and Agricultural Policies to Make Healthy Diets More Affordable*, (Rome 2022); EM-DAT, Available at: <https://public.emdat.be/>; IRENA, Available at: <https://www.irena.org/How-we-work/Asia-and-Pacific/>; World Bank, *Climate and Development in East Asia and Pacific Region*, (11 November 2022); ADB, *ADB's Focus Energy*, (2022).

Box 1: What do we mean by a “polycrisis”?

This report uses the term “polycrisis” to refer to the current overarching global economic and social crisis.¹ It is comprised of multiple simultaneous crises whose impacts compound each other at the societal and global level.

The current “polycrisis” encompasses the longstanding but increasingly severe climate change crisis, the aftermath of the COVID-19 pandemic, and the impacts of the Russian invasion of Ukraine. These crises converged in early 2022 to create a “perfect storm” that has further derailed the global economy, put at risk the livelihoods of people in Asia and the Pacific and across the world, and stalled progress towards the SDGs. In some countries in the region, political and economic crises at the national and local level have exacerbated the adverse impacts of these three major crises.

Figure A: Defining polycrisis and its interconnected impacts



While the polycrisis has exposed weaknesses in the existing energy, food and finance systems, it has proved a catalyst for fresh momentum to redirect the global and regional economies and societies towards a more sustainable, inclusive, and resilient future. The crisis is an opportunity for people and societies to positively shape the future by making prudent choices now, which bring major beneficial impacts in the long-term and are likely to be more cost-effective than putting off action until it becomes absolutely inescapable.

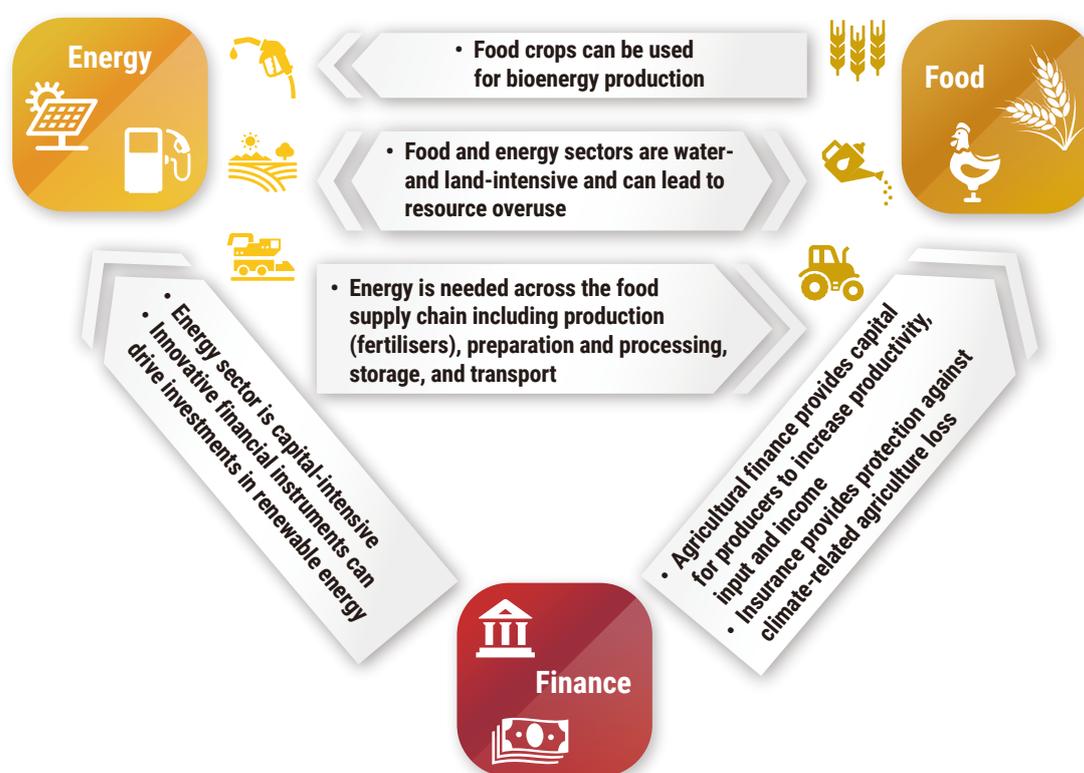
Sources: Lawrence, M., et al., “What is a global polycrisis?”. Cascade Institute, Technical Paper #2022-4, (September 2022); UNDP, “RBAP Foresight Brief: Polycrisis and Long-term Thinking”, (2022).

The socio-economic consequences of the polycrisis have put further pressure on government budgets and financial resources to achieve the SDGs. Through a complex web of macroeconomic, trade and financial channels, the crisis has negatively impacted economies, with net importers of energy and food facing particularly acute challenges. Faced with higher borrowing, deteriorating current account balances, and the need to support vulnerable people struggling to meet their basic energy and food needs, governments are grappling with shrinking fiscal space. Even though the needs are greater than ever, public resources devoted to achieving the SDGs are increasingly scarce. While fiscal deficits fell in

many economies in the last two years, they generally remain above their pre-pandemic levels.² Fiscal balances in most parts of the region are expected to continue to improve but could deteriorate again if the energy and food crises persist.

The extensive disruption of the energy, food, and finance systems calls for urgent action to improve the resilience of governments, businesses, and people to future shocks. The multi-dimensional impacts of the polycrisis necessitate integrated solutions to achieve the SDGs by exploiting synergies across the areas of energy, food and finance (figure 2).

Figure 2: Overview of the energy-food-finance nexus



This report³ describes the impacts of the polycrisis that could undermine years of investment in reducing hunger, providing energy access, and achieving other SDGs. The report also explores opportunities the polycrisis presents to redirect the region towards a greener, more inclusive and more resilient future by transforming the interconnected energy, food, and finance sectors to achieve the SDGs.

This report is composed of three chapters. Chapter 1 analyses the impact of the polycrisis on energy, food, and finance systems. Chapter 2 explores specific opportunities for green and inclusive transformations of the energy, food, and financing systems that can help improve resilience to the impacts of global shocks in the region. Chapter 3 identifies policy actions that could help transform the region's energy, food and financing systems in alignment with the SDGs.



CHAPTER

1

SDG stocktaking in times of
compounding crises:
new shocks and stresses from
energy, food and finance

The polycrisis has negatively impacted the Asia-Pacific region’s energy and food security and fiscal soundness, pushing millions more people into poverty and jeopardising the region’s ability to meet the SDGs. The shocks are widespread. They affect public finances, agricultural productivity and livelihoods and have severe effects on supply chains. Key commodity prices, consumer price inflation, and market uncertainty remain elevated. The Russian invasion of Ukraine has severely exposed some 38 countries in the region to at least one of the transmission channels (namely, rising food prices, rising energy prices, and tightening fiscal conditions), of which 25 are significantly exposed to all channels at once.⁴ As a result of elevated oil prices alone, up to 2.7 million people in the Asia-Pacific region could fall into poverty based on the \$1.90 poverty line and the figure increases to 8.7 million people based on the \$5.50 threshold.⁵ Greater economic uncertainty will likely hurt consumer and business confidence and sustained price inflation could prompt further interest rate hikes and weaken global demand including exports, investment, and tourism.

This situation threatens to slow down the post-COVID-19 transition towards a greener, more inclusive economy and society. Recovery from the pandemic provided an opportunity to reshape the global economy and society along a greener and more inclusive path; to

“build back better”. However, the crises in 2022 have halted, and in some cases reversed, this momentum (figure 3). For example, while lower energy demand during the pandemic reduced greenhouse gas emissions and drove up the share of renewables, a bounce back in demand and the 2022 turmoil in global energy markets prompted an increase in the use of coal for electricity generation. While the pandemic spurred some temporary improvements in social protection as part of emergency response, largely through stimulus packages and schemes to address immediate health and socio-economic needs, the cost-of-living crisis, accentuated by the Russian invasion of Ukraine, have again put vulnerable groups at risk and impeded the prospects of sustainable recovery from the pandemic.

Disasters triggered by natural hazards, climatic crises, and political and economic turmoil have further constrained SDG achievements. Three-quarters of people affected by disasters triggered by natural hazards worldwide live in Asia and the Pacific. The average economic loss from disasters triggered by natural hazards in the region stands at 2.4 per cent of GDP and is expected to increase with rising temperatures. Key indicators of climate change—greenhouse gas concentrations, rising sea levels, ocean heat and ocean acidification—have set new records in 2021.⁶ A combination of conflicts and

Figure 3: Examples of how the Russian invasion of Ukraine threatens to derail the green transition



political and economic crises further drives acute food insecurity, which is made worse by extreme weather events, the lingering effects of the pandemic, and global food price spikes.

This chapter discusses the impact of the polycrisis on the Asia-Pacific region; presents the responses of governments, private sector, and households to the energy and food price shocks; and assesses the impacts of the polycrisis on the SDGs and their sources of finance.

1.1 Impact of the polycrisis on Asia and the Pacific

The polycrisis has affected many countries in Asia and the Pacific and hit the most vulnerable the hardest. A sustainable and resilient post-pandemic recovery in the region has been hindered by global supply problems and energy and food price shocks. At the country level, the primary macroeconomic impact has been on economic output and prices. Given the region's strong integration in global supply chains, severe economic scarring is expected. The International Monetary Fund in late 2022

cut its forecast of the regional output level for 2025 compared to its original 2021 estimate.⁷ The disruptions in global supply chains of key commodities such as wheat, maize and natural gas have led to a surge in inflation and a subdued growth outlook.⁸ Elevated food and energy price inflation is likely to further widen consumption inequalities in the region, and fiscal policies to support vulnerable households may not be sufficient to contain the negative distributional implications. With narrow fiscal space and high debt burdens, countries face a challenging path to reverse the lasting impact of the polycrisis on the region's development prospects.

1.1.1. Exposure of countries in Asia and the Pacific to energy and food price shocks

The severity of the current economic shocks on countries in Asia and the Pacific is a function of their exposure and vulnerability to crisis and their capacity to cope. Several countries in the region are net importers of fossil fuels and food, and key trading partners of the Russian Federation or Ukraine, or both (figure 4).⁹

Figure 4: Imports of wheat and fertilisers from the Russian Federation and Ukraine, selected Asia-Pacific countries



Sources: FAO, *Technical Briefing to FAO Members on the Impact of COVID-19 and the War in Ukraine on the Outlook for Food Security and Nutrition*, (Rome, 2022); WFP, *Price Monitoring for Food Security in the Kyrgyz Republic*, (4 November 2022).

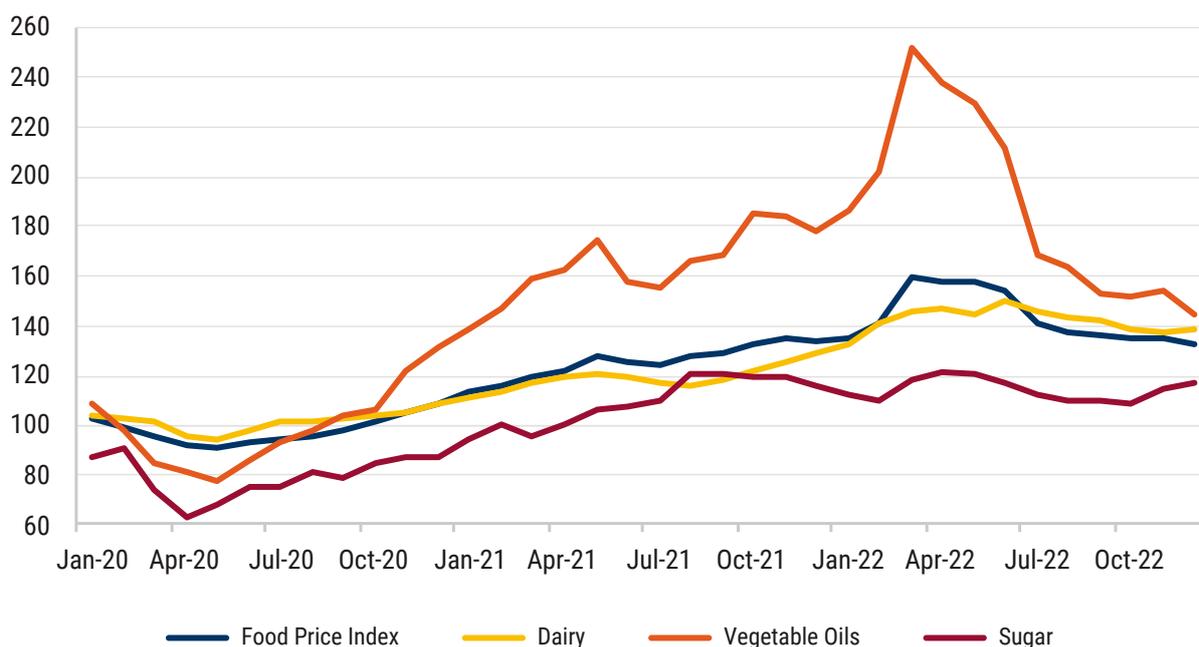
A preliminary economic assessment by ESCAP shows that Cambodia, Pakistan, Solomon Islands and Vanuatu are heavily exposed to rising energy prices because their net fuel imports are equivalent to more than 3 per cent of GDP. Similarly, Georgia, Kiribati and Solomon Islands, are highly susceptible to food price shocks, as net food imports in these countries account for over 50 per cent of domestic supply.¹⁰ Underlying food insecurity conditions further deepen the impact of these price volatilities. Table 1 provides data on structural characteristics in selected countries that affect the exposure to global energy and food price shocks.

The continued importance of agriculture in the region further increases the region's exposure to fertiliser supply shocks. Agricultural land accounted for 39 per cent of total land in Asia in 2020, with almost one fifth in Landlocked

Developing Countries¹¹, and about 30 per cent of the regional workforce engaged in agriculture in 2021.¹² High agricultural input costs not only disrupt the region's food production but also put at risk the livelihoods of millions of people.

Commodity prices have eased globally, to varying degrees, yet concerns remain as they are still above historical average levels. Global crude oil and food prices peaked in 2022 amid lingering pandemic-related effects, geopolitical disruptions and strained supply chains. In early 2023, Asian spot prices for liquefied natural gas (LNG) eased.¹³ With regard to food prices, the FAO food price index showed an upward trend in the wake of the pandemic and hit a record high in March 2022 (figure 5). Despite a significant drop in the index towards the end of 2022, the food price index hit a new annual all-time high in 2022.

Figure 5: Indices of prices for food and selected commodities since January 2020 (2014-2016 = 100)



Source: FAO, *World Food Situation*, Available at: www.fao.org/worldfoodsituation/foodpricesindex/en/.

Higher energy prices pushed up prices of key inputs in agriculture and other productive sectors, particularly fertilisers and electricity. The prices of nitrogenous fertilisers, a core agricultural input, more than tripled from April 2020 to April 2022. They have since dropped,

but remain well above the historical averages.¹⁴ Electricity generation costs increased substantially because of elevated prices of coal, feedstocks, and gas. Given the critical role of natural gas in fertiliser production, the high gas price has led to export restrictions on fertilisers.

Table 1: Structural characteristics of selected Asia-Pacific countries that affect exposure to global energy and food price shocks

	Country classification	GDP growth (%) ^a	Inflation (%) ^b	Net fossil fuel imports as % total energy supply ^c	Food imports as % merchandise imports ^d	% of agrifood imports from the Russian Federation/ Ukraine ^e	Poverty headcount ratio at \$2.15/day	Share of population unable to afford a healthy diet ^f
East and North-East Asia								
China	Other	8.1%	1.0%	22%	8%	23%	0.1%	12.0%
Mongolia	LLDC	1.6%	7.4%	-161%	14%	92.2%	0.7%	51.4%
South-East Asia								
Indonesia	Other	3.7%	1.6%	-90%	12%	4.4%	3.5%	69.1%
Lao PDR	LDC	2.5%	3.8%	18%	16%	15.4%	7.1%	79.8%
South and South-West Asia								
Bangladesh	LDC	6.9%	5.5%	29%	17%	5.8%	13.5%	73.5%
India	Other	8.7%	5.1%	40%	5%	13.0%	10.0%	70.5%
Pakistan	Other	6.5%	9.5%	39%	13%	4.5%	4.9%	83.5%
North and Central Asia								
Georgia	Other	10.5%	9.6%	79%	13%	92.3%	5.8%	
Kyrgyzstan	LLDC	3.6%	11.9%	35%	15%	71.3%	1.3%	49.6%
Pacific								
Fiji	SIDS	-5.1%	0.2%	91%	20%		1.3%	60.4%
Kiribati	SIDS	1.5%	-1.8%	65%	44%		1.7%	
Sources: a, b, d World Bank, <i>World Development Indicators</i> . c United Nations, <i>2020 Energy Balances</i> . e UNCTAD, <i>The impact on trade and development of the war in Ukraine</i> , UNCTAD Rapid Assessment, (16 March 2022). f FAO, IFAD, UNICEF, WFP and WHO, <i>The State of Food Security and Nutrition in the World 2022</i> , Repurposing food and agricultural policies to make healthy diets more affordable, (2022). Note: The data of structural characteristics pointing to countries' increased exposure are marked in red.								

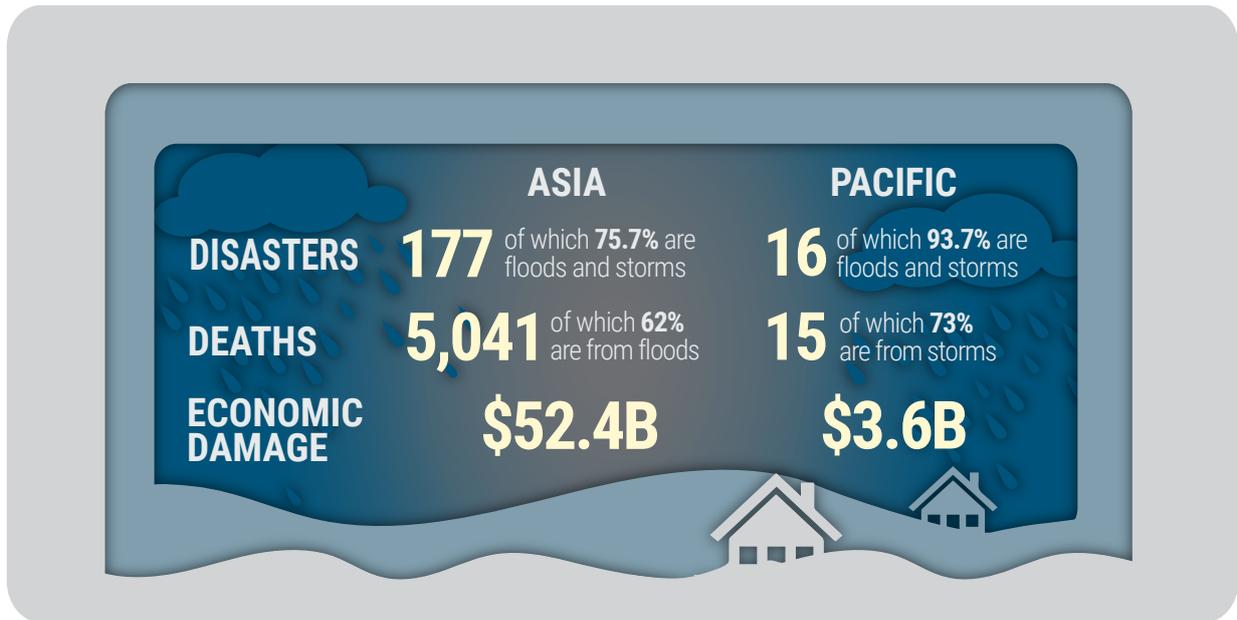
1.1.2. Exposure to disasters triggered by natural hazards and climate change shocks

Countries in Asia and the Pacific are particularly vulnerable to the impact of disasters triggered by natural hazards and climate change shocks. Based on the World Risk Index 2022, which ranks 193 countries on their risk or experiencing disaster or vulnerability to extreme natural events such as earthquakes, tsunamis, flood and drought, seven of the top ten countries with highest risk are in the region.¹⁵ The Philippines, India, and Indonesia occupy the top three

positions. In the Pacific, Papua New Guinea, Australia, Solomon Islands, and New Zealand are at "very high" risk.

Climatic and disaster shocks take a heavy toll on human life and economies. In the last two decades, over 475,000 people lost their lives as a direct result of more than 11,000 extreme weather events globally and economic losses amounted to \$2.56 trillion.¹⁶ Figure 6 provides estimates of the human and economic costs of disasters triggered by natural hazards in 2021 across the Asia-Pacific region.

Figure 6: Disasters triggered by natural hazards in Asia and the Pacific, 2021

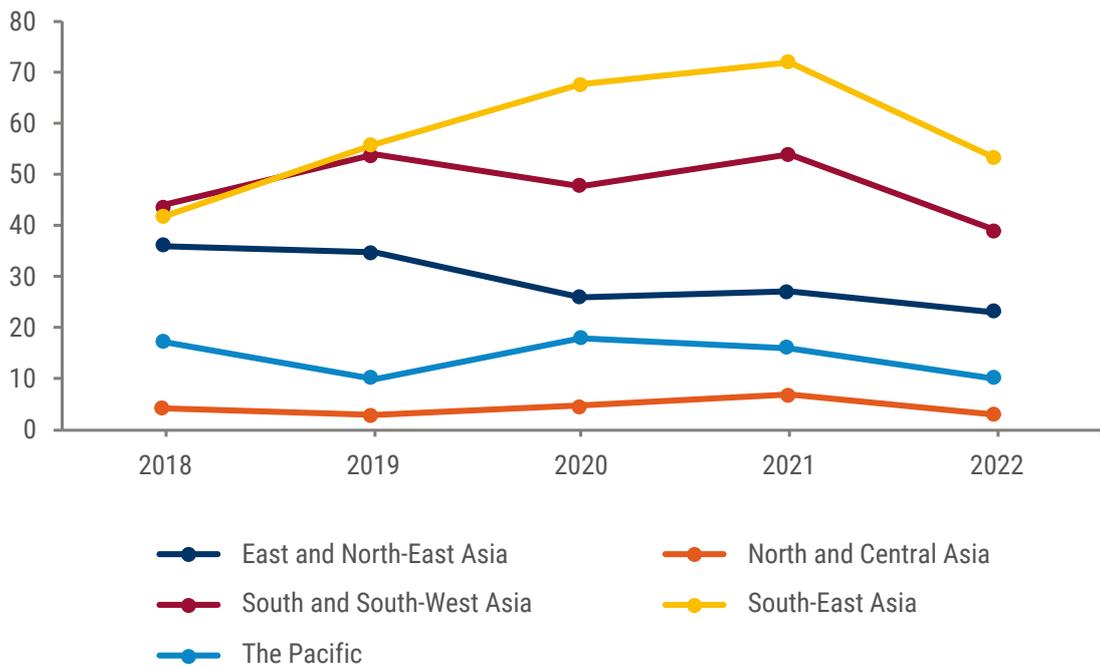


Source: EM-DAT The international disasters database, 2021.

Across subregions, South-East Asia has experienced the most disasters since 2019, followed by South and South-West Asia (figure 7). While the frequency of disasters and total economic damage is lower in the Pacific (figure 8), its economies and people are acutely vulnerable to disasters, especially when

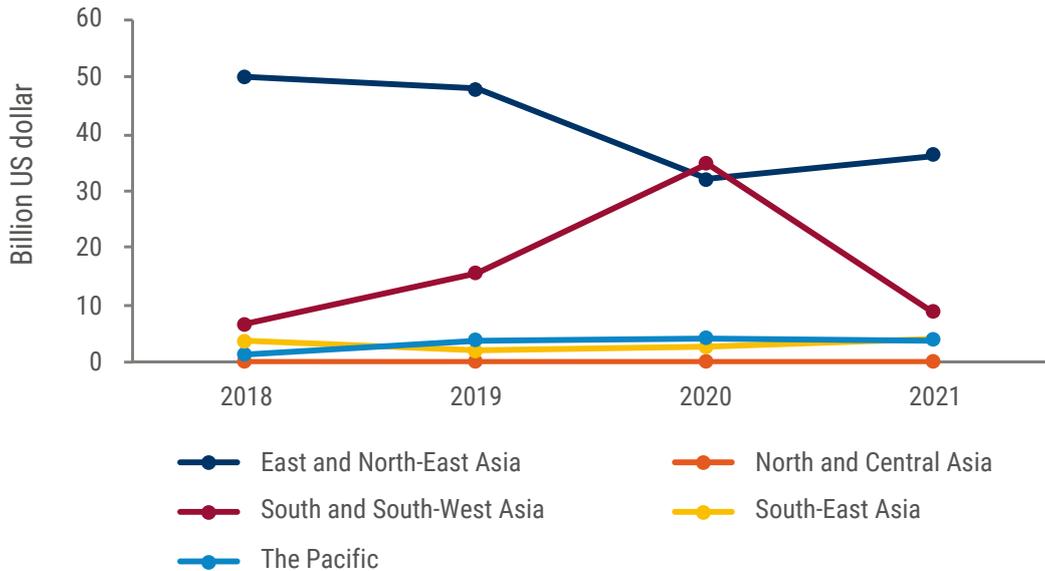
considering the number of deaths as a share of the population. The Pacific experienced a disaster-related fatality rate of 2.6 per million people from 2011-2020, second only to South-East Asia where the rate stood at 4.3 per million people.¹⁷

Figure 7: Number of disasters in Asia and the Pacific, 2018-2022



Source: EM-DAT The international disasters database, 2021

Figure 8: Total damages due to disasters in Asia and the Pacific, 2018-2021



Source: EM-DAT The international disasters database, 2021

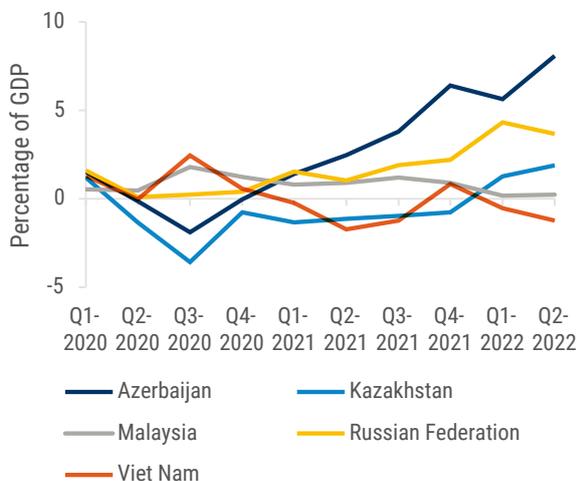
1.1.3. Impact of energy and food price shocks on countries and people in the region

Global energy price increases led to higher fuel prices for Asia-Pacific consumers in 2022, with severe knock-on effects on transport and electricity prices. This trend is largely due to a high dependence on imported fossil fuels in several countries in the region. Figure 9 shows the effects of this energy trade pattern on the current account balance

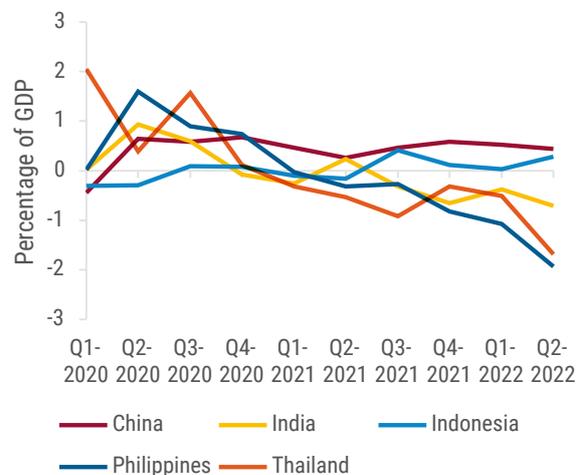
in selected petroleum net importing and exporting countries. In Pacific Island countries with a heavy reliance on petroleum imports, fuel prices have surged from July 2020 to August 2022, with estimates indicating a 118 per cent rise in Samoa, 83 per cent in Fiji, and 70 per cent in Tonga.¹⁸ In countries in South Asia, the energy price shocks hit several productive sectors and caused export losses. In some Asia-Pacific countries, power outages may also have led to the temporary closure of schools and businesses.

Figure 9: Asia-Pacific countries experiencing widening current account deficits

Current account balance in selected petroleum net exporting countries



Current account balance in selected petroleum net importing countries

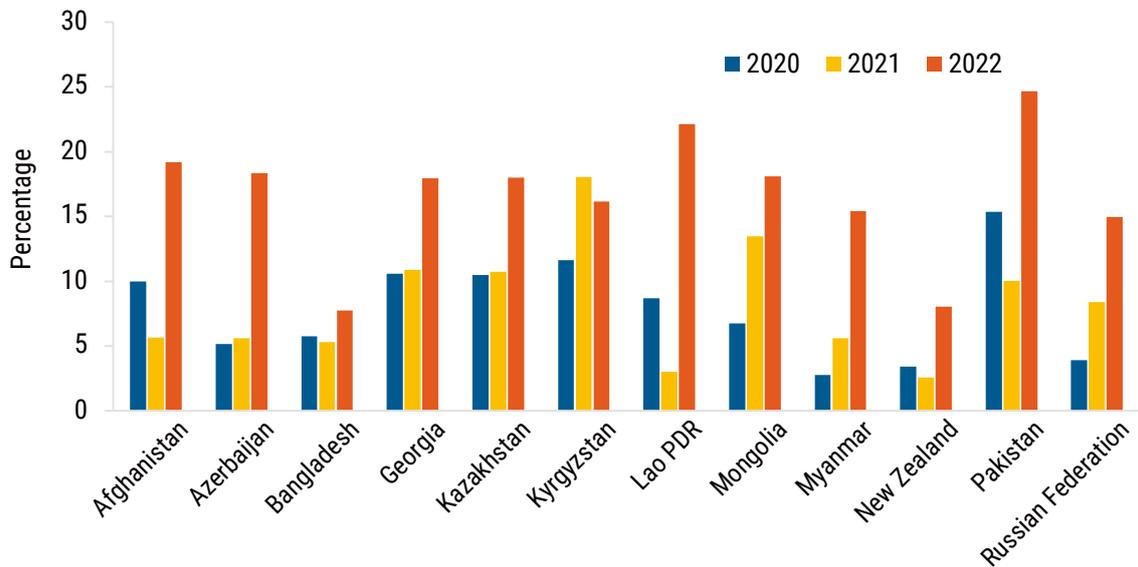


Sources: IMF, ADB, ESCAP

Many countries in the region have suffered from double-digit food price inflation. The Russian invasion of Ukraine, supply chain disruptions, local currency depreciation, increasing production costs, and climate-

related shocks are some of the factors driving up inflation. Figure 10 shows inflation in 2022 relative to the two previous years. In South Asia, annual food price inflation surged by more than 20 per cent in the first three quarters of 2022.¹⁹

Figure 10: Annual food price inflation in selected countries in Asia and the Pacific, 2020-2023



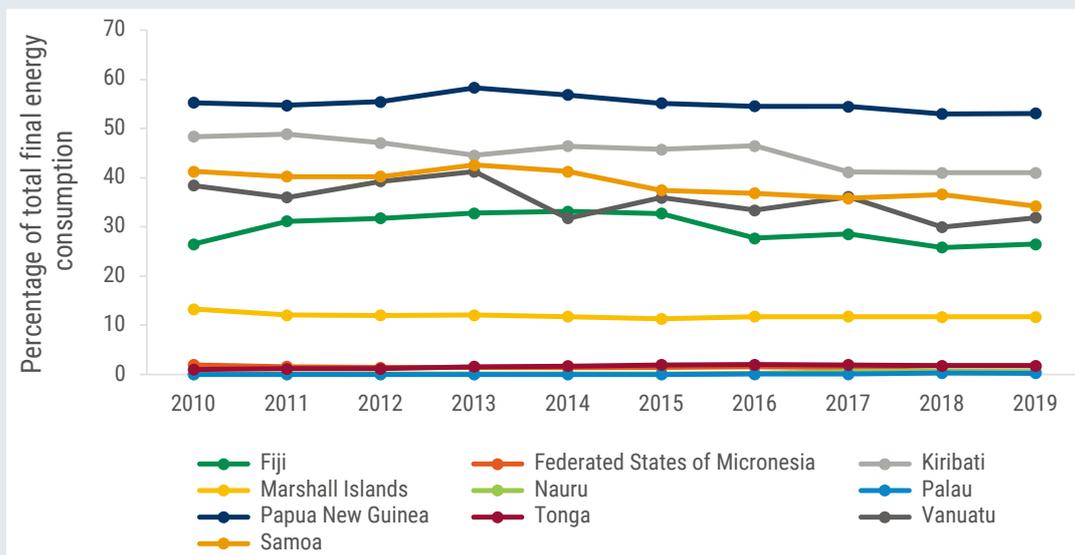
Source: Trading Economics (accessed on 14 February 2023).

Box 2 shows trends in food inflation and renewable energy consumption in Pacific Island countries.

Box 2: Food and energy trends in selected Pacific Island countries

The polycrisis has hit the Pacific Island countries especially hard as they import most of their energy and food. Higher food and fuel import prices have resulted in a significant negative terms-of-trade shock, with the biggest impact felt in import-reliant Pacific Island countries (i.e., all of them except Papua New Guinea, which exports petroleum).²⁰ While the Asian Development Bank has revised upwards the subregional economic growth projection for 2023 amid a rebound in tourism, sustained high inflation in Cook Islands, Samoa, and Tonga weigh on recovery prospects.²¹

Despite the urgent need for the Pacific to transition to renewable energy, during 2010-2019, the share of renewable energy consumption largely stagnated (figure B). In fact, countries such as Fiji and Kiribati, which relied heavily on renewables in 2010, consumed less energy from renewable energy sources by 2019. Countries in which renewable energy accounted for less than 10 per cent of total final energy consumption saw little to no increase.

Figure B: Renewable energy consumption in selected Pacific Island countries, 2010-2019

Source: ADB. Key Indicators Database.

The polycrisis has affected people within countries differently, with high food and fuel prices having uneven welfare implications.

Food and energy carry considerable weight in the expenditure baskets of consumers, particularly among vulnerable people and low-income households. Since poorer households spend a large proportion of their income on food, households in the bottom 40 per cent of the income distribution generally suffered a bigger decline in real income compared to the top 60 per cent group.²² In addition, average real wage growth in the region in 2022 fell below its historical average, slowing from 3.5 per cent in 2021 to 1.3 per cent in the first half of 2022.²³ In Sri Lanka, struggling with a mix of global economic headwinds and a

domestic political crisis, workers earning a minimum wage experienced a 23.9 per cent²⁴ decline in real wages between 2020 and 2022. Meanwhile, in the Philippines, a higher proportion of poor households were forced to reduce food consumption, compared to their better off neighbours.²⁵ Energy prices also had direct consequences on the daily lives of people. In the Pacific Island countries, the price shock hit urban and rural communities alike, with people in urban areas spending more on direct consumption of electricity and fuel while people in rural areas experienced higher transportation costs.²⁶ Box 3 highlights the impact of the polycrisis on food and fuel prices in 2022 in Kyrgyzstan.

Box 3: Impact of the polycrisis in Kyrgyzstan

Rising food and fuel prices eroded the ability of the most vulnerable people in Kyrgyzstan to eat a nutritious diet. In the first ten months of 2022, average year-on-year inflation for staple foods was recorded at 16 per cent. Meanwhile, prices of fuel and lubricants surged by an estimated 33 per cent, pushing up transport costs and most other prices. There is concern that the food crisis, together with an overall increase in inflation, could push more households to further reduce their food consumption or sell their assets. Further, the recent decline in international remittances, equivalent to around 30 per cent of GDP, is likely to reduce household income and increase poverty.

Table A: Differences in average retail prices of selected commodities in Kyrgyzstan during October-November 2022 compared with October 2021 and February 2020

Selected commodities	Compared to October 2021	Compared to February 2020
Wheat	-4%	+59%
Cooking oil	+7%	+94%
Sugar	+40%	+127%
Petrol (A1-92)	+7%	+58% (compared to February 2021)
Diesel	+45%	+97% (compared to February 2021)

Source: World Food Programme, *Price Monitoring for Food Security in the Kyrgyz Republic: Country Brief*, (2020).

High energy and food prices can have adverse consequences for women and children.

Livelihoods and health outcomes of women can be severely affected in the current global economic conditions, particularly on the heels of the COVID-19 pandemic, which already impeded progress towards Goal 5 on gender equality.²⁷ With women playing critical roles in meeting their families' energy and food needs,

shocks in these commodity markets present added pressure. Women are at risk of reducing their food intake and compromise their nutrition in crisis situations to benefit their families. In Sri Lanka, food shortages have reduced access to nutritious food for pregnant women, many of whom have to survive on one meal per day.²⁸ High energy prices may be forcing families in Asia-Pacific countries to revert to unclean

cooking fuels, which pose health concerns for women. Children and adolescents are also at a high risk of malnutrition. In Sri Lanka, more than 43 per cent of children under the age of five suffered from nutrition problems in 2022.²⁹ UNICEF estimates that the Russian invasion of Ukraine will push more than 4 million children into poverty, including in Central Asia.³⁰

1.2 Government, private sector, and consumer responses to the impacts of the polycrisis

Governments have taken urgent action to address the socio-economic impacts of the polycrisis. During the pandemic, large amounts of public funds were diverted to the health sector, forcing many governments to increase their borrowing or cut spending in other areas. Meanwhile, in response to the ongoing energy and food crisis, many governments in the region

have introduced various further measures, including subsidies, cash transfers, and price controls, despite narrowing fiscal space and the risk of debt crises in developing countries.³¹

In the first nine months of 2022, around 26 countries in Asia and the Pacific implemented or announced over one hundred policy measures in response to the energy and food crises. Table 2 shows that subsidies were the dominant measure (accounting for 36 per cent of the total number), followed by trade measures (26.2 per cent) and social transfers (16.5 per cent). Based on available data on 60 policy measures in 12 countries in the region, \$96.2 billion was spent, with an average outlay of 0.9 per cent of GDP per country. In this smaller set of countries, subsidies also accounted for the biggest portion of total spending (68 per cent), followed by cash and in-kind transfers (25 per cent) among others.

Table 2: Distribution of policy measures in Asia-Pacific countries in response to the energy and food crises, by type of measure, January-September 2022

		Policy Measures (in percentage)				
Countries	Total	Subsidies	Transfers	Labour Market	Tax	Trade
26	103	35.9%	16.5%	6.8%	14.6%	26.2%
Spending on policy measures (in percentage), based on 60 policy measures in 12 countries						
Total	Subsidies	Transfers	Labour Market	Tax	Trade	
\$96.2 billion	68.2%	25.0%	6.7%	0.1%	-	

Source: Compilation based on Ugo Gentilini and others. Tracking Global Social Protection Responses to Price Shocks, version 3. (2022).

Some of the policy responses have inflicted economic and social costs amid the interacting and cascading shocks. Subsidies and transfers have put pressure on public finances, increasing fiscal deficits and public debt. Public debt in developing countries rose to 65.1 per cent of GDP in 2021, from 55.7 per cent in 2019.³² The additional debt requires

\$311 billion, or 13.6 per cent of government revenues, in 2022 to service. Trade-related measures, such as export bans and quotas, as well as import-facilitating efforts, caused trade distortions that pushed up prices and threatened food supply, weighing heavily on import-dependent countries. To illustrate, increases in world prices of 12.1 per cent for

rice and 8.9 per cent for citrus fruits, observed in June 2022, were driven in part by trader reductions from top exporters of these commodities.³³

While some of the measures may have mitigated socio-economic impacts such as extreme hunger in several countries in the short term, it remains to be seen if they benefitted the region's food systems in the longer term.

Adverse repercussions were also seen from policy measures aimed at managing pressures in markets that support domestic food production and protecting consumers from high energy prices. China's restrictions on fertiliser exports, in place from October 2021 until the end of 2022³⁴ to ensure domestic availability of fertilisers and food security, contributed to a further tightening of global fertiliser markets. Meanwhile, price subsidies, fuel tax cuts, and other support measures for energy producing and energy consuming enterprises have acted as a brake on energy subsidy reform efforts in the region. In response to record energy prices, governments maintained or expanded subsidies (Malaysia), reversed subsidy reform efforts (Pakistan), and introduced subsidies for the first time (Japan).³⁵ To address energy poverty in the face of high global prices, fossil fuel subsidies also increased in countries, such as Indonesia, Thailand, and Pakistan, which in recent years had taken prudent steps to reduce subsidies and reallocated funds towards equitable policies.

However, budgetary pressures forced many governments in the region to scrap or reduce subsidies soon after they were introduced. Many countries found targeted social welfare schemes more effective and equitable to address energy price inflation than universal subsidies. On average, a monthly universal subsidy of \$1,000 was found to prevent just one person from falling into poverty, compared with 2.7 people when the same amount is spent in the form of a targeted cash transfer.³⁶

Companies' and consumers' steps to ease financial distress have amplified negative side effects on livelihoods and welfare. Many farmers in the region have scaled back

their use of fertilisers in response to the high prices, which might reduce rice yields by 10 per cent or more and exacerbate food security concerns.³⁷ In Lao PDR, many rice farmers have taken up other employment due to high agricultural input costs³⁸, while some Pacific Island countries have seen a decline in cropped areas. Some livestock breeders in the Pacific have reduced stock amid rising costs of feed while some fishers have reduced the use of their boats to save fuel.³⁹

Many consumers in the region have taken actions that are likely to have negative health consequences, as well as compromise their future economic security and ability to cope with future shocks. Faced with record high food price inflation, 86 per cent of Sri Lankan households have reportedly tried to cope by eating less, eating less nutritious food, or skipping meals.⁴⁰ An increase in negative coping strategies in Pacific countries in the second half of 2022 was also noted, with households reducing their expenditure on health and education, depleting their assets (Samoa), resorting to begging (Vanuatu), or switching to cheaper, often less healthy food, among others.⁴¹ Changes in energy consumption patterns have also been reported in some countries, with high LPG prices prompting some consumers in Viet Nam to switch back to cheaper, but dirtier, cooking fuels.⁴²

1.3 Impact of the polycrisis on the SDGs

The polycrisis has adversely affected and derailed development progress in Asia and the Pacific, pushing the SDGs further out of reach.

Goal 7 (affordable and clean energy), Goal 2 (zero hunger) and Goal 8 (economic growth and decent work) are strongly affected by the current multiple crises. These goals are susceptible to both the direct effects (ability of people to afford energy and food) and indirect effects (availability of resources to improve energy and food security) of the polycrisis. Relatedly, the mobilisation of additional resources for the SDGs in developing countries framed under Goal 17, a critical element for a resilient and just recovery, has become more challenging.

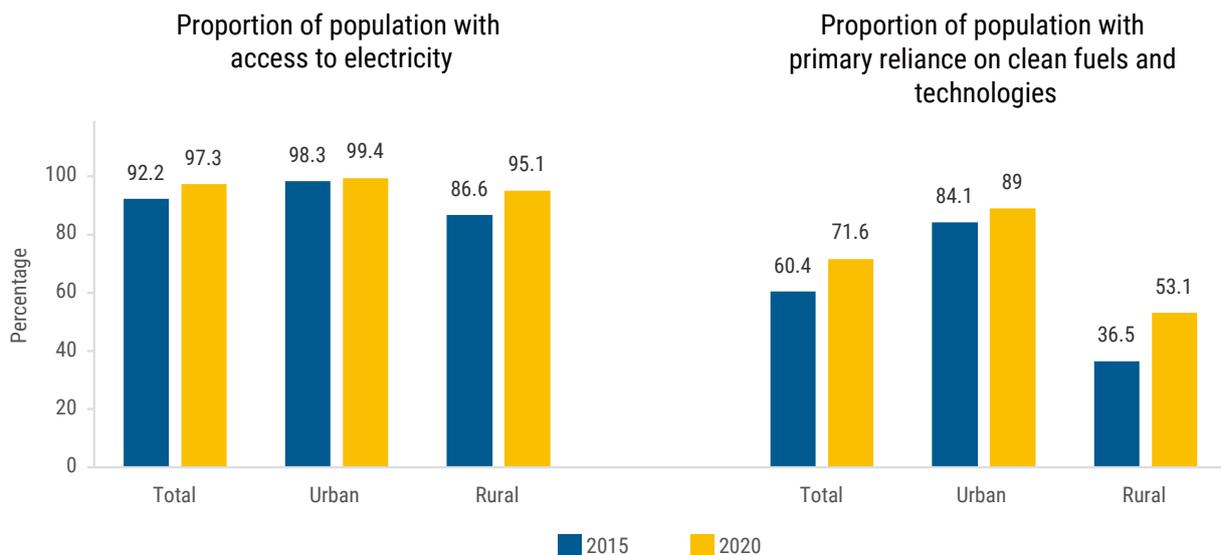
1.3.1. Impact on Goal 7 (affordable and clean energy)

Setbacks in access to affordable, reliable, and modern energy services. Before the pandemic access to electricity in Asia and the Pacific had been improving in urban and rural areas (figure 11). However, large gaps still existed in LDCs and SIDS, where, on average, nearly 10 per cent of the population had no access to electricity. On the other hand, primary reliance on clean fuel technologies increased significantly between 2015 and 2020, although in rural areas half of the population still had no access to clean fuels (figure 11). China, India, and Indonesia, Asia’s three most populous countries, increased access to clean fuel technologies faster than

most other countries in the region. In most LDCs, however, the proportion of the population with access to clean fuels stalled at less than 30 per cent in 2020.

Progress on access to energy services in the region is likely to slow amid the ongoing global turmoil. The COVID-19 pandemic and the current energy and food crisis have already caused 75 million people across the world, many of them in Asia and the Pacific, to lose the ability to pay for an “extended bundle of electricity services”. Moreover, the crises have forced 100 million people to switch from liquefied petroleum gas (LPG) for cooking to traditional stoves, as consumers’ spending power has come under threat and prices of LPG and clean fuels have soared.⁴³

Figure 11: Population with access to electricity and with primary reliance on clean cooking fuels and technologies in Asia and the Pacific, 2015 and 2020



Source: Asia-Pacific SDG Gateway

Limited progress in renewable energy uptake. Despite having abundant renewable energy resources, the region has yet to unlock their potential to support rapid urbanisation and industrialisation, which remained largely powered by coal, oil, and natural gas. The share of renewable energy in Asia and the Pacific remains low, with a small increase from 15.3 per cent in 2015 to 16.4 per cent in 2019.⁴⁴ The polycrisis has had mixed impacts on the region’s ability to meet renewable energy targets. The pandemic kindled a temporary increase in the share of renewable energy

sources in several countries in Asia and the Pacific. India increased its renewable electricity consumption by 45 per cent in the first six weeks of lockdown as a decline in electricity demand led to the shutdown of several coal-fired power stations, with ‘must-run’ renewable plants meeting a larger share of demand.⁴⁵ Similar trends were observed in other coal-consuming countries in the region. However, they were short-lived. As demand picked up again, countries largely reverted to fossil fuels to meet energy demand.

The Russian invasion of Ukraine played havoc with the supply of fossil fuels in most countries in the region, which are net fuel importers. The impact has been especially large for developing countries that are reluctant to engage in business with the Russian Federation but cannot meet their energy needs from elsewhere due to the high prices in the global market.⁴⁶ Against this backdrop, the crisis has highlighted the need for countries in the region to push for rapid energy transitions with more investment in renewables.

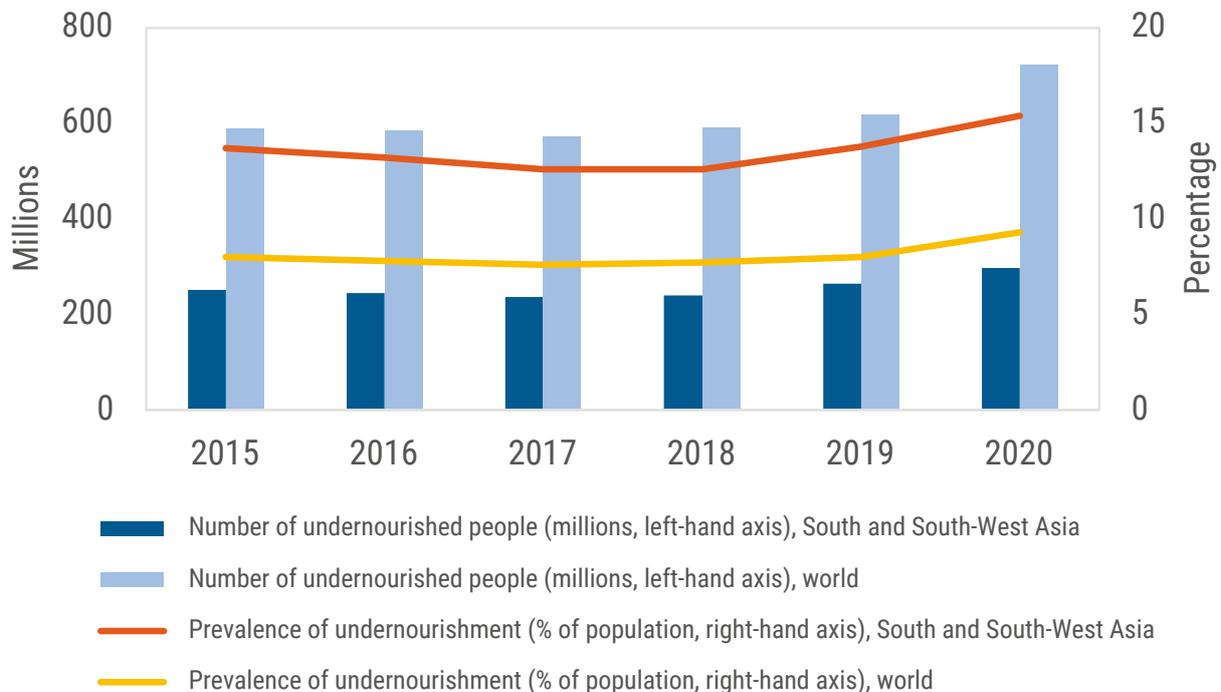
In addition, the polycrisis could also disrupt the supply of raw materials vital to developing renewable energy systems and technologies. The Russian Federation is the world's third largest producer of aluminium (5.5 per cent of the market), a key component of solar photovoltaic panels and electric vehicles. The Russian Federation and Ukraine also account for nearly 11 per cent of global solar power production. The Russian invasion has disrupted the supply chain, triggered a rise in the price of those materials, and made renewable production and installation more

costly. Heightened investment risks amid increased global economic uncertainties due to the pandemic and the Russian invasion of Ukraine can act as a brake on the renewable energy development in the region.

1.3.2. Impact on Goal 2 (zero hunger)

Rise in hunger and malnutrition. The polycrisis has exacerbated the risk of increased hunger and malnutrition in countries in Asia and the Pacific, particularly among vulnerable groups. The status of malnutrition in the region was already challenging before the pandemic. From a steady improvement since 2015, the trend reversed in 2018 and in the wake of the pandemic both the number and proportion of undernourished people surged.⁴⁷ In 2021, an estimated 425 million people were undernourished in the region, accounting for more than half of the global figure. Notably, Southern Asia⁴⁸ had the highest subregional population in the world facing hunger with more than 330 million people.⁴⁹ Figure 12 shows the increase in the prevalence of undernourishment since 2018 for this subregion.

Figure 12: Prevalence of undernourishment, world and South and South-West Asia, 2015-2020

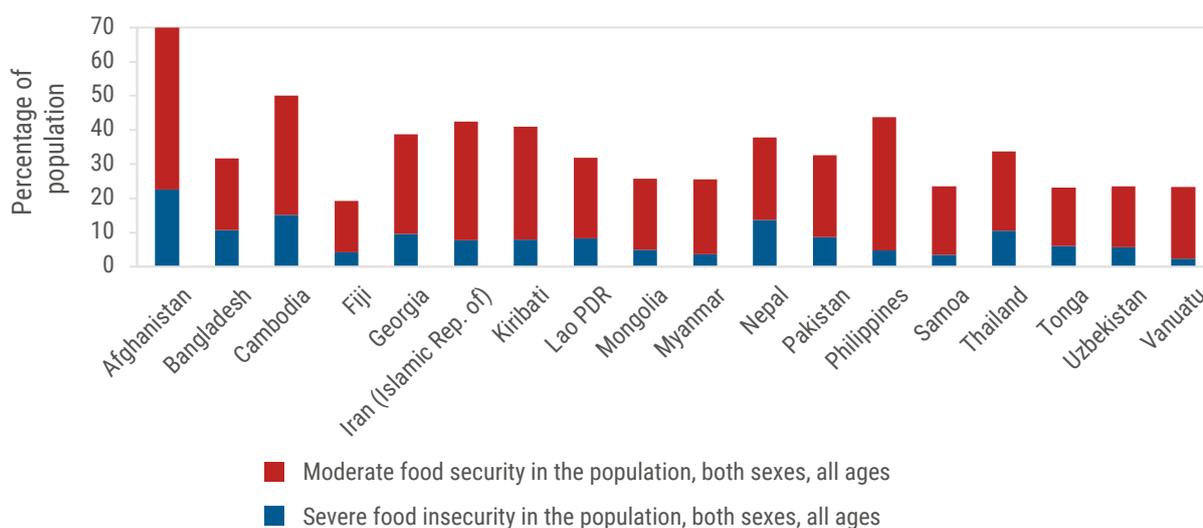


Source: Asia-Pacific SDG Gateway

Food insecurity and affordability of a healthy diet. In 2021, 1.15 billion people in Asia were moderately or severely food insecure, amounting to half the people facing hunger globally. In most countries in the region the prevalence of food insecurity increased from 2019 to 2021. It was highest in the subregion of South and South-West Asia.⁵⁰ Data for 2020 on food security in selected countries in Asia and the Pacific indicate high moderate or severe

levels (figure 13). Food insecurity tends to be more pronounced in low-income countries and LDCs. The situation is particularly dire in Afghanistan,⁵¹ where 70 per cent of the population was facing moderate or severe food insecurity in 2020. Estimates in January 2023 suggest that almost 20 million Afghans were acutely food-insecure, with six million facing “emergency-level” food insecurity.⁵²

Figure 13: Prevalence of moderate food insecurity compared to severe food insecurity in selected countries in Asia and the Pacific region, 2020

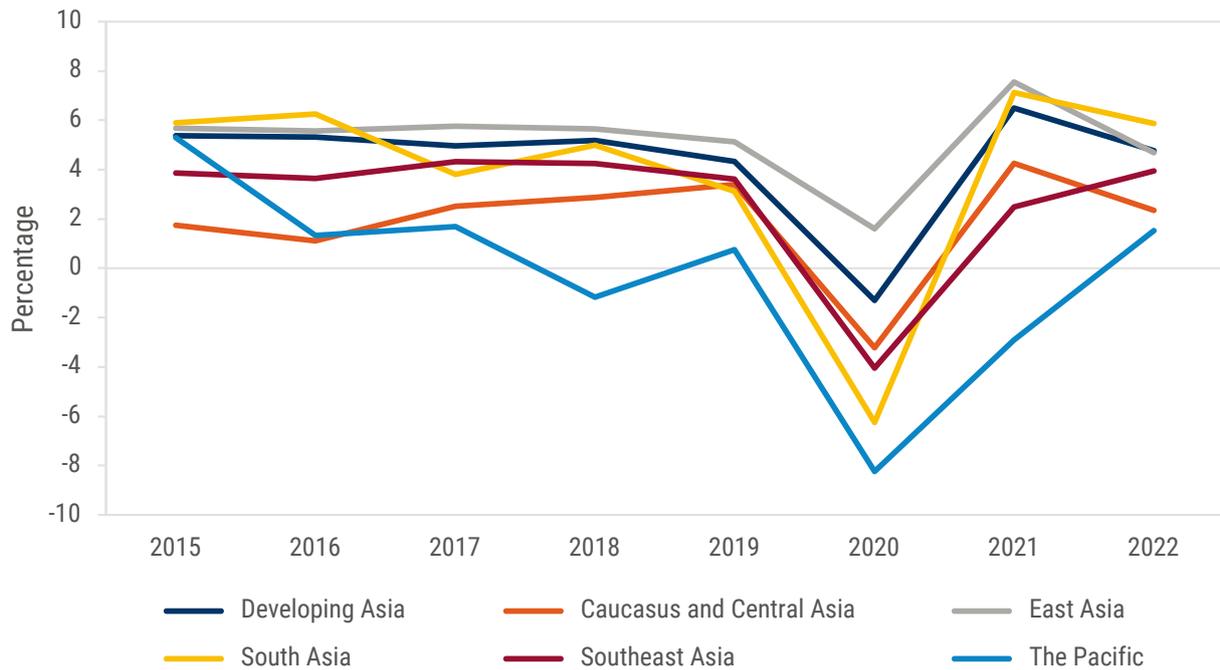


Source: Asia-Pacific SDG Gateway

The global food crisis has made healthy diets less affordable and this has a major impact on well-being of poor and vulnerable populations, especially children and young people. Given the rising cost of food and high income inequality in Asia and the Pacific, an estimated 1.89 billion people in the region could not afford a healthy diet in 2020.⁵³ The surge in food prices in 2022, in some countries exacerbated by domestic political crises and disasters triggered by natural hazards, has intensified the impact of the COVID-19 pandemic on food security. As household incomes are unlikely to rise in the current economic era of high inflation, gaps in affording a healthy diet could widen across countries and among specific groups of people within countries, further exacerbating existing inequalities.

1.3.3. Impact on Goal 8 (decent work and economic growth)

Setbacks to economic recovery. The outlook for the region’s economies remains uncertain amid the still evolving shocks of the polycrisis. In 2020, real GDP per head fell sharply in most subregions of the Asia-Pacific region (figure 14). While economic growth rebounded in 2021, with regional GDP rising to 6.5 per cent, it is forecast to moderate to 4 per cent in 2023⁵⁴ amid a global economic slowdown, the Russian invasion of Ukraine, and the hangover from China’s “zero-covid” policies.

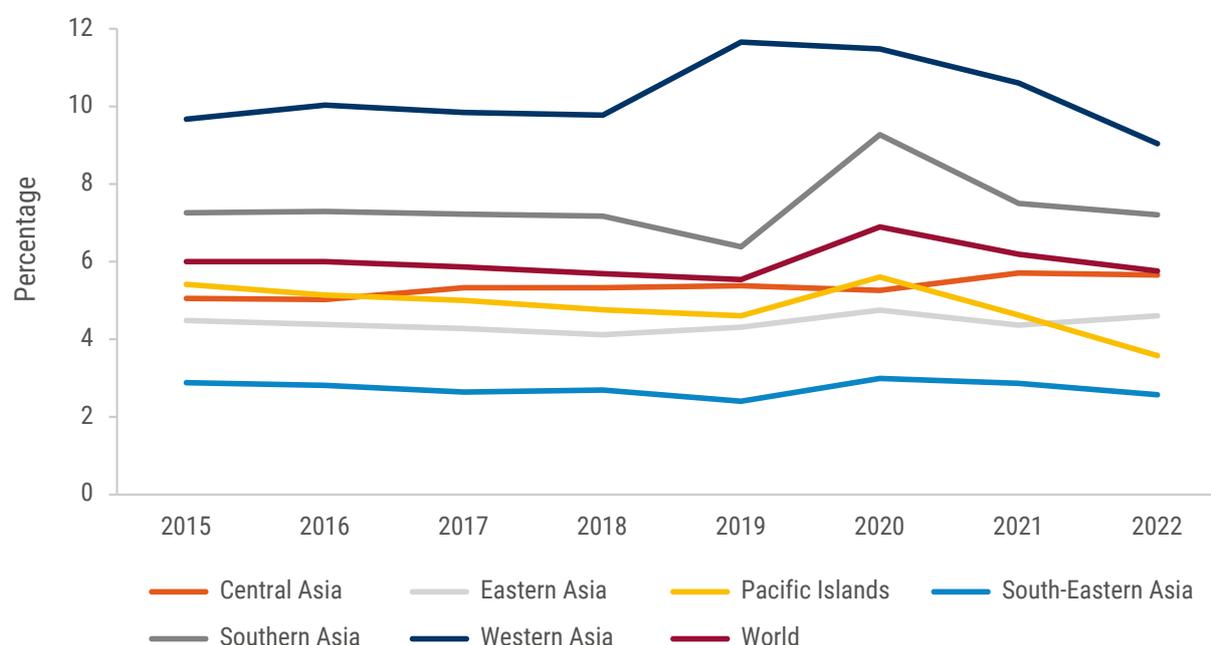
Figure 14: Annual growth rate of real GDP per capita, 2015-2022

Source: ADB, Asian Development Outlook 2022. The data for 2022 are forecast.

Most economies in Asia and the Pacific are expected to experience further setbacks with rising inflation due to high energy and food prices. ADB forecasts regional inflation to average 4.2 per cent in 2023 with varying degrees of inflationary pressure to be felt across all subregions.⁵⁵ Despite the winding down of the pandemic, the region is expected to face new challenges from depreciating exchange rates, slowing demand for exports, and effects of the Russian invasion of Ukraine, particularly on global commodity markets. With inflation outpacing nominal income growth, ILO expects a fall in real wages in most countries globally, threatening the livelihoods of low-income households and vulnerable populations.⁵⁶

Persisting decent work deficits. Labour markets in most countries in Asia and the

Pacific continue to be in crisis mode, with an incomplete recovery of employment following the pandemic, declining real wages, and a severe cost-of-living crisis. The pandemic-induced labour market disruptions resulted in job losses and reduced working hours. Unemployment rates surged in 2020 and the regional labour market has only recovered partially (figure 15), with the overall employment-to-population ratio⁵⁷ in 2022 still below pre-pandemic levels. While the region as a whole added 30 million jobs in 2022, unemployment rates in the subregions of East Asia, South-East Asia, and South Asia remained above 2019 levels and their employment-to-population ratios were lower than before the pandemic. This points to challenges in the region's labour market in creating enough jobs for a sustainable recovery.

Figure 15: Unemployment rate by subregion, 2015-2022

Source: ILOSTAT, ILO modelled estimates, November 2022.

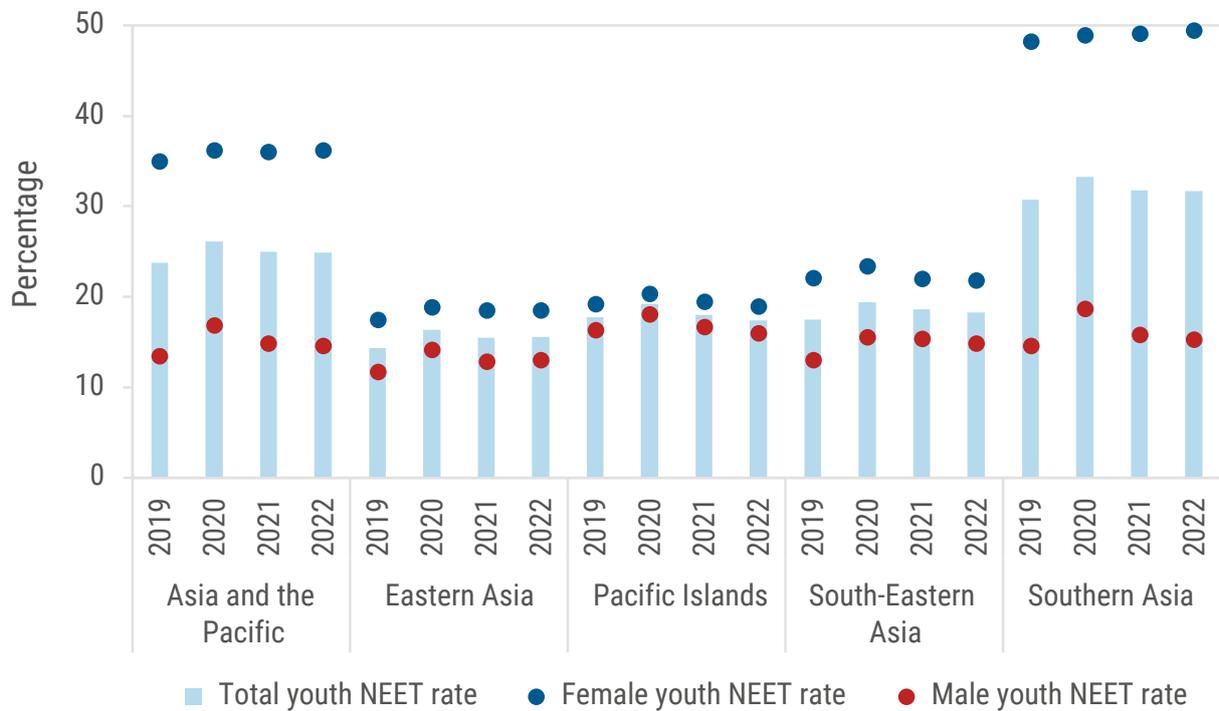
Note: The data on unemployment rates follow ILO country groupings.

Unemployment rates provide only a glimpse of the labour market in a region where most people cannot afford not to work given weak social protection systems. Informal employment is ubiquitous in most parts of Asia and the Pacific. A slight fall in informal employment and vulnerable employment in the region up until 2019 was reversed during the crisis.⁵⁸ Decent work deficits are made worse by increasing climate change vulnerability. Informal workers and those in poor quality employment, often without access to social security, are at high risk of facing impacts from climate change and the prevalence of these types of employment is high in climate vulnerable contexts.⁵⁹

Labour market inequalities. The current context of overlapping economic and

geopolitical crises is likely to increase labour market inequalities experienced by vulnerable groups, including women and youth. With the onset of the pandemic and the dual adverse impacts on labour markets and education and skills development institutions, the region experienced an increase in the share and number of youth not in employment, education, or training (NEET), highlighting potential lasting negative impacts in their job prospects and future earnings (figure 16).⁶⁰ While youth NEET rates dropped across subregions in 2022, it remained above 2019 levels in most subregions. Even before the pandemic nearly one in four young people in Asia and the Pacific were NEET. The gender gap was highest in Southern Asia, where the female youth NEET rate already stood at 48.2 per cent in 2019.

Figure 16: Share of youth not in employment, education or training (NEET) by sex, 2019-2022



Source: ILOSTAT, ILO modelled estimates, November 2022.

Note: The data on youth NEET rates follow ILO subregional classification for Asia and the Pacific.

Gender gaps in the region’s labour market were present even before the pandemic. Women are less likely to be engaged in economic activities, with the gender gap in the labour force participation rate highest in Southern Asia.⁶¹ The situation of women in employment was heavily affected because of a high concentration of women workers in sectors most affected by COVID-19. The current multiple crises and their effects on overall economic and labour market prospects are highly likely to thwart near-term progress on closing the gender gap in women’s labour force participation, employment and hours worked.

1.3.4. Impact on SDG finance (under Goal 17: Partnerships for the goals)

The crises have widened the financing gaps for achieving the SDGs. UNCTAD estimates that the annual global financing gap is now

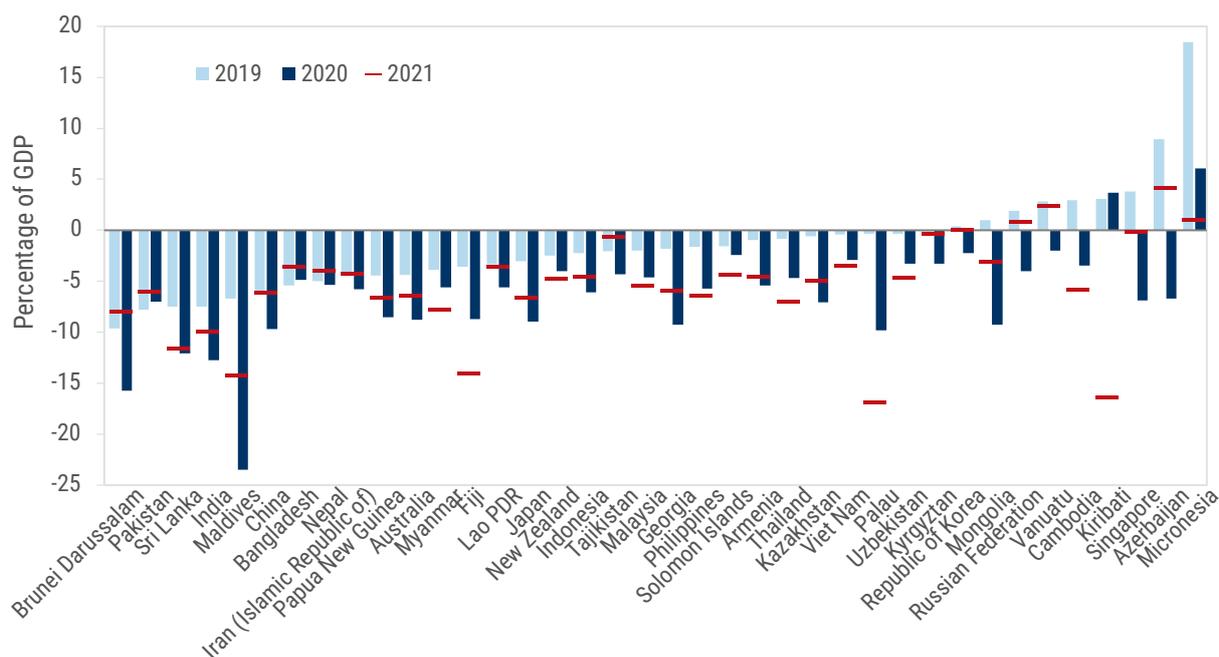
\$4.3 trillion. This is 70 per cent higher than the 2015 estimate, reflecting a reduction in public and private investments in sustainable development due to the COVID-19 pandemic, the Russian invasion of Ukraine, and the impacts of climate change.⁶² The SDG funding gaps have widened significantly in many developing countries in the region. Indonesia, for example, saw a big increase in the projected funding gap from \$1.1 trillion (in total up to 2030) before the pandemic to \$4.7 trillion in 2021.⁶³ Exacerbated by the food and energy crises and rising cost of living, closing the existing gaps has become even more challenging, especially for LDCs.

Fiscal deterioration. The crises have resulted in significant losses in government revenues, which remain the main source of SDG financing for many Asia-Pacific countries, especially during the pandemic. Government expenditures rose sharply, mainly due to spending on the public health crisis and the socio-economic

fallouts from the pandemic, thus resulting in a drawdown of fiscal buffers and widened fiscal deficits (figure 17). Although countries are recovering from the pandemic, governments in many developing countries in the region continued to face difficulties in generating domestic revenue and fiscal consolidation

was only temporary. The energy and food price crises forced many governments to start allocating additional budgetary funds for temporary subsidies, tax cuts, loans, and trade measures, undermining progress towards improving the fiscal situation.

Figure 17: Government budgetary balance across Asia-Pacific countries, 2019-2021



Source: IMF (2022). Global Debt Database.

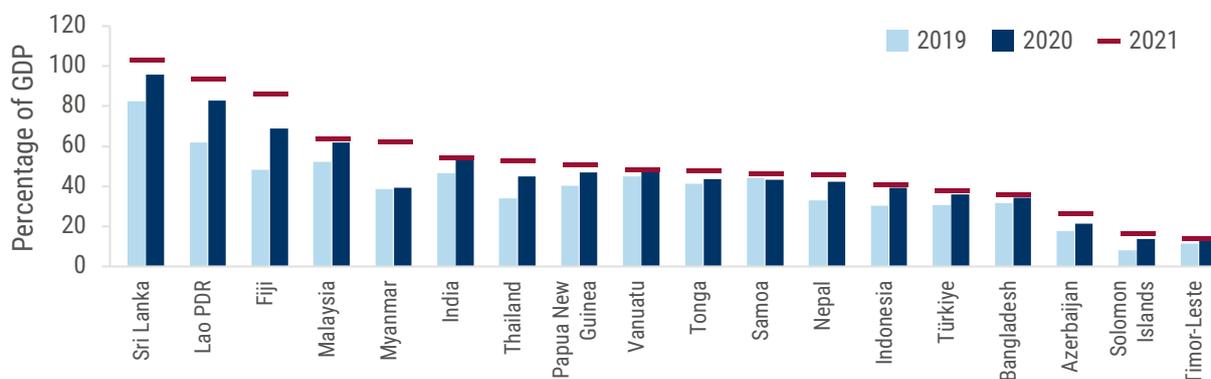
Elevated debt levels across Asia-Pacific countries. Increased pressure on government revenue and the need for large stimulus expenditure to counter the impacts of the polycrisis have sharply pushed up public debt levels in many Asia-Pacific countries (figure 18). Following the pandemic, the debt dynamic, both public and private, has worsened. Rising interest rates and borrowing costs and currency depreciation have increased the current cost of servicing debt, while slower growth, ongoing fiscal subsidies and other stimuli to address food and energy crisis weigh on countries' future ability to service their debt. Several countries in the region are in debt distress or at high risk of it, especially those that already faced high debt-servicing costs, have a large share of external

or foreign-currency denominated debts or heavily depend on energy and food imports for domestic production and consumption. For instance, in May 2022 the economic crisis in Sri Lanka forced the government to default on its debt for the first time in its history. Some other countries in South and South-West Asia such as Afghanistan, Maldives and Pakistan; several in the Pacific such as Kiribati, the Federated States of Micronesia, Papua New Guinea, Samoa, Tonga and Tuvalu; and a few in other subregions, including Lao People's Democratic Republic, Mongolia, and Tajikistan, are facing a high risk of debt distress.⁶⁴ For LDCs, debt levels and debt service ratios are relatively low compared to other groups of countries including LLDCs and SIDS. However, their debt situation is precarious, considering that

their economies and sources of financing are undiversified and thus vulnerable to shocks. Although the dominant share of LDCs' debts is concessional, recent trends in these countries

suggest increasing reliance on commercial and non-concessional loans that are externally funded and denominated in foreign currencies.

Figure 18: Central government debts in select Asia-Pacific developing countries, 2019-2021

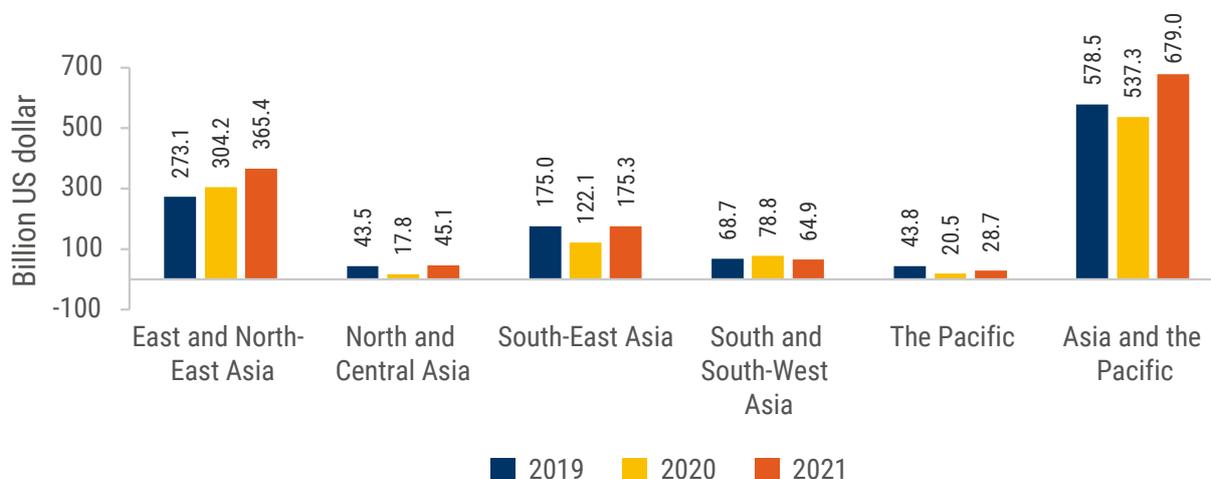


Source: IMF (2022). Global Debt Database.

Rising foreign direct investment (FDI) but volatile portfolio investment. As an important source of investment for many countries in the region, FDI inflows to Asia and the Pacific were stable until 2019, averaging \$575 billion per year, or nearly 2 per cent of GDP.⁶⁵ Figure 19 shows that FDI inflows to the region dropped in the first year of the pandemic in 2020. The rate of change, however, varied across subregions,

with significant falls in North and Central Asia, the Pacific and South-East Asia, but continued uptake in East and North-East Asia and South and South-West Asia, mainly driven by China and India. FDI inflows to the region overall picked up strongly in 2021 with inflows reaching \$679 billion, more than a quarter higher than 2020.

Figure 19: Inflows of foreign direct investment to Asia and the Pacific and by subregion, 2019-2021



Source: UNCTAD, World Investment Report 2022.

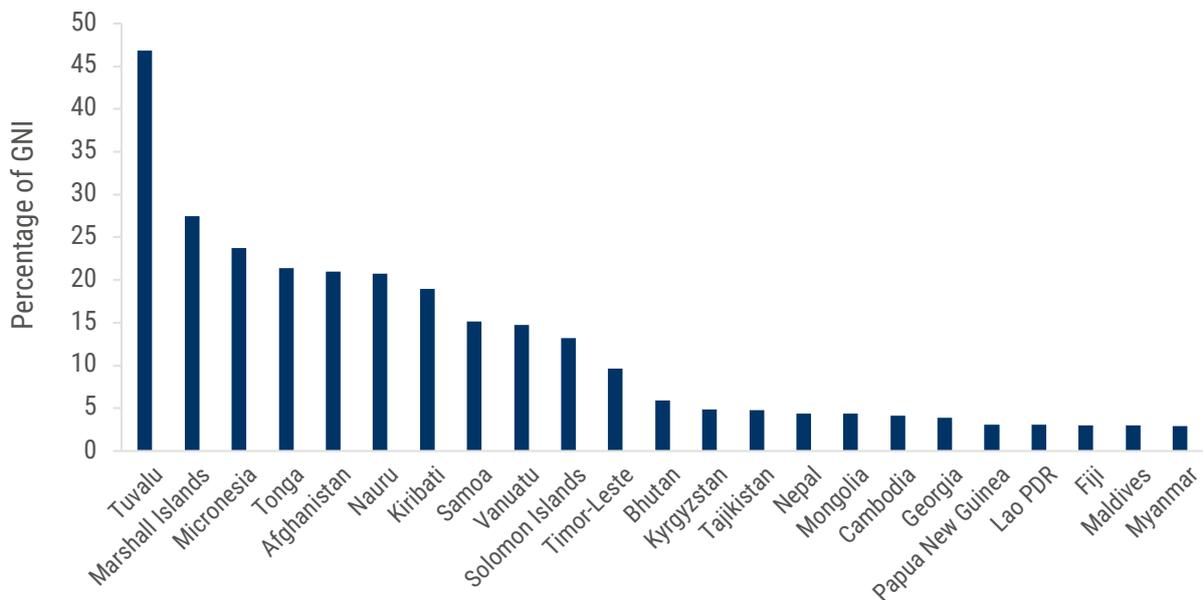
The Russian invasion of Ukraine may threaten the strong recovery in FDI, especially if it persists and the world economy slows further. Although the Russian Federation accounts for only 2 per cent of total greenfield investment in Asia-Pacific region,⁶⁶ its investment accounts for a sizable chunk in some countries, including in Armenia (8 per cent) and in Tajikistan (5 per cent),⁶⁷ posing a risk of hampering FDI in these countries and the subregion.

The energy and food crisis also curbs portfolio investment within and to the region, especially from developed to developing countries. Tightened monetary policies in major western countries, particularly policy rate hikes, have caused portfolio investment outflows from developing to developed countries. The situation is compounded by increased economic uncertainty due to geopolitical and trade tensions, a strong US dollar, high inflation, and lower growth prospects which have dampened investment risk appetites. In 2022, equity markets experienced significant losses in value while bond issuance across developing countries dropped markedly due

to higher borrowing costs and tighter credit conditions, among others.

Official Development Assistance (ODA) and Other Official Flows (OOF) as key sources of SDG financing. ODA and OOF are other key sources of SDG financing for developing countries in the region. Especially for least developed countries and small island developing States, ODA makes up a large share of sustainable development finance. For example, it was equivalent to about 47 per cent of GNI in Tuvalu and over 20 per cent in Afghanistan, Marshall Islands, Micronesia, Nauru and Tonga between 2015 and 2020 (figure 20). In 1981, the member countries of the OECD’s Development Assistance Committee, an international forum of many of the largest providers of aid, committed to providing between 0.15 and 0.20 per cent of their GNI in the form of ODA to LDCs. From 2015-2020, only six out of 19 DAC member countries provided net ODA above 0.15 per cent of their GNI (among which five provided more than 0.2 per cent) to the LDCs.⁶⁸

Figure 20: Average net ODA received by Asia-Pacific countries, 2015-2020



Source: World Bank, World Development Indicators (accessed on 15 February 2023)

ODA to LDCs in the Asia-Pacific region dropped some 15 per cent between the periods 2010-2014 and 2015-2019.⁶⁹ Although it rose significantly in 2020 and reached a record high in 2021 amid increased international solidarity to mitigate the impacts of the COVID-19 pandemic, ODA to LDCs fell short of the commitments made.

Grants account for the largest share of ODA to LDCs. However, the share of grants to LDCs declined from 90 per cent in 2015 to 75 per cent in 2019, mostly because of an increase in ODA loans.⁷⁰ The OECD indicated that, despite being highly concessional in nature, ODA loans are gradually exhibiting higher interest rates and shorter maturities.⁷¹

1.4 Outlook and the case for change

The Asia-Pacific region is at a crossroads, with a series of overlapping shocks exposing vulnerabilities in the critical systems of energy, food and finance and potentially undermining longer-term development objectives. Recent and ongoing events including the lingering COVID-19 pandemic, Russian invasion of Ukraine, a cost-of-living crisis, tightening financial conditions, and a worsening climate crisis are reversing years of progress and affecting economic, educational, employment, and health outcomes. This is exacerbating the divergence in development trajectories of countries, as well as of people within these countries, due to limitations on fiscal space and existing income inequalities. All levels of government need to address these impacts, as they permeate all levels of society, while adopting multi-sectoral and multi-stakeholder sustainable solutions. Emerging from the polycrisis will require countries to keep longer-term development objectives in sight, while responding to immediate vulnerabilities.

The polycrisis can be viewed as a historic turning point towards a cleaner and more secure future, initiating renewed momentum to transform the current energy and food systems.⁷² The uncertainties and volatility in

commodity prices experienced by countries in the region are likely to continue in 2023 due to currency depreciations and the unfolding of the energy transition. The World Bank estimates that agricultural, gas, and coal prices will fall in 2023 and 2024.⁷³ However, these estimates are subject to risks, including the extent to which fluctuations in energy prices spill over into global food prices and thereby heighten the challenge of food insecurity. Addressing these weaknesses provides opportunities to facilitate green and inclusive transformations of the energy and food systems to improve resilience, mitigate climate change, and deliver employment and economic benefits. The ILO estimates that green policy measures could generate an additional 5.8 million jobs for young people aged 15-29 in Asia and the Pacific by 2030 relative to a “business-as-usual” scenario.⁷⁴

Without substantial progress on climate change mitigation in line with international agreements, climate-related disasters will become more frequent and extreme. The international community has recognised the inevitable impacts of climate change, with the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (COP27) establishing a fund to compensate developing countries for loss and damage caused by climate-induced disasters.

Preparing the Asia-Pacific region to navigate ongoing and future crises will require coordinated and inclusive transformations of the energy, food, and finance systems. As the impacts of the polycrisis have shown, the energy and food systems in Asia and the Pacific are not well positioned to provide reliable, sustainable, and affordable supplies of energy and food in the face of major global economic shocks and localised disasters triggered by natural hazards. Bolstering coordinated actions at regional, national and subnational levels is therefore needed. The necessary sectoral transformations will require close coordination, minimising trade-offs and maximising synergies across the energy-food-finance nexus, while ensuring that no one is left behind.

CHAPTER

2



Energy, food and financing
solutions for the SDGs

The polycrisis has underlined the urgent need for new models of energy and food production that can sustainably and affordably meet the region's energy and food requirements. Many efforts that facilitate a transition to these new models, such as increasing renewable energy-based electricity generation capacity and improving agricultural efficiency, were already underway before the recent crises. However, progress has not been sufficient to meet energy and food related SDGs by 2030. To change this, governments and other stakeholders must:

- (i) accelerate existing efforts to implement solutions, supported by innovative financing sources and models, enabling policy and regulatory frameworks, and behavioural interventions,
- (ii) place greater emphasis on ensuring more equitable distribution of energy and food,
- (iii) strengthen interlinkages between the energy, food, and finance systems, mitigate potential conflicts, and exploit synergies across the energy-food-finance nexus.

This chapter identifies key opportunities and solutions to transform the energy and food sectors, harness new sources of sustainable finance to achieve the SDGs, and capitalise on the energy-food-finance nexus to contribute to a green, inclusive transition. Where appropriate, successful solutions can be replicated across the region. Some of them can be implemented without delay (subject to appropriate finance being available), while others will require more investment and maturation before they are carried out. The scale of solutions differs, too, ranging from small interventions at the community level to national and regional initiatives.

2.1 Innovative approaches to building more inclusive and sustainable energy and food systems

Innovation, in various forms, is playing a critical role in generating cost effective, sustainable ways to meet the region's demands for energy and food. There is an urgent need to scale up

these innovative approaches and make energy and food systems more sustainable and inclusive in the wake of the polycrisis. Possible approaches comprise new technologies, business models, policy frameworks, and social innovations that make the systems more accessible and more suitable for marginalized and vulnerable groups, including poor and small-scale farmers.

Despite growing interest in such approaches, there remain significant barriers to successful scaling-up and implementation, including financial constraints, lack of political will, regulatory hurdles, and social and cultural norms that resist change. Overcoming them is vital to shaping a more sustainable and inclusive future and will require sustained efforts and collaboration from all stakeholders.

2.1.1. Embracing smart and low-carbon farming approaches

Being home to a large and growing population that depends on agriculture for livelihoods and food security, the Asia-Pacific region should ramp up adoption of smart and sustainable farming practices and shift away from intensive use of energy, chemical fertilisers and pesticides that degrade the environment and contribute to climate change.

Several successful initiatives in the region show the potential of such approaches. In India, various new technologies have been embedded in agricultural production, such as solar-assisted irrigation in off-grid rural areas, and solar-powered multi-utility farming vehicles. With funding from the U.S. Agency for International Development (USAID), Claro Energy trialed the use of 50 solar battery-powered irrigation trolleys, 50 ultra-light hand-carried flexible systems, and two mini-grids in three communities in northern India. The solar irrigation system benefitted 1,000 small farmers (30 per cent of whom were women), supported the production of 2,300 tons of rice, maize and other crops, and cut costs by 50 per cent compared with the previous irrigation method (primarily diesel pumps).⁷⁵

Some farmers have adopted precision farming techniques, for example Fasal, a private company in India, which uses data and artificial

intelligence to optimize the use of inputs like water and fertilisers, resulting in higher yields and reduced environmental impact. The startup estimates that its platform has helped save some 9 billion litres of irrigation water, reduced pesticide use by around 60 per cent,

and increased yields on over 40,000 acres of farmland. Satellite remote sensing, big data analytics, and cloud computing can be used to make agriculture more sustainable and food and water systems more secure (box 4).

Box 4: SatSure in Bangladesh, India, and the Philippines

SatSure, a Bengaluru-based spacetechnology startup, uses advances in satellite remote sensing, big data analytics, and cloud computing to create products and solutions that help companies make smart decisions. Its projects focus on sustainability, financial inclusion, and food and water security.

In the agriculture sector, risk assessments traditionally rely on field labour that is costly and time-consuming and therefore can only cover a small geographic area. This leaves farm managers unable to quickly respond to variable weather conditions, can make agricultural lending perilous, and reduces the impact of public agricultural programmes. SatSure seeks to address these problems and assess risk more accurately by combining satellite imagery with field data, and other relevant information, such as commodity prices and news articles.

SatSure's data analytics platform unlocks finance for smallholder farms by aggregating real-time and historical data from satellites and operations. The AI-powered modelling estimates a farm's income generation potential, hence allowing potential lenders to assess risk more accurately. The solution empowers financial institutions to issue credit and insurance policies faster, in higher volume, and at lower cost.

Sources: Satsure. *Geospatial Data Analytics: Unlocking Value with Insights from Space*. (n.d). Available at www.satsure.co/; ADB Ventures. Home, (n.d). Available at <https://ventures.adb.org/>

Agrivoltaics (the co-development of land for solar power and agriculture) and agroecology (the application of ecological principles to agricultural systems and practices) also offer sustainable farming solutions. Agrivoltaic farming, such as the deployment of PV systems combined with goji berry cultivation in Ningxia province in China, optimizes land use, improves water and energy efficiency, and helps with income generation and climate change mitigation. Meanwhile, agroecological practices, espoused by the UN system under the Scaling up Agroecology Initiative (box 5), integrate a diversity of plant and animal species to make production more resilient while minimizing the use of synthetic fertilisers

and pesticides. The use of biofertilisers and green fertilisers is gaining momentum in Asia, particularly in India and China and at early stages in Southeast Asia, as farmers and policymakers look for ways to promote sustainable agriculture and reduce the environmental impacts of food production. The global market for biofertilisers is expected to be worth \$31 billion by the end of 2024.⁷⁶ Indoor farming, albeit not new, remains an innovative approach to agriculture, addressing the challenges of climate change, food security, and resource scarcity. In the Republic of Korea, a collaboration between the agricultural firm Farm8, the Seoul Metropolitan Government, and Seoul Metro built the world's first urban

smart farm installed in a subway system, at the capital's Sangdo metro station in 2019. Four more farms were subsequently built at other

metro stations. Some 90 per cent of water is filtered and reused while high efficiency and low heat LEDs provide the lighting.

Box 5: The UN System's Scaling up Agroecology Initiative

UNDP, together with other UN partners, is supporting a forward-looking and action-oriented platform to catalyse cooperation on agroecology within the UN system. UNDP has supported several countries in the Asia-Pacific region to implement agroecological practices, particularly through the implementation of the Small Grants Programme (SGP), a global programme that supports initiatives of communities in developing countries to address environmental issues and strengthen livelihoods.

Together with partners, SGP supports community organizations to use approaches, techniques, and methodologies in line with the principles of agroecology and climate-sensitive land resources management. For example, in Mongolia, the SGP since 2015 has assisted local communities in introducing a series of agroecological measures, including the production of bio-humus from livestock manure, and the establishment of wind protection belts around vegetable fields owned by smallholders farmers.

Sources: Nyandiga, C. and Currea, A. M. 2017. Community Approaches to Sustainable Land Management and Agroecology Practices. UNDP; FAO. *Scaling up Agroecology Initiative*. (n.d). Available at www.fao.org/agroecology/overview/scaling-up-agroecology-initiative/en/

Significant challenges remain in scaling up these approaches in the region. They include high upfront investment costs, limited access to technology and market development, lack of knowledge and awareness, and inadequate policy and regulatory frameworks. Subnational governments assume a key role in agricultural functions and policy implementation, which emphasizes the importance of developing their institutional capacities and resources (human, financial, technology) that enable them to provide financial and technical support to key stakeholders such as farmers. Overcoming current challenges will require collaboration from a wide range of stakeholders, including officials at all levels of government, farmers, businesses, and civil society.

2.1.2. Maximizing efficiency and minimizing waste: resource optimization in energy and food systems

The multifaceted consequences of the polycrisis pose significant challenges for the region's rapidly growing demand for food and energy. In this context, improving efficiency and reducing waste in energy and food systems is vital. Resource optimization ensures that resources are used efficiently, reducing waste and avoiding environmental degradation and lowering associated economic and social costs.

The use of crop residues and other agricultural waste is a largely untapped opportunity to add value for farmers while creating a potentially carbon-neutral source of energy. Excess food can feed vulnerable consumers while food waste can be converted to energy. Every year, the region generates a glut of residues from

rice, wheat, sugarcane, and other crops, as well as livestock. Some of these residues are used as animal feed, for cooking, or for other productive purposes. A significant share, however, is burnt or left to decay, with adverse consequences for human health, soil, and air.

Upcycling agricultural waste

Crop residues can be used to generate electricity using several technologies—from biogas capture and use in turbines to co-firing residues in thermal plants. However, the logistics and cost of collecting, transporting,

and storing residues present significant challenges. Developing a reliable supply chain that ensures a stable supply of feedstock, creates jobs, and supports farmers' livelihoods is critical. A role for specialised companies that manage the collection, transport, storage, processing of residues and the distribution of processed bioenergy to customers is exemplified by Punjab Renewable Energy Systems Pvt. Ltd., the largest provider of biomass fuel aggregation and supply services in India.⁷⁷ In Singapore, biodiesel is produced by processing various waste and residual raw materials, such as used cooking oil (box 6).

Box 6: Neste biorefinery in Singapore

In 2010, Neste, a Finnish oil company, started operating a refinery that produces 100 per cent renewable biodiesel in Singapore. The government and Neste developed the project, giving them a global first-mover advantage in a strategic location for sourcing raw materials and serves as a logistical hub for biofuel production and export.

Neste's biorefinery uses the company's proprietary "next generation biomass to liquid" (NExBTL) technology to produce a high-quality diesel fuel. Cars, trucks, or buses can run on this fuel with no blending limitations. The plant can process a variety of fats and oils from renewable feedstocks, such as various waste and residual raw materials, including used cooking oil and waste animal fats. Neste sources these feedstocks from the Asia-Pacific region. As the company does not rely on food energy crops as a feedstock, it avoids the food-energy trade-off common in conventional biofuel production and widely criticized for undermining food security.

Neste is investing EUR1.65 billion (\$1.8 billion) to expand the biorefinery to produce sustainable aviation fuel. Once it becomes operational in 2023, the refinery will be able to produce up to 1 million tonnes per year, making it the world's largest sustainable aviation fuel plant. It will also have the capacity to improve feedstock pre-treatment, enabling it to process increasingly low-grade waste and residues. Efforts are underway to test new materials, such as algae or straw, for future feedstock.

The market is responding to the expanding supply of biofuel. Although sustainable aviation fuel is more expensive than conventional jet fuel, Singapore Airlines has started using sustainable aviation fuel at Singapore's Changi Airport, while leading airlines in Japan and New Zealand are taking the similar steps in keeping with the trends in Europe and North America.

Sources: Ruuska, I. and T. Brady. 2011. Implementing the replication strategy in uncertain and complex investment projects. *International Journal of Project Management*. Vol.29: 422-431;
Neste Singapore. *Singapore Expansion Project*. Journey to Zero. (n.d). Available at www.neste.sg/neste-in-singapore-and-asia-pacific/journeytozerostories/singapore-expansion-project

Agricultural and industrial waste can also be effectively turned into bio-charcoals. In Cambodia, Khmer Green Charcoal, a pioneering company, crushes and carbonises coconut shells and other biomass from agricultural and industrial waste in specially designed kilns, then compresses them into briquettes.⁷⁸ Likewise, in Hokkaido, Japan, the Shikaoi Hydrogen Farm uses agricultural waste and manure from nearby livestock farms to make carbon-neutral, renewable biogas that is then upgraded to purified biomethane before being used as a feedstock to make green hydrogen. The hydrogen is channelled into tanks that are sent to local livestock farmers and neighbouring facilities for use in fuel cell vehicles, forklift trucks, and fish breeding facilities, among other uses.⁷⁹ Meanwhile, EGAS Energy, a Pakistan-Finland joint venture, captures gas from dormant or flared gas fields, processes it to make it pipeline quality, and then transports the pressurised gas to compressed natural gas stations and industrial customers. This helps make use of the country's many stranded gas fields and monetises the substantial volumes of gas that would otherwise be flared or wasted.⁸⁰

Optimizing energy use

Inefficient use of energy and other inputs in food production has enormous costs. In general, the processes that consume the most electricity rely on electric motors, especially for cooling, and replacing inefficient equipment can yield substantial energy savings. An assessment conducted in food manufacturing plants in Singapore identified a range of energy saving opportunities across different systems, with overall potential electricity savings of 59TJ per year (13 per cent of total electricity consumption) and estimated fuel savings of 44TJ per year (5 per cent of total fuel consumption). Dairy plants offered above average electricity savings (19 per cent of consumption) and frozen and cooked food plants offered above average fuel savings

(60 per cent of consumption). Two-thirds of potential savings were from boiler, chiller, and refrigeration systems.⁸¹

Improvements leading to lower energy costs is also intended under the UK-ASEAN Energy Efficiency Accelerator programme, which supports food and beverage companies in Malaysia, the Philippines, Thailand, and Viet Nam. Another way to support energy efficiency improvements in businesses, as used widely in several Asian countries, is to facilitate the adoption of energy-service company (ESCO) business models.⁸² This approach involves private companies, often engaged by the government, indentifying and implementing energy efficiency measures in exchange for compensation based on their performance (typically a guarantee of energy savings or a share of energy savings).

Curbing food waste and losses

Lost or wasted food embodies wasted energy and other resources, emits methane, and represents lost income and missed opportunities to provide people with nutrition. The FAO estimates that food lost and wasted across the world could feed almost 1.3 billion hungry people each year.⁸³ Food losses can be reduced using sustainable processing innovations (box 7).

A lack of access to temperature-controlled storage and transport, especially for perishable vegetables and fruits, leads to sub-optimal food quality and lower incomes for farmers. Cold storage facilities can enable farmers to better time the sale of their crops and consequently receive better prices. In India, Tan90, a Chennai-based startup, designed small and portable cold storage boxes to keep perishable items, such as vegetables, fruits, flowers, fish, and milk products, under controlled temperatures during transport, without grid power.⁸⁴ The product is cheaper and more versatile than refrigerated trucks and offers a wider temperature range than ice boxes.

Box 7: S4S Technologies in India

S4S Technologies, an agritech startup, uses solar dehydrators to process food that would otherwise be lost after harvesting. The technology was designed to address a lack of available storage space, which results in post-harvest losses and lost income to farmers. The dehydrators can preserve 45 different types of vegetables, fruits, pulses, cereals, and spices. The dehydrated foods have a one-year shelf-life, without the need for preservatives, and retain up to 95 per cent of the food's original nutrient content.

S4S places dehydrators with women farmers in villages and works with local banks to arrange loans. Typically, 10-30 women in each village decide to get a dehydrator. The company sources and delivers the crops from local farmers and trains the women on how to use the technology. Once the women have dehydrated the vegetables (e.g., ginger, garlic, carrot, and beetroot), women employed by S4S in each village arrange pick-up and delivery to S4S's factory. After performing quality control and secondary processing, the company sells the products to various customers. S4S then pays the women and farmers the market rate for their products and earns a margin.

S4S buys crops from 6,500 smallholders, usually through local co-operatives. It works with over 500 women who dehydrate the vegetables in the Indian states of Odisha, Maharashtra, and Tamil Nadu, as well as more than 850 customers. The farmers process 27,500 tons of food each year that otherwise would have gone to waste. Each farmer earns the equivalent of \$1,000 to \$1,500 per year from selling dried food to S4S.

Sources: S4S Technologies. *Building INDIA's only full stack food processing platform*. (n.d). Available at <https://s4stechnologies.com/>; Tech For Impact Asia. *S4S Empowers Female Farmers to Reduce Food Waste in India*. (October, 2020). Available at <https://techforimpact.asia/s4s-empowers-female-farmers-to-reduce-food-waste-in-india/>

In the interim, food on the verge of being wasted by retailers can be channelled to paying customers or to vulnerable people through food rescue programmes. In Indonesia, a mobile application called Surplus connects food merchants with surplus and near-expiry food products to consumers who can buy these products at a minimum discount of 50 per cent. Since its launch in 2020, the food rescue app has helped save about 1.7 tonnes of food waste, averted \$6,400 in economic losses and prevented the emission of 50 tonnes of

CO₂.⁸⁵ Similarly, Garda Pangan, an eco-social enterprise in Surabaya, the second-largest city in Indonesia, rescues surplus food from the hospitality and food industries by distributing food that passes quality checks to people in need while turning the rest into animal feed or compost. A Singapore-based start-up, KosmodeHealth, is also exploring how to turn by-products from food manufacturing into healthy and sustainable food fit for human consumption.⁸⁶

2.1.3. Prioritizing access and participation of vulnerable groups and communities in sustainable energy and food systems

Vulnerable groups and communities are disproportionately affected by the polycrisis and often lack the resources to access or participate in sustainable energy and food systems. Improving their access and participation, which requires support and facilitation by subnational governments in collaboration with relevant stakeholders, is crucial to ensure that these systems are inclusive and effective.

Numerous small-scale technologies are available to provide the poor and vulnerable people with energy access. Nevertheless, financial constraints and, in the case of many technologies, a lack of awareness, result in millions of people across the region still lacking

access to modern, clean energy supplies that could enhance their food security and livelihoods. Pay-as-you-go (PAYG) financing models, combined with digital technologies, are playing an increasingly important role in addressing financing constraints in unserved communities. With funding from UNCDF's Pacific Financial Inclusion Programme, Sola PayGo, a private solar power company, supplied 3,100 off-grid households and businesses in Papua New Guinea with PAYG solar-powered lighting kits between August 2019 and June 2020.⁸⁷ Similarly, a mobile application that is integrated with an electromagnetic induction stove (eCook) by ATEC, a social enterprise, provides clean and affordable cooking systems on a PAYG basis for households in Bangladesh⁸⁸, where around two-thirds of households use biomass for cooking. Box 8 profiles another electricity access solution, an ICT-enabled peer-to-peer electricity trading network for rural households in Bangladesh.

Box 8: SOLshare in Bangladesh

A Dhaka-based climate-tech company, SOLShare, successfully piloted the world's first ICT-enabled peer-to-peer electricity trading network for rural households with and without solar home systems in Shariatpur, in central Bangladesh. The pilot was carried out by SOLShare in conjunction with the NGO UBOMUS, the government-owned specialised non-financial institution IDCOL, and the Centre for Energy at the Dhaka-based United International University.

The technical solution involves households being physically connected to each other via a low-voltage direct current mini-grid and each household having a SOLShare electrical meter that allows it to buy renewable electricity from or sell renewable electricity to neighbouring households or businesses. Households are, in turn, connected to a blockchain-enabled ICT system that handles mobile money payments, customer service, remote monitoring, and grid optimisation. The system, thus, allows households that do not have their own solar systems to obtain access to low-cost, renewable electricity without the need for a large, centralised grid.

Meanwhile, households that have their own systems earn additional income from selling surplus electricity. SOLShare's village grids can unlock up to 30 per cent excess

generation capacity of existing solar home systems, spreading the capacity—and the cost of these systems—over more people. Pooling the capacity of people’s solar home systems enables electricity supply for community services, such as schools and clinics, which typically require more electricity than a solar home system can provide. It also opens up options for productive use of energy by businesses.

Households that purchase electricity through the network pay a transparent electricity tariff that is below what electricity would cost through a solar home system. The project developer can recoup the cost of the solar home systems through a monthly fee and a share of profits on electricity sales (this microfinance mechanism monitored and paid for via the SOLShare system). The company now operates 116 grids, serving almost 1,500 households, of which around 280 sell electricity through the networks.

This solution can be replicated in under-electrified areas with a minimum of 10 households or SMEs located close to each other. The company’s vision is to operate more than 20,000 nanogrids by the end of 2030, supplying more than 1 million customers in Bangladesh.

Sources: UNCC. *ME SOLshare : Peer-to-peer smart village grids*. Bangladesh. (n.d).
SOLshare. *SOLgrid Peer-to-peer Microgrid Connections*. (n.d).

Digital technologies have already transformed the way rural farmers participate in energy and agricultural value chains. The field continues to evolve, revealing more and more opportunities for households and small farmers to access

finance, information, and customers. Digital technologies are also used to support payment for energy services among rural households that have limited access to formal banking services (box 9).

Box 9: Ricult in Thailand and Pakistan

Ricult, a US-based fintech and agritech company, uses artificial intelligence and advanced data analytics to support access to finance and productivity improvements among small-scale farmers. It seeks to help farmers reduce their reliance on exploitative intermediaries for often low-quality inputs, expensive credit, and poor prices for their agricultural output.

Farmers can use Ricult’s platform to secure credit, buy inputs, and connect directly with customers. Almost 600,000 farmers use its services across Thailand and Pakistan. The company’s digital financing solution uses agronomy and profile data to predict whether farmers can afford financial services, leading to financial products that better match farming cycles, better risk management for financial institutions,

and better overall access to finance for farmers. The company partners with large banks to facilitate farmers' access to finance based on alternative credit scores, with banks offering farmers much cheaper loans than the intermediaries.

Farmers can order inputs (free of charge from Ricult's partners) via the platform and benefit from Ricult's support throughout the growing process. The company offers a mobile phone app that provides free information to help farmers improve their productivity and profitability. Farmers who do not have a smartphone can use SMS or receive information through voice calls. Finally, the company connects farmers directly with large food processing companies, taking a commission for this service. The company says its services have boosted farmers' yields by an average of 50 per cent and profits by 30-40 per cent.

Sources: WIPO. *Ricult Agritech Solutions for Farmers*, (February, 2019).

RICULT. *Home.Our Products*. (n.d). Available at www.web.ricult.com/our-products;

The entrepreneurial characteristics of millions of women in the region, and the major roles they play in securing energy and food supplies for their families, can be harnessed to support the transition to clean energy. In Vanuatu, Women Lead on Climate Adaptation Innovation in Solar Fruit Drying, a programme by the German

Agency for International Cooperation, trained women to use solar food dryers to add value, reduce losses, and improve their livelihoods.⁸⁹ Box 10 details an initiative in Bangladesh, Cambodia, and Viet Nam from 2019 to 2022 to promote women's entrepreneurship in renewable energy products and services.

Box 10: EmPower women for climate-resilient societies in Bangladesh, Cambodia and Viet Nam

EmPower is a platform for women and marginalised groups to "use their voices, agency, and leadership and collaborate with men to build resilience and secure sustainable development". Supported by UN Women, the UN Environment Programme, the Swedish International Development Cooperation Agency (SIDA), and other partners, EMPower has been working in Bangladesh, Cambodia, and Viet Nam to:

- support policy, training, and access to finance initiatives to help female entrepreneurs in selected areas pilot renewable energy interventions to improve their livelihoods,
- build the capacity of local women's organisations to engage meaningfully in climate change and disaster risk reduction processes,

- support the national statistical bureaus to collect and use sex-age-diversity-disaggregated data,
- build the capacity of policymakers to develop and implement gender-responsive climate change policies, plans, laws, and regulations.

Under its renewable energy entrepreneurship component, EmPower aimed to facilitate two types of enterprise: (i) women-led enterprises linked to climate change (such as those involved in agriculture, horticulture, fishing, or handicrafts) that use renewable energy to meet their energy requirements; and (ii) women-led enterprises that sell renewable energy products and services.

Source: UN Women. *Shortlisting Criteria for Selecting Livelihood Generation Activities*, (December 2019).

Well designed and managed social protection schemes such as food vouchers, cash transfers, and school meals can help insulate vulnerable people from food price spikes⁹⁰ and support food security. Local governments have a mandate for and play a pivotal role in the implementation of such schemes and programmes, so their capacity for efficient delivery of these public services is key. The need for integrated support across the social protection, agricultural, and health and nutrition systems to improve nutrition

outcomes for vulnerable people is becoming increasingly apparent.⁹¹ Initiatives where social protection is taking a transformative approach include the FAO's Home-Grown School Feeding programme. It cuts across the areas of social protection, agriculture, and education to support everyday food security and long-term economic development. Box 11 outlines an approach that integrates cash transfers with nutrition education and support to small-scale agricultural production in Kyrgyzstan.

Box 11: Cash+ pilot programme in Kyrgyzstan

The Kyrgyz government and FAO collaborated to pilot an approach linking social protection benefits with agricultural support, with the aim of boosting food production, generating income opportunities, and improving food security and nutrition. The project aimed to harness research findings showing that combining social protection and agricultural policies and programmes can have incremental benefits in these areas.

The Cash+ approach, which FAO has also applied in several African countries, involves interventions that flexibly combine cash transfers with productive assets, inputs, technical training and extension services to enhance the livelihoods, productive capacities, and food and nutrition security of poor and vulnerable households. It is intended to build on and strengthen national social protection systems. The unconditional cash payment enables beneficiaries to address their immediate basic needs. In some cases, it can help households diversify their sources of income and

invest in new agricultural and other economic activities. The “+” component normally combines productive support and training to enhance economic, productive, food security and nutrition impacts of the cash component while helping to protect, restore and develop rural agricultural and non-agricultural livelihoods.

FAO also helped the government pilot an innovative approach to fostering improved nutrition and boosting the productive capacities of poor rural households. This approach combined the national social cash transfer programme for low-income families with children with nutrition education and nutrition-sensitive, climate-smart agriculture. The pilot covered 150 poor rural households. It complemented the cash transfer with productive support tailored to the participants’ livelihood characteristics and the local agro-ecological and market conditions and opportunities. Two of the types of productive support were intended to improve household nutrition and dietary diversity through home gardening, while another sought to generate additional income and better access to nutritious food by supporting farm production. The programme also provided technical training and extension and advisory services, and nutrition education and coaching to all participants.

Impact assessments found that participants of the pilot programme had benefitted from:

- improvements in the quality of diets and food security (e.g., women and children’s consumption of protein- and vitamin-A rich foods, and other fruits and vegetables),
- a substantial increase in crop production and income from own-farm sales,
- greater overall agricultural production,
- improved agency and integration into the community.

Source: FAO. *Cash+ pilot programme in Kyrgyzstan : Improving food security, boosting productivity and diversifying livelihoods*. (Rome, 2022).

2.1.4. Promoting sustainable consumption patterns

Expanding domestic food production and changing diets (for example, to alternative proteins or traditional foods) can reduce exposure to volatile international food markets and offer a range of environmental, economic, and health benefits. For instance, reducing meat consumption can lower greenhouse gas emissions and water usage, while reducing plastic usage can help reduce waste and pollution. Sustainable consumption patterns can create new business opportunities and

promote the development of sustainable industries. In Thailand, More Meat, a private company, produces a plant-based protein that it says is healthier than meat, has fewer calories and 87 per cent less fat than ground pork, and is more environmentally sustainable. Both national and subnational governments have a role to play in promoting, supporting, and facilitating these shifts in consumption and behavioural changes.

Efforts are currently being made to raise awareness and promote sustainable consumption. In January 2020, the University

of the South Pacific, based in Suva, Fiji, and Fiji's National Food and Nutrition Centre launched the mobile application My Kana. The app aims to help diversify diets and improve nutrition by encouraging Fijian people to grow food at home. It provides information on how to grow and preserve food, including in urban areas, as

well as recipes that make use of locally grown foods. The app also provides information on the nutritional content of traditional Fijian and imported foods and allows users to compare their meals to a "healthy plate."⁹² The programme outlined in box 12 also boosted sustainable consumption in the Pacific.

Box 12: Pacific Island Food Revolution (PIFR) in Fiji, Samoa, Tonga and Vanuatu

The Pacific Islands have a high incidence of non-communicable disease, including diabetes, heart disease, and obesity, largely due to a shift from traditional diets to a higher share of imported, processed foods. The PIFR, developed by celebrity chef Robert Oliver from New Zealand, aims to change eating habits in the Pacific Islands through reality television, radio, and social media. It seeks to encourage an interest in fresh, local, indigenous foods and an appreciation of the health benefits many of these foods offer over the imported, processed foods that feature heavily in modern Pacific diets. The initiative is keen to address specific barriers that people in the Islands often note in relation to healthy eating—by proving healthy, traditional foods to be convenient, tasty, and affordable.

PIFR produced twelve episodes of a televised cooking competition (covering Fiji, Samoa, Tonga, and Vanuatu) and broadcast them in 12 Pacific countries and beyond. The episodes were hosted by Mr. Oliver in conjunction with local celebrities (including the Prime Minister of Samoa and Her Royal Highness Princess Salote Pilolevu Tuita, the Princess Royal of Tonga) and tailored to local culture and humour. The radio shows in local languages have reached audiences in rural and maritime areas and the social media campaign has reached almost 6 million people. People can engage with PIFR through social media or online and download information, including healthy recipes and lesson plans for teachers.

An impact assessment after two years surveyed 330 people across the four focus countries and found high levels of viewership (from 49 per cent of respondents in Vanuatu to 85 per cent in Tonga). On average, 42 per cent of people who had engaged with PIFR reported a positive change in their diets and people who had watched the programmes were significantly more likely to eat healthy diets than those who had not. The assessment noted that, if just 10 per cent of those who engaged with the show maintained their new food choices over five years, an estimated 165,000 people would have moved towards better health outcomes.

PIFR was launched in 2019 with funding from the governments of Australia and New Zealand. The pilot programme cost AU\$7 million (currently about \$5 million). It was developed in close collaboration with Pacific Island governments and enjoys significant support from local communities to the highest levels of Pacific leadership.

Source: Pacific Island Food Revolution. *Home*. (n.d). Available at www.pacificislandfoodrevolution.com

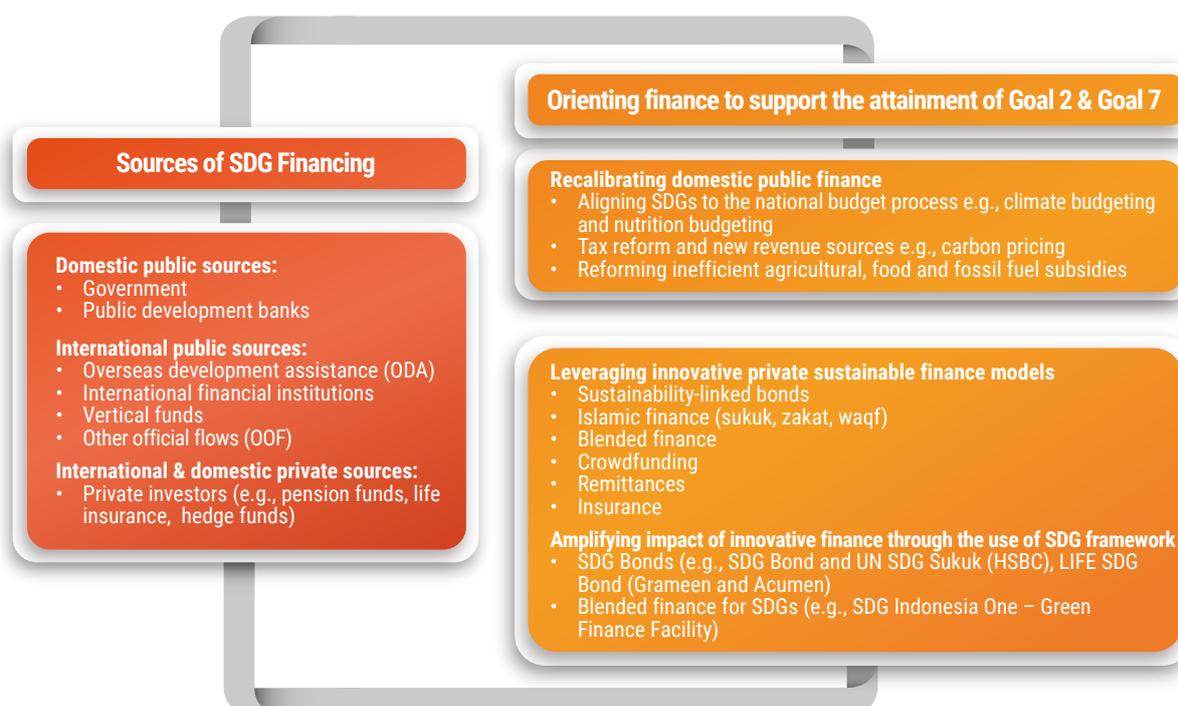
2.2. Financing solutions for equitable, sustainable, and resilient energy and food systems

The financing gap for the SDGs in developing countries worldwide is estimated to be about \$4.9 trillion per year from 2020-2025, a \$400 billion increase from 2019-2020 estimates.⁹³ For food systems, there remains underinvestment in climate-smart agriculture and most of the existing resources disproportionately supported mitigation measures instead of adaptation strategies, although the latter is equally crucial. Accelerating progress towards Goal 7 on affordable and clean energy requires financing of two main pillars: (i) clean power, efficiency, and electrification; and (ii) transitions in fuels and emissions-intensive sectors. According to the World Energy Outlook 2021 by the International Energy Agency (IEA), for the world to be on track to move to net-zero emissions by 2050, investments need to be increased to around \$4 trillion annually by 2030.

Traditional sources of finance such as domestic public finance (e.g., taxes) and international public finance (e.g., multilateral lending and

ODA) remain indispensable in financing efforts to meet energy and food-related SDGs. Domestic resource mobilisation at national and subnational levels is key to governments' ability to finance their development needs. ODA will continue to be a crucial source of financing for many developing countries and reforming the delivery of international public finance for improved outcomes for energy and food systems is vital. Further, the public finance implications inflicted by the polycrisis, particularly by putting government budgets under ever-increasing pressure, necessitates mobilisation of substantial amounts of finance from new sources. To this end, making use of private finance has never been more critical, especially recognising the wide-ranging benefits from unlocking and reorienting the \$463.6 trillion of global wealth in the global financial system.⁹⁴ This will entail strategic allocation of such resources to prioritised areas, including shifting to renewable energy, reforming the agricultural sector, and building social protection systems to support the needs of vulnerable populations. Figure 21 gives an overview of the major sources of SDG financing and examples of how finance can be oriented to support the attainment of Goal 2 and Goal 7.

Figure 21: Major sources of SDG financing and examples of their applications to support energy and food systems transformation



2.2.1. Recalibrating public finance to augment fiscal space and public investments for food and energy systems reform

Adapting public financial management (PFM) practices to support food and energy-related SDGs.

Effective financing of the SDGs requires several fundamental shifts in development planning, including using the domestic budget as the primary instrument of government policy to deliver on the SDG agenda. This calls for the SDGs framework to be applied throughout the budgeting phases, namely budget preparation, execution, monitoring and audit. It also involves development of taxonomies or classification systems to facilitate tracking of allocations and expenditures, thematic areas (such as climate change and gender) and detailed methodology for budget coding or tagging. Aligning SDGs to the national budget process will ensure better policy coherence by focusing resources on strategic priorities, realizing synergies between SDGs, and recognizing trade-offs in resource allocation. It can also address short-termism in policy planning through the use of Medium-Term Expenditure Frameworks (MTEFs). Moreover,

as cities are recognized as a key contributor to climate change, climate budgeting can be used to secure commitment from sub-national governments to demonstrate stronger climate leadership. The Climate Change Budget Integration Index (CCBII) exemplifies how to effectively incorporate climate perspectives into PFM practices to promote climate-responsive fiscal policies. Box 13 highlights a similar initiative in Bangladesh. Pertaining to the energy sector, India's Union Budget 2023-2024 illustrates the increasing importance of climate and energy security, with the equivalent of about \$4.3 billion allocated to support the green transition in the energy sector, including green hydrogen and grid-scale battery storage projects. In the context of SDG 2 (zero hunger), particularly malnutrition in children (target 2.2), UNICEF developed a manual on Public Finance Management for Children-Nutrition in Asia and the Pacific to help countries incorporate nutrition in the budgeting process with a view to scale up nutrition programming. Lao PDR offers a good example of how to integrate nutrition costing (under its National Plan of Action on Nutrition) with the government budget process.

Box 13: Inclusive Budgeting and Financing for Climate Resilience (IBFCR) Project in Bangladesh

Recognizing its position as one of the most climate vulnerable countries in the world, the Government of Bangladesh in 2014 adopted the Climate Fiscal Framework (CFF) to make its public financial management system (PFM) climate inclusive. In 2020, the CFF was updated following the implementation of IBFCR Project in partnership with UNDP. This was in response to the government's adoption of SDGs as a new framework for national development post-2015 and a PFM reform strategy introduced in 2016.

The new CFF is based on the principle of citizen-centred PFM. It puts the interest of citizens at the centre of decision making by expanding its remit to cover the role of the private sector, NGOs and CSO. To emphasise the importance of the supply side of climate finance, the CFF addresses broader financial policies, such as lending and insurance, in addition to fiscal policy tools such as tax and subsidy.

With climate public finance tracking being one of the key components of the new CFF, it will support long-term expenditure plans in line with the National Adaptation Plan (2023-2050) and the Bangladesh Climate Change Strategy and Action Plan (2008) under which food security is one of the major themes. The CFF also covers financing options to support renewable energy take-up, including taxes on carbon emissions.

Source: UNDP. *Bangladesh Climate Fiscal Framework*. (2020).

Exploring new approaches to domestic resource mobilisation. Before the pandemic, it was estimated that for the Asia-Pacific region to achieve the SDGs, annual spending would need to increase by around \$1.5 trillion. Considering the adverse fiscal impacts of the polycrisis, adopting fiscal innovations to improve tax collection and increase domestic revenue will be crucial in sustaining progress to achieve sustainable and inclusive economic growth. Targeted tax reforms can improve the efficiency of tax administrations, thus enhancing revenue collection, and boosting economic and social benefits for the population. Examples of tax reforms include capacity building initiatives for tax officials, data systems enhancement to support more efficient tax collection, and reducing tax evasion to ensure fair taxation systems for sustainable revenue collection and long-term growth. These reforms are expected to benefit developing countries in Asia by increasing tax revenue (as a percentage of GDP) by 3 to 4 percentage points, on average.⁹⁵ Despite its well-understood potential benefits, carbon pricing remains largely untapped, with only seven carbon pricing initiatives implemented or announced in developing Asia as of November 2022. Carbon pricing mechanisms include carbon tax, emissions trading systems, as well as domestic and international credit schemes. The IMF estimates that a carbon tax of \$25 per ton would benefit nearly all countries in Asia and the Pacific in the form of reduced mortality, traffic congestions, and accidents,

significantly outweighing forgone benefits from fossil fuel consumption. Under such a scenario, China and India are expected to enjoy welfare gains exceeding the equivalent of 3 per cent of GDP and other countries, such as Indonesia, Malaysia, Mongolia, and Sri Lanka, gains exceeding the equivalent of 1 per cent of GDP.⁹⁶ Implementation of appropriate carbon-pricing instruments will support the transition to renewable energy, given their benefits in channelling financial resources to support energy policy aims (including energy security) by incentivizing investments in high-value and long-term assets such as power plants, grid infrastructure, and energy-intensive industrial plants. Initiatives such as the City Climate Finance Gap Fund, a multi-donor climate action trust fund, have supported cities in India, Viet Nam, and Indonesia to improve enabling conditions to better mobilise urban climate finance by embedding climate considerations in city strategic, spatial, and investment planning.⁹⁷

Reforming agricultural, food and fossil fuel subsidies to enhance policy efficiency and promote equity. As of 2021, the total amount of subsidies dedicated to support agricultural producers worldwide was estimated at about \$540 billion, 87% of which were assessed as price distorting and environmentally and socially damaging.⁹⁸ Global fossil fuel subsidies are estimated to increase to 7.4 per cent of GDP in 2025 from 6.8 per cent or \$5.9 trillion in 2020, of which Asia-Pacific countries accounted for 48 per cent.⁹⁹ In line with Target 2.b (on trade

restrictions and distortions) and Target 12.4 (on chemical and waste management) of the SDGs, instituting subsidy reform in these sectors, while heeding the complexity and sensitivity of the process, is crucial to help augment government fiscal space. This will enable channelling investments towards more equitable and redistributive policy responses to support ending hunger and enhancing access to clean energy, while addressing the specific needs of vulnerable populations including through expansion of social protection. Fossil fuel subsidy reform undertaken by Indonesia in 2015 resulted in the reallocation of around \$15.6 billion to support the broader development agenda. This included increasing (i) the central government budget, with the Ministry of Agriculture benefitting from a

budget increase of over 100 per cent; and (ii) fiscal transfers to regional governments and villages, which were used to support special projects, including food security improvements. In India, the government initiated efforts to swap fossil fuel subsidies with clean energy subsidies. Between 2014 and 2017, the allocation of public resources to subsidise petroleum products was cut by around three quarters, while public investments in the renewable energy sector increased almost six times during the same period.¹⁰⁰ The Indian state of Andhra Pradesh took an innovative approach to agricultural subsidy reform, which involves reviving traditional farming systems that promote chemical-free agriculture, hence reducing the need for fertiliser subsidies.

Box 14: Zero Budget Natural Farming (ZBNF) in India

ZBNF was introduced in the southern Indian state of Karnataka in 1990s to promote chemical-free agricultural practices based on traditional farming methods. The inputs for ZBNF are home-grown and consist of seed treatments (bijamrita) and microbial inoculum (jiwamrita) that are applied to the soil as a liquid foliar spray or as a solid fertiliser. Recognizing its benefits, the Government of Andhra Pradesh in 2018 launched a plan to transition 6 million farmers to adopt ZBNF by 2024. It is estimated that with coverage of only 25 per cent of the agricultural land in the state, ZBNF practices could save \$70 million annually in fertiliser subsidies and, more importantly, help accelerate the transition to sustainable agriculture. Rythu Sahikara Samstha, a non-profit organisation, is implementing the ZBNF programme in Andhra Pradesh. The organisation uses a network of trained people to provide extension services in village clusters, especially to women's self-help groups.

Sources: FAO. *Zero Budget Natural Farming in India*. (n.d).

FAO, UNDP and UNEP. *A Multi-Billion Opportunity – Repurposing Agricultural Support to Transform Food Systems*. Food and Agriculture Organization of the United Nations. (Rome, 2021).

2.2.2. Leveraging private sustainable finance

Transforming the food and energy systems to support the attainment of SDG 2 (zero hunger) and SDG 7 (affordable and clean energy) requires significant financial resources. Given

the scale required, these need to be mobilised from the private sector. Various models of private financing exist, which, if properly harnessed and targeted, can increase the financing targeting sustainable and resilient energy and food systems in Asia and the Pacific.

Private Financing Models

Sustainability-linked bonds. These are bonds issued by public or private entities to raise capital for projects that contribute to sustainability objectives. The payments to bondholders are linked to the issuer's performance against pre-defined indicators related to sustainability. The bonds can be further categorized into several types: green bonds (for the environment), blue bonds (for marine health), orange bonds (for gender equality and women's empowerment)

and, more recently, SDG bonds (discussed in 2.2.3.). At the subnational level, municipal green bonds can be issued to fund investment in urban energy infrastructure. The recent recovery of the green bond market following a period of cyclical slowdown can be used to revitalize investments in clean energy technologies that were affected by the pandemic and other initiatives towards realizing Goal 2 and Goal 7.^{101,102}

Box 15: Hulic sustainability-linked bonds in Japan

In October 2020, Hulic, a Japanese real estate company, issued Japan's first sustainability-linked bonds (and the first globally to comply with the International Capital Market Association's Sustainability Linked Bond Principles). The two performance targets were: (i) supply 100 per cent of the company's electricity consumption from renewable sources by 2025 ("RE100"); and (ii) complete Japan's first 12-storey fire resistant wooden commercial facility by 2025. Failure to meet either target by 31 August 2026 means the company must pay a 0.10 per cent higher coupon. 14 Japanese companies, almost all of them banks, invested in the ¥10 billion (currently about \$77 million) issue. Investments in new solar generation capacity pushed up the renewable energy share to 20.6 per cent in December 2021 and the company may achieve its target by 2024.

Source: Hulic. Sustainability-Linked Bonds. (October, 2020).

Islamic finance. Islamic finance refers to financial services designed in accordance with Sharia principles. It is a burgeoning industry in Asia and the Pacific, notably in Malaysia and Indonesia. With social justice, prosperity for all, and avoidance of harm principles at their core, Islamic finance models are considered well-suited to support efforts to advance the sustainability agenda and counter damaging impacts, including in the food and energy sectors. Among others, relevant Islamic finance products and social finance tools include:

- *Sukuk* (bonds that comply with Sharia law). Like conventional bonds, *Sukuk* are commonly used to finance large-scale investments (e.g., power stations).
- *Zakat* (mandatory charitable contribution). *Zakat* donations by individuals have the potential to address food insecurity among vulnerable groups and support investments in the energy sector. In Malaysia and Indonesia,

there are “ATMs” for rice, for low-income populations, funded by zakat.¹⁰³ In Indonesia, zakat donations have supported renewable energy infrastructure.¹⁰⁴

- *Waqf* (donated assets for benevolent purposes). *Waqf* provides assets (e.g., land) that can be used for agricultural production.

Box 16: Green Waqf Framework for biodiesel project in Indonesia

In September 2022, Badan Wakaf Indonesia, a government agency, and UNDP published the Green Waqf Framework. It sets out how *waqf* can help achieve SDGs, especially Goal 7 (affordable and clean energy) and Goal 13 (climate action). The framework defines “green” *waqf* as “the utilization of a *waqf* asset to support the attainment of ecological balance and sustainability, while also providing a social and economic impact for society.” “Green” projects include the transmission and generation of energy from renewable sources, improving infrastructure’s energy efficiency, and waste management, among others. The framework envisages using *waqf* property, especially land, for such projects, as well as cash *waqf*.

A proposed pilot project involves planting a Tamanu plantation and processing the fruit to make biodiesel that meets US and EU standards and can be used without engine modification. Tamanu fruits can also be processed for pharmaceutical, chemical, and other industrial uses and waste can be used as animal feed. Other benefits of the project include restoring degraded land, reducing deforestation, and providing employment and income to smallholder farmers and community groups. The project will use some large tracts of idle, barren land that has been given as *waqf*, as well as *waqf* in cash and funding from other sources.

Source: UNDP. Green Waqf Framework. (September 2022).

Blended finance. Blended finance is the use of catalytic capital—capital from public and philanthropic investors that is impact-oriented and not seeking market-rate returns—to mobilise private sector investment in sustainable development, by allowing organisations to invest alongside each other while achieving their own objectives (whether financial return, social impact, or both). With arrangements allowing certain risks to be shifted from private investors to the public

sector, blended finance opens the door to unlock new investments to support SDGs, including in energy and agricultural sectors. Globally, blended finance has been used as a tool for social entrepreneurs, in collaboration with public sector partners, to provide liquidity to energy companies during a crisis with the aim to prevent interruption in energy access.¹⁰⁵ Box 17 outlines the use of blended finance to support a geothermal project in Indonesia.

Box 17: Blended financing of the Sarulla Geothermal Power Project in Indonesia

The 330-megawatt (MW) Sarulla Geothermal Power Plant in North Sumatra, one of the world's largest, was financed by a mix of concessional and commercial loans. The project used a risk guarantee from the Japan Bank for International Cooperation (JBIC) and a 20-year Business Viability Guarantee Letter from the Indonesian government to crowd-in commercial financing. The guarantees, along with a 30-year feed-in-tariff that provides long-term revenue certainty, unlocked access to long-term debt at competitive rates and raised the project's expected equity returns to those of other geothermal projects, at 14-16 per cent.

The project raised \$1.17 billion of 20-year door-to-door limited recourse project financing loans. This included a direct loan of \$492 million from JBIC; \$329 million in commercial bank loans that benefitted from JBIC's extended political risk guarantee; \$250 million loan from ADB, funded from its ordinary capital resources; and two ADB tranches of senior debt funded by the Clean Technology Fund (\$80 million) and the Canadian Climate Fund for Private Sector in Asia (\$20 million).

The \$1.6 billion project achieved financial close in 2014, with the three units of the plant coming online in March 2017, October 2017, and May 2018, respectively. The geothermal energy is sourced from a contract area managed by PT Pertamina Geothermal Energy, one of the largest geothermal companies in Indonesia. The electricity is sold to PT Perusahaan Listrik Negara, the state-owned electricity company, under a long-term sales agreement, increasing sustainable access to energy.

Source: Climate Policy Initiative. Using Private Finance to Accelerate Geothermal Deployment: Sarulla Geothermal Power Plant, Indonesia. (June, 2015).

Crowdfunding. Usually arranged through online platforms, this innovation allows multiple investors to lend money to a company in four ways, namely donations, reward, lending, and equity. In 2020, the transaction volume globally, excluding China, rose by 24 per cent to more than \$110 billion.¹⁰⁶ The crowdfunding market continued to grow during pandemic. Considered an attractive financing model for young entrepreneurs, crowdfunding was used to advance the food security agenda even before the polycrisis. For example, Cropital, a peer-to-peer lending platform for smallholder

farmers, was founded in 2015 by a group of students in the Philippines to improve agricultural productivity and address poverty among farmers. With growing interest among investors to support businesses and projects with prosocial and sustainable orientation, crowdfunding can be broadened to finance initiatives in response to polycrisis challenges, particularly new ventures that work at the nexus of finance, food and energy. Box 18 examines CROWDE, an agriculture crowdfunding platform from Indonesia.

Box 18: CROWDE agriculture crowdfunding platform in Indonesia

CROWDE is an agriculture crowdfunding start-up enterprise that runs a financing platform for agriculture, aquaculture, and livestock projects in Indonesia. Besides financial loans, CROWDE provides technical advice and training; market access, sales, and distribution support; pest control; and other services to borrowers. Agricultural enterprises or people that meet CROWDE's eligibility criteria can apply for a loan. If approved, CROWDE offers the investment opportunity to institutional and individual financiers. Borrowers receive the loan in the form of farm supplies (e.g. fertilisers, seeds and equipment, facilities, and workers' budget), rather than cash, and can repay the loan with agricultural produce. By June 2022, CROWDE had extended more than \$3.5 million in financing to over 20,000 farmers and fishermen, helping boost incomes by up to 150 per cent. Through CROWDE, investors can invest in chili, corn, and rice cultivation projects, with loans ranging from IDR8 million to IDR2 billion (about \$530-\$134,000) at interest rates of 6-18 per cent and repayment periods between one and 12 months.

Sources: CROWDE. Home. (n.d). Available online at: <https://crowde.co/en>;
Mongabay. *Building a farmer-friendly future: Q&A with CROWDE's Yohanes Sugihtonugroho*. (23 June 2022).

Remittances. Migrant remittances have long been a major source of development financing in Asia and the Pacific, with India, China and the Philippines consistently ranking among the top remittance recipient countries globally. Remittances also account for a significant share of GDP of Tonga, Samoa, Marshall Islands and Fiji. Often praised for their tendency to move countercyclically with crises (in 2022, remittances to the East Asia and the Pacific increased 0.7 per cent to \$134 billion),

remittances are a crucial source of household income during crises.¹⁰⁷ The pandemic-induced acceleration of digital transformation, particularly in the payments industry, has opened the door for further innovations to maximize the development impact of remittances. This includes remittance-linked investment products that support the transition to more sustainable food and energy sectors. Box 19 provides an example of such products, which were introduced in Tajikistan.

Box 19: Matching grant scheme for investment of remittances in agribusiness in Tajikistan

In Tajikistan, households tend to spend remittances on food, housing, and education, rather than use the money for long-term investments. In 2019, the Government of Tajikistan, in collaboration with FAO and IOM, designed a pilot project to channel remittances into agriculture, to promote food security and nutrition, job creation,

and inclusive growth. The project aimed to encourage migrants and recipients of remittances to invest in Small and Medium Enterprises (SMEs) engaged in fruit, vegetables, livestock production, and agribusinesses.

The pilot project, rolled out in Hissor city and Jaloliddini Balkhi district, was open to migrants, voluntary and forced returnees, and women who were acting as the head of a household and receiving remittances from a first-degree relative. Every unit of remitted currency invested in a selected business venture was matched with a unit from project funds. The project also trained recipients on operating agricultural SMEs, helped them prepare business proposals, and built capacity in the production, storage, processing, and marketing of agricultural products. In 2021, 51 successful applicants from the Yovon district received matching grants to support improved agricultural production, greenhouses for lemons and vegetables, sheep breeding and meat production, and poultry breeding. Funded by the Russian Federation, the project has since been scaled up with funding from the Global Environment Facility, an international environmental project fund. The pilot was part of a broader FAO project that aimed to exploit the linkages between agriculture, nutrition, and social protection in national food systems.

Sources: ADB. *Support labor migration Tajikistan*. (December 2020);
FAO. *FAO Harnesses the potential of migrant remittances in Tajikistan*. (January 2018).

Climate risk insurance. In the agricultural sector, disaster risk insurance is designed to compensate farmers for crop failures and adverse impacts from extreme weather or disasters triggered by natural hazards. This non-traditional index-based insurance pays out pre-set amounts based on an objective condition being met, such as the severity of an event, such as a disaster, rather than based on the value of the loss. Recognizing the importance of insurance for vulnerable groups in high-risk environments, the World Bank during COP27

launched a new vertical fund, the Global Shield Financing Facility, to help developing countries access more financing for recovery from disasters triggered by natural hazards and climate shocks. Broader opportunities for such facilities exist, including in the areas of insurance for net-zero transition, risk transfer solutions to deal with increasing physical risks, and provision of adaptation and resilience services. They can be tailored according to sectoral needs, including for energy and food sectors. Box 20 illustrates the use of climate risk insurance in Fiji.

Box 20: Parametric disaster risk insurance for farmers in Fiji

Many Pacific Islands are highly vulnerable to disasters triggered by natural hazards. Farmers and other vulnerable groups have limited financial capacity to cope with losses from disasters and limited access to climate- or disaster-risk insurance. Most insurance products do not cover losses from bad weather or economic disruption.

In August 2021, the United Nations Capital Development Fund (UNCDF), with support from the India-UN Fund and other partners, launched the first parametric micro-insurance scheme in the Pacific Islands. The initiative included a digital onboarding platform for aggregators and insurer partners and supported the Government of Fiji in granting a value-added tax exemption.

Policyholders can choose from: (i) wind coverage that pays out after extreme wind events, and (ii) storm coverage that protects against extreme rainfall and wind. Claims are processed within seven days of an event, enabling policyholders to quickly rebuild without having to use their savings or take out loans. Policyholders receive up to FJ\$1,000 (currently around \$460) in compensation for cyclone damage.

The insurance provides coverage to sugarcane, rice and copra farmers, fishermen, and market vendors through cooperatives. At the end of 2021, there were almost 1,250 policyholders. The product has the potential to be scaled-up across Fiji and other SIDS.

Source: UNCDF. *Parametric Insurance Meets A Critical Demand in the Fiji Market.* (November 2022).

2.2.3. Using the SDG framework to measure and amplify the impact of innovative finance

The adverse impacts of the polycrisis, particularly tighter financial conditions, have highlighted the importance of measurability and results management in ensuring effectiveness of public and private investments. Innovative finance solutions, including those discussed in the preceding section, require a framework against which their effectiveness can be assessed. The SDGs—with its 17 goals, 169 targets and 231 indicators—can serve as such a framework to inform decision making and planning, and to measure and manage impact. The use of the SDG framework can also help address greenwashing or “SDG-washing” in the financial sector, which entails companies making vague or false claims about their contributions to the SDGs for marketing purposes or to improve their image.

While sustainable finance using SDGs as a framework remains a small subset compared

with broader Environment, Social, Governance (ESG) frameworks, the SDGs are seeing greater uptake, especially as they have never been more important to guide a sustainable and inclusive recovery from the pandemic, and now the polycrisis. Two specific types of innovations in this area are SDG financing instruments that target SDGs directly (e.g., SDG Bonds and sustainability *sukuk*) and SDG-aligned sustainable finance wherein SDGs are used to inform investment decisions (e.g., SDG-aligned blended finance). While most of these innovations are found in other regions, there are several important examples in Asia and the Pacific.

SDG bonds. In recent years, SDG bonds—bonds that raise capital which the issuer uses for projects that advance the SDGs—have emerged to provide innovative products to investors. SDG bonds sit within a wider sustainability bond issuance body of practice that covers sustainability, green, and blue bonds. Originating in Europe, they have become more popular in Asia.

Box 21: SDG bonds in Asia and the Pacific

- **HSBC's \$1 billion SDG Bond**, launched in November 2017, was the first SDG Bond worldwide. Three times oversubscribed, it aimed at financing projects for 7 SDGs: SDG 3 (good health), 4 (quality education), 6 (clean water and sanitation), 7 (affordable and clean energy), 9 (industry, innovation and infrastructure), 10 (reduced inequalities), 11 (sustainable cities and communities), 13 (climate action). The selected projects were located in the UK, the US, Mexico, Sri Lanka, India, Singapore, and Dubai.
- HSBC followed this with a **UN SDG Sukuk** in October 2018, issued by HSBC Amanah Malaysia Bhd as the world's first UN SDG *sukuk*, worth RM 500 million (\$121 million at the time).
- The World Bank in November 2018 issued its own **SDG index-linked bonds** in Asia, worth \$3.52 billion, following similar issuances in Europe.
- In June 2019, Grameen Impact Investments in India and Acumen, a philanthropy-backed investor, issued the Livelihood Innovation Fostering the Economy (**LIFE SDG Bond**). It was worth ₹100 million (\$1.43 million at the time). The capital flowed to a pool of five social enterprises to enable sustainable livelihoods for youth in rural and urban areas.

Sources: HSBC. *HSBC UN Sustainable Development Goals Bond Report* (November 2018);
 New Straits Times. *HSBC Amanah launches world's first UN SDG sukuk*, priced at RM500m (October 2018);
 IISD. *World Bank Launches SDG-Linked Bonds in Asia*. (January 2019);
 Acumen. *Acumen and Grameen Impact Launch A Pioneering SDG Impact Bond for Livelihoods*. (June 2019).

As discussed earlier, *sukuk* form a key financing tool in countries using Islamic finance, and these have sometimes integrated the SDGs into their results approaches. The framework

of the sustainability *sukuk* issued by Malaysian energy company TNB Power Generation Sdn Bhd is one such example.

Box 22: Sustainability sukuk for Nenggiri Hydropower Plant in Malaysia

In June 2022, TNB Power Generation Sdn Bhd (TPGSB), a subsidiary of the state-owned Malaysian power company Tenaga Nasional Bhd, issued a sustainability *sukuk* worth RM1.5 billion (about \$341 million at the time) under its RMB10 billion (\$2.3 billion) *Sukuk Wakalah* Programme. The company intends to use the proceeds to finance the development of the 300MW Nenggiri Hydropower Plant Project in the northern state of Kelantan. The *sukuk* was issued in three tranches: RM150 million (10-year tenure),

RM750 million (15-year), and RM600 million (20-year). Once commissioned in mid-2026, the Nenggiri plant will generate about 600GWh of electricity per year. This will help stabilise the grid and contribute to the national target of generating 40 per cent of electricity from renewables by 2035.

Tenaga Nasional Bhd seeks to achieve net zero emissions by 2050. Its TPGSB *Sustainability Sukuk Framework* describes how the project benefits six SDGs—6 (clean water and sanitation), 7 (affordable and clean energy), 8 (decent work and economic growth), 11 (sustainable cities and communities) 13 (climate action), and 17 (partnerships for the Goals)—and specifies the SDG indicators it will use to report on the project’s impact on the Goals. The stated benefits include:

- up to 2,000 jobs for local people during the construction phase,
- flood mitigation,
- clean water supply,
- support to economic activities downstream, including by providing continuous water supply for agricultural activities, especially during the dry season,
- a reservoir that will provide opportunities for aquaculture and tourism.

The company contends that the affected communities that are being relocated for the project will benefit from a better quality of life in the long-term, with high quality housing; modern water, electricity, and sewerage infrastructure; an access road; health, educational, and community facilities; and income earning opportunities from rubber plantations that are being set up under the project.

Sources: TNB GENCO. *TNB Power generation SDN BHD Sustainability Sukuk Framework*. (April 2022).

Andritz. *Groundbreaking ceremony for Nenggiri Hydroelectric Power Plant, Malaysia – a milestone towards more renewable energy*. (June 2022).

Blended finance for the SDGs. The Government of Indonesia has established a public-private blended finance platform—SDG Indonesia One—that channels different forms of financing from public donors, private equity, philanthropists and investors into a mechanism that finances infrastructure projects

contributing to the country’s SDGs agenda. This integrated platform is managed by PT Sarana Multi Infrastruktur, a “Special Mission Vehicle” under the Ministry of Finance. The SDG Indonesia One—Green Finance Facility is one part of the platform to leverage investments for green infrastructure in different sectors.

Box 23: SDG Indonesia One – Green Finance Facility (SIO-GFF)

SIO-GFF, the first green finance facility in Southeast Asia, has been designed to address the lack of a large-scale pipeline of bankable green infrastructure projects in Indonesia. It has four pillars, namely, (i) commercial financing; (ii) concessional fund for de-risking; (iii) equity fund; and (iv) project development.

SIO-GFF uses public resources to catalyse private funds and channels the blended finance into infrastructure projects to achieve the SDGs in Indonesia. To be selected for financing, subprojects must meet clear “green” or SDG-related eligibility criteria and clear bankability targets (a minimum debt service coverage ratio of 1.05 and a positive net present value). At least 30 per cent of private, institutional, and commercial capital must be mobilised for each “green” subproject.

ADB has provided a \$150 million loan over 20 years to support SIO-GFF projects on green recovery to help achieve the SDGs, including low-carbon energy projects in hydropower, biomass energy and other renewables. The initiative could catalyse green projects totalling more than \$1 billion (eight times the original amount). It has strong potential to be replicated in other Asia-Pacific countries.

Source: ADB. *SDG Indonesia One: Green Finance Facility*. (2022).

2.3. Regional and multilateral cooperation initiatives to improve food and energy security

Through its effects on trade and geopolitical relationships, the polycrisis has exposed the fragility of the world’s food and energy systems. Protecting the systems’ resilience to ensure uninterrupted availability of affordable energy and food sources for all hinges on stronger cooperation between countries through regional and multilateral platforms. Regional and subregional initiatives, which complement the technical and country- or community-level interventions outlined above, span countries and can on a broader scale provide solutions to addressing the challenges wrought by the polycrisis and accelerate transitions to low-carbon and sustainable systems. Regional initiatives that are deemed crucial in time of the

polycrisis involve removing trade barriers and advancing just energy transition frameworks.

2.3.1. Removing barriers to cross-border trade in food and energy sectors

Restrictions on trade in agricultural products, whether in the form of policies, such as tariffs or bans imposed by governments, or because of inefficient customs systems and trade infrastructure, have many negative impacts on food security. In Asia and the Pacific, the polycrisis has given rise to new trade restrictions, particularly food-related, often with potential adverse impacts on local livelihoods and food security. Removing administrative and logistical barriers hindering international trade and strengthening multinational cooperation and transparency in this area are two important ways to help avoid the need for countries to resort to such measures in future crises.

Examples of multilateral cooperation to enhance energy security and promote renewable and modern energy in Asia and the Pacific include initiatives to create an enabling environment to facilitate regional electricity trade between six countries in the Greater Mekong Subregion led by the Regional Power Trade Coordination Committee (RPTCC).¹⁰⁸ In South Asia, supported by multilateral development banks and development agencies, countries collaborate through platforms such as the South Asia Regional Electricity Markets (SAREM) and the South Asia Regional Initiative for Energy Integration (SARI/EI).¹⁰⁹ In Central Asia, with the support of the Eurasian Development Bank, countries collaborate to promote efficient use of transborder water resources for increased electricity generation and more efficient irrigation systems. Such cooperation would open new subregional

opportunities for the joint operation of national energy systems to overcome energy deficits and promote economic growth.¹¹⁰

The Asia Pacific Economic Cooperation (APEC) established the APEC Policy Partnership on Food Security (PPFS) in 2011, with the primary aim to strengthen public-private cooperation in addressing food security issues in the region. In 2021, the PPFS, in collaboration with the APEC Business Advisory Council, launched the Food Security Roadmap Towards 2030 that focuses on productivity, inclusivity, and sustainability of food systems. The roadmap emphasizes the need for an open, fair, transparent, predictable, and non-discriminatory trading system to enable member countries to reap the benefits of international trade that could facilitate their food security and nutrition agenda.

Box 24: APEC list of environmental goods

To support green growth in Asia-Pacific, the APEC Economic Leaders Meeting in 2012 endorsed the APEC List of Environmental Goods to which reduced tariff rates of five per cent or less would be applied. In line with the Bogor Goals to promote free and open trade in the Asia-Pacific region, the policy measure supports trade and investment liberalization in environmental goods that directly and positively contribute to green growth and sustainable development objectives. The APEC list entails 54 products at the Harmonized Standard six-digit level, including goods such as solar water heaters, biomass boilers and turbines for geothermal energy production. The initiative illustrates the important role of the removal of trade restrictions in supporting the attainment of SDG 7. In 2021, Indonesia became the 19th APEC member economy to be fully compliant with the list.

Source: APEC. 2023 List of Environmental Goods.

2.3.2. Developing frameworks for “just” energy transitions

While coal dominates Asia and the Pacific’s energy mix and coal mining remains a major economic activity in the region, phasing down coal, the most carbon-intensive fossil fuel, is imperative to meet climate change goals. This will require substantial investment in renewable

energy power plants to allow countries to meet rapidly growing energy demand and find alternative sources of employment and government revenues. As many of the existing coal-fired generating capacities in the region are far from reaching the end of their lifespan, owners will be reluctant to close their plants early. ADB has designed an innovative way to overcome this hurdle (box 25).

Box 25: Energy Transition Mechanism (ETM) in Indonesia, Pakistan and the Philippines

ETM launched in November 2021, is aimed at accelerating Asia-Pacific countries’ transition from fossil fuels to clean energy. It is intended to be “a win for the climate, a win for local communities, and a win for developing economies”. It involves the facility buying and operating coal-fired power plants at a lower cost of capital than is available to commercial companies, allowing them to run at a higher margin but for less time while generating similar returns. The cash flow would then be used to repay debt and investors. The program, currently in its pilot phase, seeks to retire or repurpose 5-7 coal-fired power plants in Indonesia, Pakistan, and the Philippines and replace them with renewable energy capacity.

In November 2022, ADB signed a landmark memorandum of understanding with its Indonesian partners to jointly explore the early retirement of the first coal-fired power plant owned by an independent power producer (IPP), the 600MW Cirebon-1 plant in West Java. ADB is also working with Perusahaan Listrik Negara (PLN), Indonesia’s national public power utility, to identify candidate plants for early retirement. The ETM’s other recent milestones include establishing the ETM Partnership Trust Fund under ADB’s Clean Energy Financing Partnership Facility and developing the investment plan for Indonesia for the Climate Investment Fund-Accelerated Coal Transition (CIF-ACT), an investment program seeking to advance a just transition from coal power to clean energy in emerging economies.

Sources: ADB. *ADB Energy Transition Mechanism Marks Significant Milestones*. (November 2022).

ADB. *ADB, Indonesia, the Philippines Launch Partnership to Set Up Energy Transition Mechanism*. (November 2021).

Nevertheless, addressing the potential financial losses to owners of coal power stations and mines is not enough.¹¹¹ To ensure political acceptance and avoid adverse social and economic consequences, efforts to phase down coal need to be accompanied by social support mechanisms and regional development initiatives that ensure a just transition and capitalise on opportunities for new jobs in “green” industries.¹¹² Box 26

presents a new partnership approach—the Just Energy Transition Partnership—to support the phasing out of coal as part of a just transition. The Just Transition Support Platform, launched by ADB in late-2022, supports the same objective by building the capacity of member countries to strategically plan, implement, and finance just transitions; manage negative impacts; and increase benefits from the transition to net-zero.¹¹³

Box 26: Just Energy Transition Partnership

The Just Energy Transition Partnership is a new funding model designed to help countries transition from heavy dependence on coal production and consumption to renewable energy, while addressing associated social impacts and opportunities, such as those highlighted in the Paris Agreement and by the ILO. Half of the funding will come from donors and half from the private sector, as a mix of concessional loans, commercial loans, grants, guarantees, and investments.

In November 2022, the Partnership announced a support package for Indonesia in the form of \$20 billion financing for the period of three to five years. The package will be used to accelerate the retirement of coal-fired power stations, restrict the development of new plants, and accelerate investments in renewable energy capacity. Crucially, it will also implement concrete actions to achieve a just energy transition, particularly by addressing the needs of populations that are most vulnerable to the potential negative impacts of the transition.

Source: ASEAN Briefing. *Indonesia's Just Energy Transition Partnership: Impacts for the Green Economy*. (January 2023).



CHAPTER

3

**Reclaiming the decade of
action on the SDGs**

The first chapter of this report reviewed the devastating impacts of the polycrisis on the energy, food, and finance systems in Asia and the Pacific, and the implications for the relevant SDGs, highlighting the strong nexus between the three systems. The second chapter outlined specific opportunities and innovative approaches to mitigate these impacts and realize energy, food, and finance systems that are more sustainable, inclusive,

and resilient. This closing chapter brings together the report’s findings and proposes practical actions for countries and different stakeholders in the region to take, in the short and medium term, in three cross-cutting areas (figure 22). These areas have the potential to enable and reinvigorate progress towards the energy and food goals, in the face of the current crises and shocks.

Figure 22: Overview of actions across three cross-cutting areas



3.1 Strengthen regional and national partnerships across the energy-food-finance nexus

Responding to challenges that are cross-border and cross-sector in nature requires multinational and multisectoral solutions. Most existing multilateral solutions are in the form of sector-specific strategies, are undertaken by sector-specific actors, and target outcomes in a single sector. This report has demonstrated, however, that the socio-economic and political shocks wrought by the polycrisis have impacted energy, food, and finance systems in a deeply interconnected

manner. This situation necessitates re-thinking current approaches and exploring ways to unlock cross-sectoral synergies to build greater resilience against future shocks. A multifaceted approach is needed to deal with the fallouts of the polycrisis and plan the region’s development pathways based on an energy-food-finance nexus approach. To address the derailment of progress towards the SDGs and build back better, a wide range of partners—Asia-Pacific governments and energy, food, and finance system stakeholders from the grassroots to the national level—need to work together to design and implement collective solutions to our shared challenges. Strengthening existing, and forging new, multinational and multi-

stakeholder partnerships across the energy-food-finance nexus is vital to the development and implementation of effective strategies to regain momentum on the SDGs until 2030. Actions broadly fall into two categories: regional and subregional partnerships, and country-level collaborations.

Priority areas for action

Strengthening regional and subregional partnerships for crisis response. Various regional and subregional networks and mechanisms—some of which are highlighted in Chapter 2—are playing valuable roles in devising responses to the crises, including solutions to transform the energy, food, and finance sectors. Existing regional partnerships need to be strengthened, and the benefits of establishing new ones explored. Opportunities exist for regional-level partnerships to work in tandem with global initiatives in developing crisis response strategies, while adding value by localizing solutions to suit the unique challenges faced in the region. For instance, governments and international organisations in the region can capitalise on the work of the Global Crisis Response Group and establish a similar Asia-Pacific body to shape regional planning for crisis management, including strategies to deal with future shocks. Given the increasing inter-connected nature of economies, energy and food supply chains, and financial systems across countries, it is important for regional trade bodies to factor in such interconnectedness when updating their strategies. These organisations can play a role in the short-term to facilitate sharing of information on new trade restrictions on food and energy commodities, to improve countries' understanding of the impacts of such policies on their counterparts and the need to take a longer-term perspective, as the WTO suggests.¹¹⁴

Engaging national stakeholders across the energy-food-finance nexus to align policy and planning. The polycrisis makes clear that responses and policies related to energy, food, and finance systems cannot be developed and implemented in silos. National strategies that exploit the synergies between these sectors, while acknowledging potential conflicts and

policy impacts, have a critical role to play. The success of these strategies will hinge upon the ability to make use of and strengthen cross-agency partnerships within countries, to foster more coherent and cohesive actions that consider common challenges and synergies among the three sectors. Relationships between governments and international partners (both bilateral and multilateral) working on relevant sectors need to be continuously nurtured. Intergovernmental relations must be deepened to enable subnational governments to play a bigger role in responding to the polycrisis. The institutional frameworks for policymaking need to reflect the increasing complexity and multifaceted nature of our future world. This may require building the systems and enhancing institutional capacity to enable integrated modelling and generate analytics around the dynamic interplay among the three sectors. Public sector officials working in these sectors can benefit from cross-agency exchanges and, more importantly, innovation needs to be incentivised within government itself to bring about creative policy solutions. Improving participatory policymaking surrounding the nexus—through stronger national and sub-national level partnerships with energy, food, and finance-experts in academia, think tanks, business associations, civil society organisations, and community organisations—will be crucial to support progress towards the SDGs.

3.2 Build data-driven, agile institutions

The polycrisis highlights the importance of governance for resilience. The capacity of institutions to address unforeseen and evolving challenges determines a country's recovery and subsequent development trajectory. Amid increasing uncertainties, adopting models of "anticipatory governance" that entail analysing different future scenarios using strategic foresight methods will enable more effective planning.¹¹⁵ This approach is predicated on the availability and use of accurate and timely data. Data-driven and adaptive institutions can enable subnational administrations and countries in Asia and the Pacific to better respond to crises and build systemic resilience over the medium to long term. This process requires

a longer-term perspective and, as is the case with regional and national partnerships, also needs regular review and adjustment.

Priority areas for action

Incentivizing data-driven solutions across the energy-food-finance nexus. The emergence of “big data”, “open-source data”, and digital technologies presents an unprecedented opportunity to improve the effectiveness of public policy and private solutions related to energy, food, finance, and economic crises. However, most countries in the region are yet to take full advantage of these technological developments. Developing national data plans—through public-private collaboration—that identify key data needs is a first step towards improving policy responses to crises involving the three sectors and improve planning for green and inclusive transformations. To deal with the challenges presented by the polycrisis, disaggregated and time-sensitive data on changes in energy and food consumption patterns, nutritional intake, and renewable energy prices are of particular importance. Understanding how consumers at the local level behave during shocks is also crucial. Such data will provide the basis for assessments of the impact of the polycrisis on the region’s energy and food systems and for the design of more effective policy, technological, and financing solutions. Other relevant data in the context of energy and food security include weather forecasts, geospatial maps of agricultural areas and technical performance of energy utilities. A repository of low cost and scalable practices is essential for cross-fertilization of knowledge and experience and multi-stakeholder collaboration.

Asia-Pacific countries should invest in developing robust processes, digital systems, and human capacity to facilitate the nationwide collection of extensive, recent, and reliable data on energy and food systems. Much responsibility for data collection currently falls on national statistical bureaus. However, the role of private entities—especially in designing innovative data collection and analysis systems based on digital technologies, artificial intelligence, and mobile phones—is also critical. To scale up private sector data

gathering and analytical systems, governments may need to review their policy and regulatory frameworks to incentivise private companies’ involvement in data collection efforts and, more importantly, to encourage individuals to participate in the process.

Applying agile governance and participatory scenario practices to inform policy planning.

Agile governance, at its core, refers to the ability of institutions to adapt to changing circumstances through responsive and iterative policymaking. It implies multi-stakeholder collaboration, especially with businesses, and the deployment of digital technologies.¹¹⁶ This “Agile”, or “Anticipatory, Agile, and Adaptive (“Triple A”) Governance” approach, which is designed to be more people- and outcome-focused, inclusive, flexible, and innovative, offers a model of future governance.¹¹⁷ The advantage of this approach is that it can be tailored to address the challenges posed by current and future contexts to enable precision and speed in responding to crises and the redirection of strategies as circumstances evolve. Some governments in the Asia-Pacific region, including in Singapore and Japan, are in the process of implementing agile governance that can potentially serve as a model for other countries. Regional institutions also should heed the Agile model as they support Asia-Pacific countries in this journey, for example to embrace a culture of experimentation, innovation, and learning, along the lines of UNDP’s Accelerator Labs.¹¹⁸

In an uncertain environment, institutions must continually assess risk and plan for multiple scenarios. Such planning needs to integrate external factors such as climatic events, political shocks and different circumstances in the global, regional, national and subnational food, energy, and finance systems, as well as risks from the interactions of these areas. The result is identification of different scenarios according to importance, and their respective implications. This impact analysis helps policymakers and other stakeholders to assess the impacts of different scenarios on indicators in energy, food, and finance systems, their interconnections, as well as relevant SDG targets. The scenario analysis can be used to design actions that should

be taken if and when different scenarios emerge. Importantly, countries should use a multi-stakeholder, collaborative process to do this; participatory planning can be the central driver to operationalise this new approach and design a network of robust and agile public and private sector institutions in the region. The implications for institutions are wide-ranging and will involve change management processes to implement improved structures, systems, and work culture, all of which will enable institutions to operate more effectively when confronting global shocks. Introducing such operational changes may include making processes more flexible, recruiting and training staff with different or new skillsets, fostering a culture that encourages experimentation and learning, and harnessing digital systems to facilitate data-driven policymaking, open communications, and access to real-time information during crises.

3.3 Target finance towards the SDGs

Mobilising new sources of international and domestic financing to transform the energy and food systems to deliver on the 2030 Agenda and aligning public and private financial flows with the SDGs are critical areas for action. Asia-Pacific governments can, as a first step, carry out rigorous analysis of the impact of the polycrisis on SDG progress in their country, producing different trajectories for SDG attainment. While estimations for SDG financing needs are readily available, these must be updated taking into consideration the reversal in SDG progress brought about by the polycrisis, particularly for energy- and food-related SDGs. Regional institutions have a role to play in supporting this important work. This will then provide a knowledge base for developing practical strategies for mobilising new, targeted finance towards the attainment of the SDGs over the next seven years.

Priority areas for action

Financing adaptive social protection systems to improve the ability of vulnerable households to adapt to energy- and food-related shocks. Social protection systems have played a critical role in protecting livelihoods and food security

as well as enhancing long-term resilience in the face of recent humanitarian crises and shocks.¹¹⁹ The polycrisis has highlighted the urgent need for robust, inclusive and adaptive social protection systems, implemented by all levels of government, which concurrently address multi-dimensional risks. Financing these systems, especially in the current fiscally constrained environment, is a major challenge for many countries in the region. Expenditure on social protection accounted for a large part of Asia-Pacific countries' stimulus packages, and governments may also need to access crisis support measures, such as the IMF's Food Shock Window or, for the longer-term, reach out to the international community or consider alternative funding sources like windfall taxes on large oil and gas companies.¹²⁰ Ultimately, domestic resource mobilisation is the longer-term solution for governments to finance national social protection programmes. Comprehensive beneficiary registration systems, combined with innovative financing models, digital technologies, and measures to address the digital divide, will maximize efficient and effective delivery of social protection programmes to the most remote communities and people excluded from traditional financial markets. Enhancing institutional capacities of subnational administrations is a key enabling factor for these efforts. In the context of a just energy transition, it will be essential for coal-mining countries to ensure their social protection systems incorporate adjustment mechanisms for workers affected by mine closures and facilitate retraining so these workers can benefit from employment opportunities in the green economy.

Encouraging financiers to use the SDGs as a sustainability framework for investment-ready projects in the energy and food sectors.

Well-prepared investment projects in areas like electricity generation, electricity transmission and distribution, and food processing are more likely to attract investors; the lack of such projects is a major impediment to channelling greater domestic and international investments. Countries need to identify priority energy and food projects by undertaking market sounding, economic, financial, social, and environmental feasibility assessments, and appropriate risk allocation. Efficient and

transparent procurement processes in parallel ensure projects are converted to tangible infrastructure. Aligning these investments to the SDGs has significant potential benefits for energy and food system transformations and accelerating progress on the goals. In recent years, there has been a growing interest in using the SDGs as a framework to measure and manage impact, both in the public and private sectors, and at both national and local levels. This entails integrating the SDG targets and indicators into existing sustainability metrics for various financial instruments and investment vehicles to measure social and environmental impact. Enabling this trend, through public-private collaborations, the development of SDG impact frameworks and development of bankable projects for such SDG-aligned financing, is important to orient greater amounts of financing that is aligned with the SDGs. Development agencies and private investors can collaborate to define common frameworks to improve alignment of private sector incentives and practices with the SDGs. These frameworks need to be designed to be consistent with standard corporate reporting frameworks and apply to a wide range of financing institutions and financial models. Within donor agencies, using project design and assessment templates to address synergies between agriculture and food-related and energy goals is useful, alongside broader aspects, such as environmental impact and gender.

Positioning financial market regulators to manage risks from climate change and smooth the low-carbon transition.

Successfully mobilising finance for the energy- and food-related SDGs and the low-carbon transition, while managing risk, will

require changes to how central banks and financial market regulators operate. These institutions have an important role to play in managing climate-related financial risks, such as climate-induced damage to assets or loss of value in sectors during the transition, and facilitating a low-carbon transition.¹²¹ The challenges facing financial regulators in emerging markets in Asia and the Pacific are particularly acute because their financial markets are underdeveloped, information is limited, agriculture (which is particularly susceptible to the impacts of climate change) and coal (which is negatively affected by the transition) dominate many economies, and millions of people are food insecure.¹²² Central banks and other financial market regulators in the region should review their approaches and consider adjusting them to better manage risk in the face of climate change and the transition. Managing these emerging risks will require such institutions to expand their information bases, more effectively incorporate climate change and transition risks in their modelling and amend regulations. The latter may include enhancing information disclosure requirements or imposing higher capital and liquidity requirements on financial institutions that are particularly exposed to such risks.¹²³ The design of new approaches must be founded on an in-depth understanding of the domestic economy and the likely impacts of climate change and the transition.¹²⁴ Greater availability of information can also help market players make better decisions in the face of climate change and transition. The Network of Central Banks and Supervisors for Greening the Financial System, of which many central banks in the region are members,¹²⁵ may support countries in these efforts.

Conclusion

The convergence of multiple crises has created turmoil in the Asia-Pacific region's economy. The resulting increases in food and energy prices, along with severe macroeconomic and financial impacts, have further derailed progress towards the SDGs and pushed millions more people in the region into poverty. To achieve the SDG targets of ending hunger and ensuring access to affordable, reliable, sustainable, and modern energy for all, countries must take urgent action to address the weaknesses in the region's energy, food, and financial systems and improve the resilience of these systems to future shocks.

Transforming the food and energy sectors in a green and inclusive way can turn challenges of the polycrisis into opportunities for a more resilient, sustainable future and achievement of the SDGs. All levels of governments are pivotal in achieving these ambitions. The

key pathway to such transformations is not only to accelerate efforts in these areas, but also to explore synergic opportunities across the energy-food-finance nexus, with more innovation (by embracing new technologies, business models, policy frameworks, social and financial innovations) and more inclusive approaches (by enabling greater accessibility to marginalized and vulnerable groups).

Major cross-cutting opportunities to make progress in these areas are strengthening multi-stakeholder partnerships across the food-energy-finance nexus to facilitate the development of integrated strategies; building agile, dynamic institutions and processes that will render the region and its energy, food, and finance sectors better placed to manage future shocks; and mobilizing and aligning finance towards the SDGs.

Endnotes

Introduction

- ¹ The report's concept of "polycrisis" is founded on similar concepts that are increasingly being discussed in the literature. According to Lawrence, et al. (2022) "[a] global polycrisis occurs when crises in multiple global systems become causally entangled in ways that significantly degrade humanity's prospects. These interacting crises produce harms greater than the sum of those the crises would produce in isolation, were their host systems not so deeply interconnected."
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