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RETHINKING SOCIAL PROTECTION AND CLIMATE CHANGE

The medium-term implications of climate change for social protection policy and programming in the Asia-Pacific region

Climate Change and Social Protection (CCASP) Research and Advisory Project Cecilia Costella and Anna McCord

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EXECUTIVE SUMMARY

Introduction

Accelerating climate change will generate significant social, economic and political disruption globally and in the Asia-Pacific region by the middle of this century. It will profoundly reshape the socio-economic risks people face and their ability to meet basic needs, significantly extending poverty and vulnerability. Social protection, the set of public measures provided by a society to transfer resources with the aim of protecting its members against economic and social distress, has the potential to play an important role in helping to manage these challenges and enabling the structural changes required to achieve a green transition. However, to contribute effectively, existing social protection systems will need significant transformation in terms of scale and design.

This report aims to support a shift in vision around social protection and climate change in the Asia-Pacific region by improving understanding of the socio-economic challenges likely to arise from climate change in the medium to long term, and how social protection can be used to manage them. The report provides a framework which goes beyond the more usual analysis – focused on climate extremes, shocks and disasters – to conceptualise the wider set of risks arising from climate change, and the potential role of social protection to address them. It then explores the projected medium-term socioeconomic impacts of climate change in the region and their implications for social protection. Next it provides a brief overview of climate-resilient social protection globally and maps current policy and practice on linking social protection and climate change in the region. Finally, the report critically assesses how social protection needs to be reconceptualised to meet the challenges arising from climate change, and provides policy, practice, financing, and learning recommendations to take forward the climate and social protection agenda. The report is aimed at social protection and climate policymakers and practitioners in the Asia-Pacific region, but its findings and recommendations are of global relevance.

The climate challenge

Negative climate impacts are already taking place across the the Asia-Pacific region, which is particularly exposed and vulnerable to climate change due to its high dependence on agriculture and the clustering of significant populations and infrastructure in coastal cities. The region has already experienced average temperature increases, sea level rise, and a shift towards more pronounced and variable precipitation and these impacts are expected to intensify significantly, even under optimistic warming scenarios (IPCC, 2022). While there is uncertainty regarding the detailed timeframe and location of climate impact, predictions consistently indicate that climate change will have impacts on a range of ecological and human systems, including water and food systems, health and wellbeing systems and urban and infrastructure systems.

These systems impacts are projected to adversely affect key determinants of socio-economic welfare in the medium term, including food and water security; health and nutrition; infrastructural stress; urban pressure; local economic and labour market performance; poverty and inequality; peace and mobility, and overall economic growth (IPCC, 2022). Significant livelihood disruption, migration and impoverishment are likely, and the introduction of mitigation policies may further exacerbate poverty due to loss of employment, income and price rises. Chronic poverty is projected to increase, as are the numbers of people affected by increasingly frequent and severe shocks. Compounding impacts, tipping points and domino effects will result in step changes as well as incremental increases in the scale of climateinduced poverty, significantly reducing the ability of many populations to meet their basic needs by the mid-century.

At the same time as needs are likely to increase, response capacity will be constrained as states face climate-induced GDP-loss and challenges in ensuring food and water security, the provision of basic services and income security. This has the potential to adversely affect the state-citizen contract and political and social stability. Resources available for informal social protection are also likely to be compromised as climate-induced impacts tend to affect whole communities and large parts of societies, putting pressure on community-based mutual support. Competition for access to scarce basic resources such as food and water are likely to result in increased tension and conflict within and between countries.

This report does not aim to provide a comprehensive analysis of impacts, as current models struggle to map the complexity of socio-economic systems and their interaction with climate systems (IPCC, 2022). Nor does it provide detailed analysis of poverty and inequality impacts, including those related to gender equality outcomes, disaggregated across population groups, as such data is not yet available. Rather, the report provides an indicative guide to the immense scale and reach of the impacts that climate change is likely to engender in the coming decades and the multiple dimensions across which impacts will be experienced.

Urgent need for policy responses and the role of social protection

There is a short window of opportunity to engage strategically in planning responses to manage these impacts, including social protection responses. Without ambitious action, climate change will significantly increase the depth and scale of poverty in the region – and worldwide – rendering new groups vulnerable and negatively impacting societies across almost all aspects of human development, including health, food and water security, economic security and stability.

Social protection, has the potential to play a significant role in supporting Climate Resilient Development (CRD), as recognised by the IPCC (IPCC, 2022), protecting the right to an adequate standard of living set out in Article 22 of the Universal Declaration of Human Rights (UN General Assembly, 1948). However, it can only play this extended role in addressing the large-scale socioeconomic impacts of climate change in the medium to long term if implemented strategically and at scale. This report considers how social protection might play this role, using a framework which identifies five potential functions in relation to climate change (adapted from Costella et al., 2023):

- Reducing underlying vulnerability to climate change, by directly reducing income poverty; contributing to human development and productive outcomes, such as education, health and productive livelihoods; and supporting increased equity, gender equality, inclusion, and social justice;
- Responding to climate shocks and disasters, by transferring income to cushion the effects of shocks in anticipation or in response;
- Offsetting the negative welfare impacts of climate transition policies, by supporting those whose income security is affected by policies aimed at reducing greenhouse gas (GHG) emissions, protecting the environment, or otherwise managing climate change;
- Facilitating and enabling climate change adaptation options, by incentivising behaviours and practices that enable adaptation; and
- Contributing to reduced greenhouse gas emissions and carbon sequestration, by promoting engagement in mitigation activities or measures that reduce emissions.

The state of climate-resilient social protection globally and in the region

At the global level, various policy and program initiatives linking social protection and climate have been developed during the last decade, including conceptual and operational approaches that address some aspects of climate risk management, such as Adaptive, Climate-Responsive, or Shock-Responsive Social Protection, among others. However, the operationalisation of social protection approaches for climate change – especially of approaches that consider the full scope of impacts of climate change in the medium term – remains limited and there is limited evidence of the effectiveness of scattered examples. In particular, the focus of social protection practice in relation to climate change remains on responses to shocks and climate extremes, and the potential impacts of climate change – on food production, migration and economic growth, etc.- which are likely to materialise over the coming decades are not yet being strategically considered in analyses of poverty and associated social policy needs or social protection responses. The social protection sector has yet to recognise its potentially central role in realising the net-zero visions of the 'Just' and 'Green Transition' approaches and achieving the structural and economic transformation needed to adapt to and mitigate climate change.

In the Asia-Pacific region, there have been attempts to link social protection and climate change over recent decades, and a wide variety of social protection innovations, programming options and experiences across can be found across all five functions. However, these programs seem to be islands of innovation – mostly disconnected from each other and from most mainstream social protection programming, and not directly aligned with national or regional climate strategies. Their coverage is low, interventions are predominantly small in scale, and there has been little evaluation of their effectiveness or the feasibility of large-scale replication in relation to projected future needs. Interventions are not currently informed by a strategic analysis of medium-term climate needs in terms of their vision or scope. They are based on an implicit assumption that future needs will be essentially similar to current needs, based on incremental rather than profound step changes. Overall social protection in the region remains insufficiently developed to meet current and future climate challenges.

Reconceptualising social protection to meet the climate challenge

The current conceptualisation of social protection – globally and in the region – needs to be reconsidered in response to the vast economic and social transformations that climate change will bring about in the coming decades. The sector's strategic vision and programming needs to be climate informed and accommodate the profound implications of climate change in terms of scale, type, duration, and spatial distribution of social protection needs. Large-scale increases in the size of populations unable to meet their basic needs without external support will have implications for the scale of social protection coverage and the type of instruments adopted. Different, more complex and dynamic risks will have implications for the duration of provision required and extending coverage to new groups such as vulnerable urban populations, internal and transboundary migrants and those affected by the green transition. Adapting the geographic and spatial distribution of provision to accommodate climate-induced needs will necessitate rethinking the way in which social protection can be effective in contexts of mobility and displacement.

This reconceptualisation will need to be informed by an understanding of the implications of climate change for poverty, and a reconsideration of some of the orthodoxies that inform current program design but may no longer be relevant in a rapidly changing context. This implies radical rethinking across six domains: institutions and mandates; policy alignment; coverage and targeting; instrument and program design; operational systems; and financing. Engaging with this process of reconceptualisation is critical to enable the sector to develop a meaningful response to the emerging climate-induced needs identified in this report, and will require a major shift of global ambition, vision and urgency.

This report is intended as a resource to assist colleagues in the social protection community to participate in this process and engage with the realities of the climate challenge ahead.

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ACRONYMS

AA	Anticipatory Action		
AADMER	ADMER Agreement on Disaster Management and Emergency Response		
ACFP	Australian Climate Finance Partnership		
ADB Asian Development Bank			
ALMP Active Labour Market Policy			
AIFFP	Australian Infrastructure Financing Facility for the Pacific		
APAN	Asia-Pacific Adaptation Network		
APCP	Australia Pacific Climate Partnership		
AR6	IPCC Sixth Assessment Report		
ASEAN	Association of Southeast Asian Nations		
ASP	Adaptive Social Protection		
CANCC	Coalition of Atoll Nations on Climate Change		
CAP	Climate Action Programme		
CARICOM	CARICOM Caribbean Community		
CCASP	CASP Climate Change and Social Protection		
CCM Climate Change Mitigation Policies			
CDRFI	RFI Climate Disaster Risk Financing and Insurance		
CIDs	s Climatic Impact Drivers		
CLP	LP Chars Livelihood Programme		
COSPPac	DSPPac Climate and Oceans Support Program in the Pacific		
CRN Climate Resilient by Nature			
CRD	RD Climate Resilient Development		
CSIRO	SIRO Commonwealth Scientific and Industrial Research Organisation		
DFAT	Department of Foreign Affairs and Trade		
DFID	Department for International Development		
DRF	Disaster Risk Financing		
DRFI	FI Disaster Risk Financing and Insurance		
DRM	Disaster Risk Management		
DRR	Disaster Risk Reduction		
EU	European Union		
EWS Early Warning System			
FCDO	Foreign, Commonwealth and Development Office		
GDP Gross Domestic Product			
GHG	Greenhouse Gases		
GIZ	German Agency for International Cooperation GmbH)		
HMIC	High- and middle-income country		
IAM	Integrated Assessment Model		
ICESCR	SCR International Covenant on Economic, Social and Cultural Rights		
IDMC	DMC Internal Displacement Monitoring Centre		
IDP Internally Displaced Persons			
IIED	IED International Institute for Environment and Development		

ILO	International Labour Organisation	
IPCC	Intergovernmental Panel on Climate Change	
KfW	KfW Bank aus Verantwortung	
L&D Loss and Damage		
LMIC	MIC Low- and middle-income country	
NDC	Nationally Defined Contribution	
OAOR	One ASEAN One Response	
ODA	Overseas Development Assistance	
P4SP	Partnerships for Social Protection	
PES	Payment for Environmental Services	
PICAP	Pacific Insurance and Climate Adaptation Program	
PIP	Program Indonesia Pintar	
РКН	Program Keluarga Harapan (PKH)	
PMT	Proxy Means Test	
PMUY	1UY Pradhan Mantri Ujjwala Yojana Program	
PNG	Papua New Guinea	
PSNP	Productive Safety Net Programme	
RCPs	CPs Representative Concentration Pathways	
RCCAP Regional Climate Consortium for Asia and the Pacific		
RCM Regional Climate Model		
RKR Representative Key Risk		
SA	A Social Assistance	
SACEP South Asia Cooperative Environment Programme		
SDGs	Sustainable Development Goals	
SEAN-CC	South-East Asia Network of Climate Change Offices	
SEPD	Subregional Environmental Policy Dialogue	
SFDRR	Sendai Framework for Disaster Risk Reduction 2015–2030	
SI	Social Insurance	
SP	Social Protection	
SPREP	Secretariat of the Pacific Regional Environment Programme	
SRSP	Shock-Responsive Social Protection	
SSPs	Shared Socioeconomic Pathways	
TAR	Third Assessment Report	
UNDP	United Nations Development Programme	
UNEP	EP United Nations Environment Programme	
UNESCAP	ESCAP United Nations Economic and Social Commission for Asia and the Pacific	
UNFCCC	NFCCC United Nations Framework Convention on Climate Change	
UDHR	HR Universal Declaration of Human Rights	
USAID	United Stated Agency for International Development	
WB	World Bank	
WBG	World Bank Group	
WFP	World Food Programme	
WGII	Working Group II	
WHO	World Health Organisation	

GLOSSARY

AR6: The Sixth Assessment Report (AR6) produced by the UN Intergovernmental Panel on Climate Change (IPCC). The AR6 consists of three Working Group (WG) contributions and a Synthesis Report summarising the state of scientific, technical and socio-economic knowledge on climate change, its impacts and future risks, and options for reducing the rate at which it is taking place. This report draws primarily on the WGII contribution to the Assessment Report, Climate Change 2022: Impacts, Adaptation and Vulnerability, which assesses the impacts of climate change, looking at ecosystems, biodiversity, and human communities at global and regional levels and reviewing vulnerabilities and the capacities and limits of the natural world and human societies to adapt to climate change. This report is referred to throughout as AR6.

Climate Change Adaptation: The process of adjustment in human systems to actual or expected climate change effects to moderate harm or take advantage of beneficial opportunities (IPCC, 2022). Adaptation actions can be either incremental (where the primary objective is to maintain the integrity of an existing system) or transformative (where the objective is to change the fundamental nature of a system in response to climate change and its impacts). The need for adaptation varies from place to place, depending on the risk to human or ecological systems. Adaptation actions can be grouped into four categories: infrastructural and technological; institutional; behavioural and cultural; and nature based.

Climate Change Adaptation Options: The array of strategies and measures that are available and appropriate for addressing adaptation, which can be categorised as structural, institutional, ecological or behavioural (IPCC, 2022).

Climate Change Mitigation: Human interventions to reduce emissions or enhance the absorption of greenhouse gases by carbon sinks (IPCC, 2021). Mitigation can reduce emissions by transitioning to sustainable energy sources, conserving energy, and increasing efficiency. In addition, CO2 can be removed from the atmosphere by enlarging forests, restoring wetlands and using other natural and technical processes to promote carbon sequestration. **Covariate shock:** the experience where many households in the same geographical location suffer similar shocks (i.e. community shocks, such as natural disasters or epidemics)

COP27: The 27th Conference of the Parties to the United Nations Framework Convention on Climate Change which took place in November 2022.

Green transition: A shift towards economically sustainable growth and an economy that is not based on fossil fuels and overconsumption of natural resources. The concept of green transition contains societal actions that seek to mitigate climate change (by reducing GHG concentration) and adapt to it, while acknowledging ecological and environmental degradation caused by other factors, such as overconsumption.

Idiosyncratic shock: the particular experience where one household's experience is typically unrelated to neighbouring households' (i.e. household-level shocks, such as death, injury or unemployment)

Intergovernmental Panel on Climate Change (IPCC):

The international body for assessing the science related to climate change, set up in 1988 by the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) to provide policymakers with regular assessments of the scientific basis of climate change, its impacts and future risks and options for adaptation and mitigation.

Just transition: Refers to a set of principles, processes and practices that aim to ensure that no people, workers, places, sectors, countries or regions are left behind in the transition from a high-carbon to a lowcarbon economy. It stresses the need for targeted and proactive measures from governments, agencies and authorities to minimise any negative social, environmental or economic impacts of economywide transitions while maximising benefits for those disproportionately affected.

Loss and Damage (L&D): While no formal definition exists, the term is used to refer to harm caused as a result of the impacts of climate change (both slow onset and extreme weather events) that occur despite, or in the absence of, adaptation and mitigation.

Representative Concentration Pathways (RCPs):

Time-dependent projections of atmospheric greenhouse gas (GHG) concentrations adopted by the Intergovernmental Panel on Climate Change (IPCC) to describe different climate futures, all of which are considered possible depending on the volume of greenhouse gases (GHG) emitted in the years to come, and their atmospheric concentrations. The RCPs, which range from 1.6 to 8.4, are consistent with varying socio-economic assumptions and are presented together with Shared Socio-Economic Pathways (SSPs) in the current literature.

Representative Key Risks (RKRs): Key risks are a set of potentially severe risks resulting from human interference with the climate system, likely to become increasingly dangerous over time due to changes in hazards and/or of the exposure/vulnerability of societies or ecosystems. The concept of RKR was developed in AR6 to capture a wide variety of interconnected risks to human or ecological systems within a limited number of categories to facilitate communication and assessment. The 120 RKRs identified by the IPCC are grouped into eight categories: risk to low-lying coastal socio-ecological systems; risk to terrestrial and ocean ecosystems; risks associated with critical physical infrastructure, networks and services; risk to living standards of already vulnerable groups and aggregate economic outputs; risks to human health; risk to food security; risk to water security; and risks to peace and human mobility.

Responses to climate change: Denotes policies, technologies, processes, investments or other activities undertaken in reaction to or with the intent of addressing some aspect of climate change (IPCC, 2022). Responses to climate change encompass what is typically known as climate change mitigation and adaptation. It provides a framework for understanding human actions to manage or reduce climate change, how they reduce risk, but also how they may create them (sometimes inadvertently, and sometimes to others than those who implement the response, in other places, or later in time) (O'Neill et al., 2022). This report uses the term to refer to policies or other institutional actions that aim to manage or reduce climate change. Shared Socio-Economic Pathways (SSPs): Five illustrative scenarios used in AR6 to describe the future greenhouse gas emissions associated with different climate policy contexts with varying levels of adaptation and mitigation. Climate scientists consulted in the production of this report suggested that a warming of 2.7 degrees by 2100 is the most likely scenario, conforming to SSP2. This scenario is consistent with an intermediate GHG emissions scenario in which CO2 emissions start to fall after 2050 but fail to reach net zero by 2100.

Social protection: The transfer of resources to individuals and families, implemented or mandated by governments, with the goal of helping them to maintain income in times of adversity or to raise their living standards (adapted from Midgley, 2022). Social protection includes social assistance, social insurance, and active and passive labour market policies (ILO, 2021, Midgley, 2022). This report focuses primarily on social assistance and social insurance.

Social assistance (also known as 'social safety nets') comprises non-contributory schemes that provide conditional and unconditional transfers for priority groups and can be either universal or poverty targeted.

Social insurance comprises contributory schemes that provide benefits such as unemployment, disability, maternity provision and pensions.

Active labour market policies (ALMPs) are government programs that intervene in the labour market to help the unemployed find work (for example, training, job search facilitation).

1 INTRODUCTION

Accelerating climate change is reshaping the socio-economic risks people face and is likely to lead to significant social, economic and political disruption, globally and in the Asia-Pacific region.

The most recent Intergovernmental Panel on Climate Change (IPCC report) identifies widespread negative impacts already taking place across a range of human systems, including water and food systems, health and wellbeing systems and urban and infrastructure systems with damage to critical economic sectors (IPCC, 2022). The Asia-Pacific region is particularly exposed and vulnerable to climate change. This vulnerability is due in part to its high dependence on agriculture and the clustering of significant populations and infrastructure in coastal cities, many already impacted by sea level rise. Climate change is likely to result in livelihood losses, food and water insecurity and increased morbidity, among other impacts. Without ambitious action, climate change will significantly increase the depth and scale of poverty in the region – and worldwide – rendering new groups vulnerable and negatively impacting societies across almost all aspects of human development, including health, food and water security, economic security and stability.

There is now a short window of opportunity to engage strategically in planning responses for this accelerating crisis, including significantly expanding social protection systems to protect people against the impacts of climate change while supporting the green transition process. Social protection, the set of public measures provided by a society to transfer resources with the aim of protecting its members against economic and social distress, has the potential to play a significant role in supporting Climate Resilient Development (CRD), as recognised by the IPCC (IPCC, 2022). In particular, social protection has the potential to significantly contribute to managing climate change impacts on society by reducing vulnerability, responding to shocks, enabling adaptation and mitigation responses, and offsetting the negative welfare impacts of transition policies and measures, especially for the most vulnerable and marginalised (Costella et al., 2021; Costella et al, 2023).

However, social protection can only play a significant role if implemented strategically and at scale, an approach that as yet remains unrealized. In the Asia-Pacific region, social protection coverage remains extremely low on average, with 70% of the regional population (excluding China) without access to any form of social protection. Although there has been innovation and experimentation linking social protection and climate change, climate risks still need to be strategically integrated into social protection systems. Initiatives seeking to integrate social protection and climate change more directly have tended to be small relative to the magnitude of the challenge.

There is a need for a more comprehensive conceptualisation of social protection as a response to the vast economic and social transformations that climate change will bring about in the coming decades. Such conceptualisation will require considering poverty through a climate lens and social protection's role in supporting climate change adaptation and the transition to more sustainable, green economies. It will also require a major shift of global ambition, vision and urgency in current social protection thinking.

This report aims to support this shift in vision in both the social protection and climate sectors, promoting aligned policy and programming in the Asia-Pacific region by improving the social protection sector's understanding of the implications of climate change. It considers how social protection can contribute to managing the impacts of climate change by consolidating learning on existing experiences and approaches in the region and worldwide. The report is the output of the Climate Change and Social Protection (CCASP) Research Initiative, which seeks to inform and support an expanded role for social protection in addressing the large-scale socio-economic challenges likely to arise from climate change in the medium to long term.



THIS REPORT AIMS TO SUPPORT THIS SHIFT IN VISION IN BOTH THE SOCIAL PROTECTION AND CLIMATE SECTORS The report is aimed at social protection and climate audiences in the Asia-Pacific region, but its findings and recommendations are globally relevant. Within the Asia-Pacific region, it focuses on three subregions: South Asia, South-East Asia and the Pacific, which broadly conform to the IPCC's subregional categories (IPCC, 2022).¹

The report:

- » Provides a conceptual framework on climate change risks' implications for social protection that is comprehensive (goes beyond the more usual analysis focused on climate extremes, shocks and disasters) and that outlines the *potential* roles for social protection in managing climate change impacts. (Chapter 2)
- » Explores the projected medium-term impacts of climate change in the Asia-Pacific region and their implications for social protection needs and demand. (Chapter 3)
- Provides a brief overview of global climate-resilient social protection, exploring conceptual and programmatic developments. (Chapter 4)
- » Summarises and critically reviews current social protection in the Asia-Pacific region and maps existing programmatic and policy evidence on linking social protection and climate change. (Chapter 4)
- » Critically assesses how social protection needs to be reconceptualised to meet the challenges arising from climate change (Chapter5)
- » Provides recommendations for policymakers and practitioners in both climate and social protection sectors to take forward this agenda in coming years (Chapter 5).

¹ Due to this focus, this report does not discuss impacts in parts of East Asia (including Mongolia, China, DPRK, Korea, Taiwan, and Japan) and West Asia, Australia, and New Zealand.

2 CONCEPTUAL FRAMEWORK

2.1 Climate change risks

Climate change is intensifying the risks for individuals and societies with implications for poverty and wellbeing. As extensively highlighted by the IPCC report (2022), the growing frequency and intensity of **extreme events** is leading to increasing risks for individuals, households, and societies arising from larger and more frequent shocks and disasters. Moreover, gradual processes such as **slow-onset events**² (for example, sea level rise and increasing temperatures) are likely to have direct and indirect consequences on social, health and economic factors and lead to loss of livelihoods, employment sources, asset erosion, increasing incidence of health problems, displacement and relocation, among others.

Importantly, increased risks are not only caused by physical changes in the climate system but also by how societies manage risks in general. **Persistent vulnerabilities** such as poverty and inequality – *created by factors other than climate change* including gender inequality and social exclusion, urbanisation, conflict, and policies in all sectors, from poverty reduction to land use planning – can increase risks, making it more difficult to manage the impacts of climate change. Furthermore, policy responses to climate change

(climate change mitigation and adaptation measures) can also have (unintended) negative consequences that increase vulnerability and hence risk. Mitigation policies may lead to job losses, cause higher energy prices and contribute to food insecurity. Climate change adaptation measures may also have undesired effects if not carefully thought through; for example, supporting irrigation to buffer the effects of rainfall variability can increase competition for scarce water resources. Green transition measures are desirable overall, but it is important to recognise that they might have unintended consequences for groups and individuals.

Figure 1 illustrates how climate, human, and ecosystem interactions increase climate risk (IPCC, 2022). Societies (that is, human systems) cause climate change, which leads to hazards arising from the climate system affecting those human systems and ecosystems. Societies can respond to climate change in a variety of ways; they can adapt to climate change positively (climate change adaptation) or negatively (maladaptation) and can reduce emissions to reduce the warming that causes climate change (climate change mitigation). Ecosystems provide livelihoods and ecosystem services. Human systems and climate change impact ecosystems, but human systems can also restore and conserve them.

² In the climate change literature, 'slow-onset events' refer to the risks and impacts associated with increasing temperature means, desertification, decreasing precipitation, loss of biodiversity, land and forest degradation, glacial retreat and related impacts, ocean acidification, sea level rise and salinization (IPCC, 2022). This differs from term 'slow-onset disasters', which is more commonly used in the disaster risk management literature and often refers to shocks such as droughts that evolve more slowly than rapid onset disasters such as hurricanes/cyclones.



Figure 1: Climate, human and ecosystem interactions leading to increased climate risk

Source: Adapted from IPCC, 2022: Oppenheimer et al. 2014; Costella et al. 2021

Worsening climate change and its interaction with other factors that lead to persistent vulnerability and exposure of societies and people is increasing socioeconomic risks, with implications for poverty and wellbeing. Increasing extreme events and slow-onset events (for example, sea level rise and increasing average temperatures) are already leading to increased covariate needs as many people lose income, health, employment and livelihoods, both in more frequent disaster events and because of gradual processes (IPCC, 2022). Responses to climate change, that is, primarily climate change adaptation and mitigation measures, are necessary and desirable but can have externalities that negatively impact individuals and households through changes in labour markets that affect employment (at global, national, or local scale), food, housing and transport options and prices (ILO, 2018; Saget et al., 2020a). Finally, policies, norms, and practices in other sectors and areas (urban, agriculture, education, gender and social inclusion) can amplify climate change risks and impacts.

It is important to note that climate change risks are reduced not only by a (crucial and extremely important) reduction in CO2 emissions and warming but also by reducing societies and ecosystems' vulnerability and exposure. For this reason, social protection measures are central to managing climate change. Social protection can contribute significantly to climate-resilient development, primarily supporting reductions in people's vulnerability both by protecting those affected by climate change impacts and by supporting adaptation and mitigation actions.

2.2 Social protection: Definitions and roles for managing climate change³

Formal social protection can be defined as the transfer of resources to individuals and families, implemented or mandated by governments, with the goal to help them maintain income in times of adversity or to raise their living standards (adapted from Midgley, 2022). Social protection includes social assistance and social insurance (the focus of this report) and other schemes including labour market policies (ILO, 2022, Midgley, 2022) (see Box 1 for some examples worldwide). Overall, social protection schemes help individuals and households manage chronic poverty and income risks, including those resulting from both small localised and large covariate shocks, such as the socio-economic impacts of COVID-19 (Gentilini et al., 2021).

While this report focuses on formal, governmentmandated, social protection, informal social protection (support provided by family and community, including through remittances) is also critical for addressing poverty (Calder and Tanhchareun, 2014).This report suggests that it is important to separately examine the implications of climate change for ongoing informal provision.

Box 1: Social protection schemes: concepts and worldwide examples

Social assistance (sometimes called 'social safety nets') are non-contributory schemes that mainly provide conditional and unconditional poverty transfers. Social insurance includes contributory schemes such as unemployment, disability, maternity benefits and pensions.

Labour market interventions refer to a wide range of policies and programs that aim to address labour market challenges, such as unemployment, skills mismatches and labour market segmentation. They can be passive (for example, rules and regulations that increase labour market flexibility) or active (for example, improving the matching between job seekers and available jobs). Many international and national actors consider them separate – though complementary – policies to social insurance and social assistance, and thus not necessarily under the umbrella of social protection.

This report focuses on social assistance and social insurance because these form the backbone of SP interventions in the region and are of the highest interest to governments and donors.

Types of schemes (examples)	Programs in LMICs (examples)
Social assistance: cash transfers, public works programs, conditional cash transfers, economic or productive	India's MNREGA, a seasonal employment guarantee to help households maintain income during the slack agricultural season.
inclusion, etc.	Brazil's Bolsa Familia, a conditional cash transfer that aims to increase school attendance and health check-ups and decrease poverty and inequality.
Social insurance: unemployment, disability and maternity benefits, among others.	South Africa's Unemployment Insurance Fund, a mandatory and contributory scheme for formal and informal workers, provides benefits in case of job loss, maternity, or illness (South Africa Revenue Service, n.d.).
Labour markets: wage subsidies, training, labour market activation etc.	North Macedonia's COVID-19 related wage subsidy, which covered the minimum wage per employee at private companies for the period of April to May 2020 (Gentilini et al. 2021).
	Argentina's Continuing Education Programme promotes training of workers as a tool to gain access to decent and quality jobs and improving competitiveness (socialprotection.org, n.d.).

Source: Authors based on Costella et al., 2023

³ This section builds on the social protection concepts and climate change functions set out in Costella, McCord et al, 2021 and Costella, [...] McCord et al., 2023.

Globally, social protection has significant reach. 47% of the global population is covered by at least one social protection benefit (ILO, 2021), and more than 120 low- and middle-income countries (LMICs) provide some form of cash transfer for the poor (Banerjee et al., 2022). In the Asia-Pacific region, coverage has increased significantly in recent decades, but overall, only 30% of the population (excluding China) are covered, and levels vary significantly across the region (ILO, 2021).

Social protection policies have the potential to play an important role in addressing the socio-economic implications of climate change, given their longestablished and central function of promoting income security and managing poverty and income risks. Several different roles have been ascribed to social protection in relation to climate change. This section identifies and discusses five key functions;

- » Reducing underlying vulnerability to climate change
- » Responding to climate shocks and disasters
- » Offsetting the negative welfare impacts of climate transition policies
- » Facilitating and enabling climate change adaptation options
- » Contributing to GHG emissions reductions or carbon sequestration

Reducing underlying vulnerability to climate change

Social protection has the potential to reduce vulnerability in the face of climate change. It can do this by directly reducing income poverty; contributing to human development and productive outcomes, such as education, health and productive livelihoods; and supporting increased equity, inclusion, and social justice. Reducing underlying vulnerabilities is currently one of the core functions of social protection and could be expanded to accommodate climate concerns. Such expansion is important for responding to worsening climate extremes, managing slow-onset events, facilitating climate change adaptation and mitigation, and managing other risks that interact with and amplify climate change.

Responding to climate shocks and disasters

Social protection can reduce the impacts of specific shocks by transferring income to cushion their effects. A large body of practice and literature has recently been developed around 'shock-responsive social protection' (SRSP) and 'Adaptive Social Protection' (ASP) (see Section 4.1) based on the potential to scale up social protection provision in response to crises. This literature recognises that the distinction between social protection's traditional focus and this new role in responding to (climate-related, among others) shocks is the increased focus on covariate rather than individual idiosyncratic shocks (O'Brien et al., 2018; Tenzing, 2020). Extending social protection's covariate shock-responsive function by expanding existing programs and administrative systems would allow countries to reach significant coverage during crises.

Offsetting the negative welfare impacts of climate transition policies

Social protection can offset the negative income and labour market impacts of climate change mitigation and adaptation measures, thus preventing increases in vulnerability which would otherwise result from these responses. Social protection can help the labour market performance of workers adversely affected by transitions to cleaner energy, through re-skilling, training, and direct income support (such as unemployment benefits or early pensions). It can also protect people whose income security is affected by interventions that affect prices, such as removing subsidies or imposing carbon taxes.

RETHINKING SOCIAL PROTECTION AND CLIMATE CHANGE

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UNDERSTANDING FUTURE CLIMATE REALITIES IS CENTRAL TO RECONCEPTUALISING SOCIAL PROTECTION POLICY AND PRACTICE

Facilitating and enabling climate change adaptation options

Social protection can facilitate and enable various adaptation options, including ecological or behavioural adaptation. If linked to complementary programming or conditionalities, social protection interventions such as public works programs or poverty-focused Payment for Environmental Services can support and incentivise disaster risk reduction and natural resource management. Moreover, if sufficiently generous and linked to complementary programming, social assistance (SA) programs, combined with asset transfers or skills training, can contribute to improved employment or livelihoods.

Contributing to reduced greenhouse gas emissions and carbon sequestration

Some social protection interventions, such as public works programs have the potential to contribute directly to mitigation outcomes (including carbon sequestration). Also, when coupled with complementary measures, social protection policies and programs could incentivise individual behaviours that reduce emissions or increase GHG sinks, for example, by incentivising individuals to protect ecosystem functions or engage in greening activities.

While social protection has the potential to fulfil these critical and varied functions in response to climate change, the integration of social protection policies and schemes in the climate policy agenda is currently limited, particularly in LMICs. Further, the social protection discourse still needs to be well informed of the profound implications of climate change in the coming decades. Understanding future climate realities is central to reconceptualising social protection policy and practice, which is necessary for the sector to play a relevant and effective role in responding to the challenges of climate change. The following sections overview the potential impacts of climate change that will shape the nature and scale of social protection demand in the Asia-Pacific region in the medium term. After this overview, this report explores how far social protection systems in the region are already addressing climate concerns and how they might need reconceptualising to fulfil their potential in the social protection space more strategically.

3 MEDIUM-TERM SOCIO-ECONOMIC IMPACTS OF CLIMATE CHANGE

Changes in the climate system resulting from global warming are generating a range of 'climatic-impact drivers' (CIDs) that will have increasing impacts on human and ecological systems.⁴

For example, global warming leads to changes in average temperatures and changes in precipitation (i.e. changes in the climate system) which can lead to sea level rise, increases in the frequency and severity of extreme weather events like tropical cyclones, changes in rainfall patterns, decreases in ecosystems health, loss of biodiversity and changes in species range (i.e. climate-impact drivers) (IPCC, 2021). CIDs intersect with non-climate drivers, such as land degradation, population growth and urbanisation, to generate a range of socio-economic impacts including increases in poverty, food insecurity, and health-related outcomes. The increase in poverty resulting from these changes is referred to in this report as 'climate-induced poverty'.

The effects of global warming on climate systems have been extensively modelled and are documented in the Working Group 1 component of the IPCC's Sixth Assessment Report (*Climate Change 2021*, *The Physical Science Basis*) (IPCC, 2021). The implication of these climate systems changes for human and ecological systems is documented in the report of the IPCC Working Group 2 (*Climate Change 2022: Impacts, Adaptation and Vulnerability*) which also sets out their impacts on selected socio-economic outcomes (IPCC, 2022). The implications of these findings for social protection have not yet been systematically appraised in terms of the distribution, scale or nature of future needs. This chapter summarises the major impacts of climate change on critical human and ecological systems and their likely socio-economic impacts across the South Asia, South-East Asia and the Pacific subregions in the medium term. It identifies the implications of these findings for social protection provision in the region. The analysis in this chapter is largely based on a review of the IPCC's Working Group 2 Sixth Assessment Report (often referred to as AR6) (IPCC, 2022), complemented by additional material gathered from a literature review, search of regional knowledge platforms, national reports by international policy organisations and interviews with expert informants from the climate and social protection sectors.⁵ Box 2 presents an overview of how modelling of climate change impacts occurs, and the scenarios usedin this report.

⁴ The global climate system consists of five major components: the atmosphere, the hydrosphere, the cryosphere, the lithosphere and the biosphere and the interactions between them. The climate system changes over time under the influence of its internal dynamics and because of external influences, including human activity. Changes have occurred in all components of the climate system: the atmosphere and the ocean have warmed, amounts of snow and ice have diminished, sea level has risen, the ocean has acidified, and its oxygen content has declined, and atmospheric concentrations of GHGs have increased (IPCC, 2021).
'Climatic impact-drivers' (CIDs) are physical climate system conditions (for example, average temperature, seal level rise, extreme events) that can be directly connected with having impacts on human or ecological systems (IPCC, 2021).

⁵ See Appendix 5, 6 and 7 for an overview of relevant regional organisations, regional initiatives and key informant interviews respectively.

Box 2: Estimating future climate impacts

Modelling climate impacts commonly occurs in three components, combining global biophysical models with Regional Climate Models (RCMs) and Integrated Assessment Models (IAMs), focusing on single or several outcomes of interest. The results of biophysical models (either global or regional) are used as inputs into IAMs which use these estimates to predict impacts on the economy or a particular sector (like agriculture).

Models typically follow the IPCC closely in calibrating their emissions scenarios and impact timelines using *Shared Socio-economic Pathways* (SSPs). SSPs provide a set of potential futures based on emissions, as well as varying mitigation and adaptation responses and their implications for global warming. The SSPs link to Representative Concentration Pathways (RCPs), which describe different levels of greenhouse gasses and projections of other radiative forcings.

- » SSP1: Sustainability inclusive development that respects environmental boundaries a low-warming scenario
- » SSP2: *Middle of the road* social, economic, and technological trends do not shift substantially, and global and national institutions fall short of expectations but make some progress
- » SSP3: Regional rivalry insular nations focused on domestic policies and material-intensive consumption
- » SSP4: *Inequality* divergence in international approaches to energy policies, with investments in both carbon-intensive and low-carbon fuel sources
- » SSP5: Fossil-fuelled *development* involves rapid economic growth, innovation, and technological progress, at the expense of environmental systems a high- warming scenario

Given current progress on emission reductions, expert informants interviewed for this report suggested that an SSP2 scenario is most likely, resulting in intermediate GHG emissions and an estimated warming of 2°C in the medium term (2041–60) and 2.7°C by the end of the century, with CO2 emissions around current levels until 2050, then falling but not reaching net zero by 2100. This conclusion is consistent with the WG1 statement that it would only be possible to avoid warming of 1.5°C or 2.0°C if massive and immediate cuts in GHG emissions are made, and no such undertakings have been made.

Existing socio-economic climate models tend to be designed to understand how a particular sector or issue, such as economic growth, will be affected by changes in the climate systems. They do not capture dynamic impacts by incorporating the feedback loops and compounding effects on multiple interconnected social and ecological systems that are likely to drive social and economic impacts. The static nature of these models, and their focus on a single sector or outcome, constrains their ability to identify and quantify socio-economic impacts adequately. This report recognises these limitations and focuses on the predicted impacts of a set of key socio-economic outcomes of particular significance in terms of future needs for social protection provision.

Source: Authors based on IPCC, 2021; CarbonBrief, 2018 and Riahi et al, 2017

The three subregions, South Asia, South-East Asia and the Pacific, face unique threats from climate change due to differing combinations of climate system impacts and drivers, non-climate drivers, and adaptation limits, which are also influenced by political, financial, resource, and development constraints (IPCC, 2022). All three subregions have already experienced average temperature increases, sea level rise, and a shift towards more pronounced and variable precipitation. These changes are all projected to worsen, even over the short term. In addition, the three regions are made more vulnerable by high levels of poor and exposed populations dependent upon climate-sensitive sectors, like agriculture, and by growing populations, particularly in urban areas. The following sections of this chapter set out the implications of climate change for each subregion. For each subregion a brief overview of modelled climate-related systems impacts is set out, based AR6, followed by a summary of the projected consequences of these systems' impacts in the medium term, on eight critical areas of socio-economic impacts which are of relevance for future social protection needs. These socioeconomic impacts areas are derived from the IPCC's *Representative Key Risks* set out in the AR6 (IPCC, 2022):

» Food and water security

Impacts on crops, livestock, fisheries, and aquaculture due to declining ecosystem services, extreme and slow-onset climate events, and reduction in water and arable land availability. This critical area also includes changes in freshwater availability and impacts on food and water security due to climate-related damage to infrastructure.

» Health and nutrition impacts

Impacts arising directly from hazards; indirectly from changes in ecosystems, temperature, and precipitation; impacts resulting from damage to critical infrastructure and social disruption. This critical area includes heat-related mortality, vector-borne diseases, water-borne diseases and malnutrition.

» Infrastructural stress impacts

Impacts on vital service provision systems, such as energy, water, sanitation, and transportation due to extreme and slow-onset events.

» Urban pressure

Impacts of climate-related disasters and slow-onset events on urban populations and infrastructure, such as urban heat island effects, the inundation of coastal cities and infrastructure risks. Climate-enhanced rural to urban migration, unplanned settlement and increasing energy stress will amplify these impacts.

» Local economy and labour market

Impacts on livelihoods due to the loss of agricultural land, reduction in agricultural and fishery yields and ecosystem changes; impacts on employment due to the contraction of the tourism sector and decreased employment in carbon-intensive industries due to reduced capital investment under Climate Change Mitigation (CCM) policies; the impacts of heat and climate-related disasters on labour productivity.

» Poverty

Impacts of compounding direct and indirect effects of climate change on poverty due to changes in prices and household income, reducing households' abilities to meet their basic needs.

» Peace and mobility

Impacts on mobility resulting from active climate adaptation strategies; forced migration due to climate-related disasters and slow-onset events like sea level rise; and climate change-induced domestic and transboundary conflicts, exacerbated by competition for scarce resources, including water and food.

» Economic performance

Impact on GDP growth due to economy-wide impacts on significant sectors such as trade, tourism, and agriculture together with the cost of post-shock reconstruction.

This review does not aim to provide a comprehensive analysis of the likely socio-economic impacts of climate change across the three subregions or provide disaggregation across vulnerable groups. Climate models have typically not been produced with social protection analysis in mind and few focus on the inequality or poverty impacts of climate change or disaggregate results to specific sectors of the population. As such, this report rather aims to give an indicative guide to the immense scale and reach of the impacts that climate change is likely to engender in the coming decades and the multiple dimensions across which impacts will be experienced. It seeks to enable actors in the social protection sector to engage with the climate-modelling literature and to inform them of the likely scale and nature of future impacts, illustrating the urgent need for a profound reconceptualisation of social protection responses in the context of the growing climate emergency.

3.1 South Asia: Climate and socio-economic impacts

3.1.1 Impacts on climate-related systems and climate risks

Countries in South Asia are some of the most severely affected by changes to the climate system, although impacts vary across distinct geographic areas (IPCC, 2022). The north is impacted by glacial melt, predominantly in the Himalayas, with consequences for freshwater availability (IPCC, 2022). In the south, precipitation is becoming more variable, with longer and drier periods bringing prolonged drought, particularly across India and Bangladesh (Krishnan et al., 2020; World Bank Group, (2021), and more intense rainfall and storm surges. Overall, the subregion's climate is heavily influenced by monsoon rainfall, which has decreased over most parts of the eastern and central northern regions and increased across Pakistan, where annual precipitation is likely to increase by up to 16% by the end of the century (IPCC, 2021). In addition to changing precipitation patterns, the frequency and severity of extreme events, including tropical cyclones and storm surges, is expected to intensify (IPCC, 2021).

Average temperatures in the region have already increased and are projected to increase more than the global average over the next century. Between 1950 and 2010, average temperatures have already increased by 1°C (see Figure 2), with Pakistan experiencing increases of between 1.5 and 3°C (Mani et al., 2018). Projected increases range from 1.3°C under a low-warming scenario to 4.6°C under a high-warming scenario by the end of the century, with increases likely to be even greater over the Tibetan Plateau (IPCC, 2021). These changes will have complex and cascading impacts across human and ecological systems. For example, prolonged droughts, longer and more extreme heat waves, extreme precipitation events, salinisation, water stress and inundation will significantly reduce the availability of both water and arable land (IFPRI, 2022; IPCC, 2022). Longer and more severe droughts, land degradation, agricultural production, glacial melt and changes in monsoonal and rain patterns are expected to increase water stress. Combined with other vulnerability factors in the region, such as rapid population growth, urbanisation and land use, these impacts are likely to put substantial pressure on societies and ecosystems. The next section reviews the projected socio-economic consequences of these changes in the climate system and their cascading effects.

Figure 2: Temperature trends in South Asia 1950–2010



Source: Mani et al., 2018

3.1.2 Socio-economic impacts

Food and water security

Climate change is expected to have significant negative impacts on food security across South Asia due to decreasing crop yields, large fishery capacity reductions and a decline in water availability, with effects already observed by 2030.

Crop yields are predicted to start decreasing as early as 2030, with decreases exceeding 30% for most crops by 2080, even accounting for improved agricultural practices (Hallegatte et al., 2017. Agricultural regions near the coast are particularly at risk due to storm surges and sea level rise, among others, which increase salinity and destroy crops (IPCC, 2022; ADB, 2017a). In Bangladesh, a 40% loss of productive land is expected under a 65 cm rise in sea levels by 2080 (Yu et al., 2010 *in* ADB,2017a). Fisheries are also at risk, particularly in coastal areas in Sri Lanka and the Bay of Bengal facing decreases in maximum catch potential (IPCC, 2022).

When combined with existing food security drivers, climate change could, by 2030 alone, lead to an additional 22.7 million people at risk of hunger compared to a scenario without climate change (IFPRI, 2022). Daily caloric intake per capita could fall after 2030 by up to 10% under a high-emissions scenario (Havlik et al. *in* Hallegatte et al., 2016).

At the same time, water stress is expected to increase, with the region likely to face substantial water shortages (IPCC, 2022; IFPRI, 2022). Even now, climate change is affecting South Asia's most essential deltas, with adverse effects on downstream users (IPCC, 2021), many of whom are already facing extreme water stress (Lutz et al., 2014 in IPCC 2022). Population pressures already lead to excessive groundwater use, which has been linked to decreases in water quality and increases in water insecurity and associated conflict (Thakur and Gupta, 2019 in IPCC 2022; UNESCO, 2023; Roth et al., 2019 in IPCC, 2022). Accelerating glacial melt will disrupt the significant freshwater sources that feed Asia's ten largest river systems, further affecting regional water security (IFPRI, 2022). This impact will increase water insecurity, particularly in India and the Maldives, which are expected to have withdrawals exceeding supply by 2030 (Krishnan et al., 2020; Ahmed et al., 2014).

Health and nutrition

South Asia will be the subregion most affected by the impacts of climate change on health, facing substantial impacts on undernutrition, malaria, diarrhoeal disease, dengue, and heat-related mortality as early as 2030 under a medium- to high-emissions scenario (WHO, 2014).

Increases in temperature, precipitation, and the indirect effects of tropical cyclones, storm surges and sea level rise will substantially impact the prevalence and transmission of disease and associated health and nutrition outcomes. Diseases associated with droughts, including bacterial diarrhoea, and those associated with floods and cyclones, including leptospirosis and typhoid fever, are likely to increase (ADB, 2017a; IPCC, 2022). Increased water contamination, heavy rains and flooding increase the likelihood of toxic runoff from agricultural production and sewage and increase the propensity for diarrhoeal diseases (IPCC, 2022).

High temperatures are likely to affect mortality and morbidity together with deaths related to circulatory, respiratory, diabetic, and infectious diseases (IPCC, 2022). South Asia is projected to have the highest global rates of excess death related to heat stress, with some areas experiencing temperatures considered beyond thresholds that humans can withstand (McGuire, 2022). Increased temperatures and emissions, particularly in urban areas, are also associated with declines in air quality, which are expected to put more people at risk of respiratory disease and other health problems (ADB, 2017a).

Infrastructure

South Asia is likely to experience pronounced stress on vital infrastructure, including electricity, transport, sanitation and housing (IPCC, 2022). Such stress will amplify existing challenges relating to infrastructural provision that has not kept pace with population growth, particularly in large cities (ABD, 2017a). Electricity access rates in South Asia are relatively low (Shukla et al., 2017 in IPCC 2022), and the region already experiences infrastructural stress and failure with some of the most unreliable power supplies in the world (Zhang, 2019; Hallegatte et al., 2019; Rentschler et al., 2019). Climate change impacts, including the direct effects of storm surges, sea level rise, floods, and the indirect impacts of increased needs for heating and cooling due to climate extremes will exacerbate pressure on this already strained system (IPCC, 2022,). Sea level rise poses a particular threat to infrastructure

located in low-lying regions. In Bangladesh, one third of power plants will have to relocate by 2030 (Hallegatte et al., 2019). Although investments have increased rapidly, including in Bhutan and Bangladesh (WEF, 2018 in IPCC, 2022), the region still has the highest adaptation deficits in coastal protection (Nicholls et al., 2019 in IPCC, 2022).

Urbanisation

South Asian cities are particularly vulnerable to climate risks, experiencing a high concentration of critical infrastructure, high population density, and large informal settlements exposed to climaterelated hazards. The region is expected to host many megacities, with four in India alone by 2030 (Chennai, Bangalore, Hyderabad, Ahmadabad). Moreover, the region is rapidly urbanising with much unplanned urban growth, partly due to climate-induced rural-tourban migration, which will increase infrastructural stress vulnerable informal settlements (IPCC, 2022).

Large coastal cities are particularly vulnerable to storm surges, sea level rise and salinisation, resulting in infrastructural failure (IPCC, 2022) and reducing the habitability of low-lying regions. In addition, temperatures in urban areas will continue to increase by more than the global and regional averages. Consequently, megacities in India, Bangladesh, and Pakistan could be among the first places in the world to experience extreme heat that exceeds the survivability threshold (IPCC, 2022).

Local economies and labour markets

Climate changes already directly affect livelihoods, causing displacement and damage to infrastructure and assets and affecting agricultural yields, food security, and water availability. These changes adversely affect workers in the agricultural, fisheries, and aquaculture sectors which employ large sections of the population, including many of the most vulnerable (ILO, 2019; IPCC, 2022). Labour markets, especially in rural areas, are likely to be substantially impacted by the decreases in agricultural yields as agriculture employs an estimated 65% of the workforce in most South Asian countries and up to 80% in poorer, rural areas (McDermid et al., 2015). Increases in average temperature are projected to result in the loss of 5% of total working hours by 2030, with India set to be the most impacted (ILO, 2019d).

Poverty

South Asia experienced a reduction in extreme poverty rates from 58 to 15% between 1981 and 2014. However, climate change threatens these gains, primarily due to the high number of vulnerable smallholder farmers dependent on rainfed agriculture, the large and growing urban (and often informal) population, and the substantial areas of exposed coastal populations and infrastructure (IPCC, 2022). Overall, the poor are highly vulnerable to the compounding impacts of climate change on food security, water security, infrastructure, health and nutrition (WBG, 2021) and tend to reside in disasterprone areas, particularly in urban regions.

Climate-related food price increases and reduced agricultural yields are projected to be the major drivers of poverty and extreme poverty increases in the region (Hallegatte et al., 2016). Extreme poverty rates are forecast to increase over 15% in Bangladesh, up to 25% in India, over 25% in Pakistan, and 30% in Sri Lanka in the medium term under a high-emissions scenario, reflecting significant food price increases (Ivanic and Martin 2014 *in* Hallegatte et al., 2016).

While none of the studies analysed for this report model climate impacts on inequality, the IPCC states that vulnerable groups tend to reside in disaster prone areas, particularly in urban regions, and are thus disproportionately impacted by extreme events, and that women, girls and youths are particularly at risk of climate impacts in the subregion (IPCC 2022).

Peace and mobility

Climate-related disasters are already displacing large numbers of people annually (IDMC, 2017 in Rigaud et al., 2018). Countries in South Asia had some of the highest global rates of migration due to climaterelated disasters, with estimated 3.2 million people displaced in 2020, primarily in Bangladesh and India because of cyclones and floods (IDMC, 2021). Moreover, climate change is already driving significant circular internal migration between rural and urban areas (Rigaud et al., 2018; ADB, 2013).

In the future, climate change will increase both voluntary and involuntary migration in the region as an adaptation strategy (IPCC, 2022), especially due to water scarcity, reductions in crop productivity and sea level rise (Rigaud et al., 2018). Estimates suggest climate-induced migration may reach between 11 and 22 million by 2050 (Rigaud et al., 2018; IPCC, 2022). Some countries are likely to be more impacted than others, with coastal regions experiencing significant displacement. In Bangladesh, sea level rise could displace between one and 2 million people through direct inundation by 2050 (Davis et al., 2018 in IPCC, 2022) and net out-migration from coastal areas in South Asia is estimated to be between 0.5 and 1.5 million by 2050 (Rigaud et al. 2018). Rates of rural-tourban migration are expected to increase as a climate adaptation strategy (Mani et al., 2018). However, the picture is complex as migration to rainfed agricultural regions from dense urban settlements, as well as areas dependent on irrigated croplands, is also predicted and could potentially reach over 3 million people by 2050 under a pessimistic climate scenario (Rigaud et al., 2018), suggesting a future scenario characterised by multidirectional population flows reflecting the relative spatial distribution of vital resources such as water.

Adverse climate impacts on resource availability, particularly water and other agricultural inputs, are likely to increase the potential for violence and conflict within and between countries (Uexkull et al., 2016 *in* ADB, 2017a; IPCC, 2022). Changes in stream flow and runoff patterns have the potential to ignite transboundary conflicts (ADB, 2017a). Fragile and conflict-affected countries, including Afghanistan and Sri Lanka, are particularly vulnerable to tension around future resource availability (WBG, 2021).

Economic performance

Climate change is predicted to have negative impacts on GDP across South Asia (WBG, 2021), and in the absence of mitigation and adaptation interventions, the total economic cost of climate change for South Asia could be an annual 2% GDP loss by 2050, rising to 9% by 2100 (Ahmed et al., 2014).

3.2 South-East Asia: Climate and socio-economic impacts

3.2.1 Impacts on climate-related systems and climate risks

The South-East Asia (SEA) subregion is a collection of diverse but predominantly tropical countries. The region is already experiencing direct climate impacts in terms of increases in mean annual temperature, changes in precipitation, increases in the frequency and severity of tropical cyclones and rising sea levels. These effects are likely to increase in the short- to medium-term (IPCC, 2021). Mean annual temperatures are predicted to increase by between 0.8 to 3.2°C by 2080-2100 (under SSP2 and SSP5, respectively), and precipitation trends are also expected to increase over the same period (IPCC, 2021). Large delta and riverine regions in the north and the low-lying, archipelagic countries in the south are particularly vulnerable to climate threats (IPCC, 2021). Significant climate risks include river and sea flooding, water shortages in already arid zones, infrastructural damage, inundation of settlements, infrastructure, agriculture and crop failure, heat-related mortality, increased water and vector-borne diseases, coral reef decline and the impacts of heat stress on labour productivity (Hijoka et al., 2014 in IPCC, 2022).

These impacts render the subregion one of the most vulnerable to adverse climate change. Further, impacts are amplified because of large populations living in extreme poverty or employed in climate-sensitive sectors, and rapid population growth, particularly in low-lying coastal cities (Raitzer et al., 2015; ILO, 2019c).

3.2.2 Socio-economic impacts of climate change

Few studies have modelled the medium-term socio-economic impacts of climate change in the region, consequently this section's overview of likely impacts is based on literature analysing prior data patterns rather than modelled future outcomes.

Food and water security

Climate change is likely to have significant food security impacts across the region, especially due to declining agricultural yields, potentially resulting in a 25 to 33% increase in food insecurity by 2050 among the population at risk of hunger (Cenacchi et al., 2021).

Climate change-induced disruption of inland and coastal ecosystems (including main rivers and river deltas) is likely to affect agriculture and fishing significantly and adversely, with both sectors expected to experience substantial declines in yields (IPCC, 2022). For example, the Mekong River Delta is predicted to experience floods and inundation due to sea level rise resulting in the loss of 190,000 hectares of rice paddies (IPCC, 2022; WBG, 2010 in ADB, 2017a). Without adaptation, agricultural yields are projected to decline by 7 to 9% by 2050 under an SSP2 scenario (IPCC, 2022). Critical aquaculture and marine industries, an essential protein source for coastal populations, are likely to face declining maximum catch potentials (IPCC, 2022), particularly in Vietnam, Thailand and the Philippines (Handisyde et al., 2017 in IPCC, 2022).

Groundwater in the Mekong Delta is expected to decline significantly by 2100 due to sea level rise (IPCC, 2022), affecting the water security of 60 million people living in the lower Mekong Basin who rely on the river for much of their livelihoods and economic activity. Across the subregion, increasing water temperature, decreasing streamflow, and increased salinisation from storm surges and sea level rise are projected to increase contamination of water sources (IPCC, 2022), potentially leading to a 50% increase in water stress by 2050 (Gao et al., 2018 *in* IPCC, 2022), a problem amplified by population growth and rapid urbanisation (IPCC, 2022).

Health and nutrition

Excess deaths because of climate change are projected to be particularly high in SEA (Gasparrini et al., 2017 in IPCC, 2022), with the increase driven by the impact of temperature increases on heat-related mortality, air pollution and respiratory diseases, and the impact of extremes (for example, cyclones and storm surges) on vector-borne diseases (WHO, 2014), including dengue and malaria (IPCC, 2022). Air pollution already affects large populations across SEA annually and is projected to increase in the absence of adaptation (Sahani et al., 2014 in IPCC, 2022). Disruption to the already intermittent water supply also poses a significant health risk in increased incidence of infections and diarrhoea (Hallegatte et al., 2019). Climate impacts on food prices and availability will also exacerbate already high rates of undernourishment (IPCC, 2022; WHO, 2014).

Infrastructure

Most SEA countries are likely to experience substantial infrastructural stress, given the increases in energy demand co-occurring with climate-related extremes, such as coastal flooding, water scarcity, cyclones, extreme heat and wildfires that damage infrastructure (IPCC, 2022; Hallegatte et al., 2017). Many cities face substantial infrastructural challenges, with power generation infrastructure in the Philippines, Indonesia and Vietnam particularly vulnerable (Nicholas et al., 2019 *in* Hallegatte et al., 2019).

Urbanisation

SEA has some of the world's fastest-growing urban areas, including informal areas where populations are exposed to multiple climate-related hazards (IPCC, 2022; WG2, Chp.10). Over 436 million people live in cities within 100 km of the subregion's coasts (UNEP, 2015 in IPCC, 2022). These cities are exposed to sea level rise, coastal inundation and storm surges (IPCC, 2022). Coastal megacities like Jakarta are already experiencing rapid increases in sea level rise and severe and regular urban inundation, predominantly in poorer and informal settlements (IPCC, 2022). Subsidence, mainly due to groundwater extraction, is amplifying sea level rise impacts (Jevrejeva et al., 2016 in IPCC, 2022). The subregion has high and rapidly growing populations of urban slum dwellers who are disproportionately vulnerable to climate-related disasters (IPCC, 2022) (Gu et al. 2015 in IPCC, 2022).

Many cities face an intersection of hazards, such as the increasing likelihood of both flood and urban droughts (IPCC, 2022) and the challenges associated with large 'urban heat island' effects, where urban areas experience temperatures 0.5°C to 1.5°C higher than average, exposing vulnerable populations to heatrelated mortality and morbidity – a particular challenge in Manila, Bangkok, and Jakarta (ADB, 2017a).

Local economies and labour markets

Impacts on livelihoods are expected to be particularly significant in the subregion due to the importance of informal sector employment and the high number of workers in vulnerable employment in industries likely to be affected by climate change, such as agriculture (ILO, 2019). The Lower Mekong has a substantial share of the population employed in or reliant on the agricultural sector, who will be disproportionately impacted by sea level rise and salination (Clement et al., 2021). Heat stress and increases in the number and intensity of extreme hot days are likely to present a particular challenge for workers in predominately outside sectors, such as agriculture and construction, and adaptation options are limited. Tourism-based livelihoods will also be adversely affected, for example, due to the loss of reef in the coral triangle (ADB, 2017b).

Poverty

As in South Asia, climate change threatens the poverty reduction achieved in most South-East Asian countries over the last three decades (ADB, 2017a), with poverty increases driven mainly by increases in food prices (Jafino et al., 2020). Increased exposure to sea level rise and extreme events is also likely to directly impact poverty and inequality in the absence of sustainable adaptation options (IPCC, 2022). There is evidence that climate change is already affecting women disproportionally in the region, including in the Philippines, where they compose a large portion of the unskilled international migrants who leave climateaffected agricultural-based livelihoods for domestic work internationally (ADB 2017a).

Peace and mobility

Displacement from climate-related disasters is already a regular occurrence in the region and is likely to increase (IPCC, 2022). In 2020, over 300,000 people were displaced by climate disasters in Indonesia and Vietnam alone (IDMC, 2021).

Climate-induced migration is likely to increase, particularly in the Lower Mekong and coastal nations, including Indonesia and the Philippines (IPCC, 2022). High migration rates, mostly internal, are predicted from these low-lying coastal regions, particularly among low-skilled workers into urban settlements or higher-elevation agricultural areas (Raitzer et al., 2015; IPCC, 2022). In the Lower Mekong region, migration is projected to reach 2 million by 2030 and over 3 million by 2050 under a low-emissions scenario, rising to 3 and 6 million under a high-emissions scenario (IPCC, 2022). Migration may exacerbate vulnerability in destination locations, especially in environmentally sensitive areas with limited livelihood opportunities (Jain et al., 2021 *in* IPCC, 2022).

Increasing scarcity of critical resources, such as water for consumption and energy generation, may exacerbate internal and international tensions and conflict as the subregion relies on significant transboundary natural resources (ADB, 2017a).

Economic performance

The projected GDP costs of climate change in Indonesia, the Philippines, Thailand and Vietnam have been estimated at between 0.25 and 0.5% by 2030, rising to between 0.5 and 1.0% by 2050, under an optimistic emissions scenario (Raitzer et al., 2015). Under a pessimistic one (SSP5), inaction could result in significantly higher GDP losses, rising from under 1% across the region in 2030 to 4% by 2050, considering market, labour production and non-market losses, and over 10% by 2100 (ibid).

3.3 The Pacific: Climate and socio-economic impacts

3.3.1 Impacts on climate-related systems and climate risks

The Pacific is likely to face continued warming, although at a slightly lower rate than the global average (IPCC, 2021). Most countries are expected to experience drier rainy seasons, with marine heatwaves becoming longer lasting and more severe in the medium term. These changes will be detrimental to reef and marine health, with decreasing ocean oxygen levels, warming and acidification bringing unprecedented impacts before 2100 (IPCC, 2021).

The impacts of sea level rise are likely to be particularly severe in the region. The combined effects of the average rise and extreme local sea levels is predicted to increase the frequency of flooding events. Flood events previously occurred only once in a century but are expected to occur annually in some locations by mid-century under all RCP scenarios. The frequency of category 4 and 5 tropical cyclones and associated precipitation rates is projected to increase, driving the intensity of storm surges (IPCC, 2021). The region's unique geography, isolation and economic structures mean that it will face multiple interconnected threats, which will reduce the habitability of many islands even under a low-warming scenario (IPCC, 2022). The region is highly dependent on agriculture, fisheries, and tourism. Sea level rise and storm surges, changes in resource availability, a loss of agricultural yields and fish stocks, and loss and damage from extreme events will impact these industries. Moreover, less frequent but more erratic rainfall events and salinisation of freshwater ecosystems from sea level rise mean that water will become scarcer, impacting agricultural livelihoods and health and wellbeing.

Non-climatic drivers, including urbanisation, poverty, over-exploitation of natural resources, and limited institutional, financial and technical capacities also drive vulnerability to climate impacts (IPCC, 2022). While population growth remains relatively low, land and resource constraints mean that even limited increases place significant pressure on available resources (IPCC, 2022). Most migration within the region is likely to be rural to urban, placing pressures on regional infrastructure (ADB, 2017b).



Figure 3: The Pacific Islands

Source: ADB, 2013

3.3.2 Socio-economic impacts

Overall, the Pacific is highly vulnerable to climate change and will face substantial socio-economic impacts even under low-emissions scenarios (IPCC, 2022). Sea level rise coupled with the region's resource constraints, mean that even a small loss of land or agricultural capacity is likely to have substantial impacts on employment, health, nutrition, and wellbeing (IPCC, 2022), and there is a risk that 'the vulnerability of communities in small islands, especially those relying on coral reef systems for livelihoods, may exceed adaptation limits well before 2100 even for low greenhouse gas emissions pathways' (IPCC, 2022).

Food and water insecurity

The Pacific is highly dependent on agriculture-based livelihoods, including rainfed subsistence production. Temperature increases, rainfall variability, sea level rise and tropical cyclones are likely to significantly reduce yields of basic subsistence crops, including cassava, sweet potato and rice. The ADB projects reductions of over 30% for cassava and 10% for sweet potato and taro by 2050 in Papua New Guinea and Fiji, even under an optimistic climate scenario (ADB, 2013). Most agricultural production is reaching hard adaptation limits (IPCC, 2022), as many countries already dedicate more than 40% of land for agricultural production (ADB, 2017a; Rosegrant et al., 2015). Salinisation, erosion, and seawater intrusion into freshwater ecosystems due to sea level rise are reducing the limited land available for production and the viability of low-lying coastal agricultural regions (IPCC, 2022; Rosegrant et al., 2015; IPCC, 2022). Increases in the intensity and frequency of extreme events are likely to reduce agricultural yields further by damaging crops and infrastructure (IPCC, 2022).

In aquaculture and fisheries, reductions in maximum catch potential are occurring as increasing temperatures drive fish to migrate out of the subregion and coral bleaching and ocean acidification decrease reef fish populations (IPCC, 2022). A 50% decline in catch potential has been projected in over half of the Pacific Island nations by 2100 compared to 1980 to 2000, even under low-emissions scenarios (Asch et al., 2018 *in* IPCC, 2022; Cheung et al., 2018 *in* IPCC, 2022). These impacts are particularly significant as fish protein currently accounts for most animal protein consumption in the region (Hanich et al., 2018 in IPCC, 2022). Overall, these impacts are likely to drive up food prices and increase food insecurity (IPCC, 2022), with the number of people at risk of hunger in Papua New Guinea and the Solomon Islands increasing by 21% and 45%, respectively, by 2050 under a high-warming scenario (Rosegrant et al., 2015).

Freshwater is already limited in the region and likely to become scarcer due to climate impacts, with more common droughts and overall rainfall decreases despite more frequent extreme rainfall. Sea level rises are expected to reduce freshwater resources and contaminate drinking water (IPCC, 2021; ADB, 2017a). Water security will be a challenge in areas with higher urban population growth rates. These areas are expected to experience severe freshwater stress even under a low-warming scenario by 2030 (IPCC, *2022*).

Health and nutrition

Climate change is projected to increase the burden of health risks in the region due to increased exposure to extreme events, changes in ecological systems, disruptions to socio-economic systems, and undernutrition and stunting driven by declining agricultural yields, fish stocks and a greater reliance on imported food (IPCC, 2022; WHO, 2018).

Reductions in locally available food, including fish, will increase undernutrition, partly due to a greater reliance on expensive imported food (IPCC, 2022). Deteriorating water security will drive water contamination and the prevalence of water-borne diseases. At the same time, increases in rainfall intensity will increase the risk of diseases like diarrhoea, cholera, and typhoid fever (WHO, 2018). Climate-related damage to water sanitation infrastructure will further exacerbate these health impacts (IPCC, WG2).

The increasing frequency and severity of extreme weather events is projected to cause additional injuries, deaths and increase infectious disease transmission (IPCC, 2022). Mental health challenges are also increasing with growing threats to livelihoods, future habitability and the existential threat to some nations (Ali et al, 2020).

Infrastructural stress

Pacific nations are already reporting loss and damage of infrastructure from extreme events, such as storm surges and tropical cyclones, which are projected to increase in frequency and severity, and slowonset events, such as coastal and riverine flooding (IPCC, 2022). The increased severity of extreme events and the loss of terrestrial biodiversity and ecosystem services is leaving coastal settlements and infrastructure more exposed to hazards (IPCC, 2022).

Climate-related impacts on infrastructure are particularly pronounced in the Pacific because of the relatively high proportion of infrastructure close to the coast. Most Pacific Islands have more than half their infrastructure within 500 metres of the coast. In Kiribati, the Marshall Islands and Tuvalu, over 95% of infrastructure is in low-elevation coastal zones (IPCC, 2022; Andrew et al., 2019 in IPCC, 2022). Sea level rise is also impacting even relatively higher-elevation islands like Fiji, due to the high proportion of infrastructure located in coastal areas (Kumar and Taylor 2015 in IPCC, 2022). Limited land availability means that options for relocating essential infrastructure are limited, locking in potentially maladaptive responses. Some adaptation measures to protect the limited land available negatively affect coastal and marine ecosystems and associated livelihoods (IPCC 2022).

Urban pressure

Growing urban centres are significantly impacted by climate change due to their location and, in some cases, constrained access to land and resources (IPCC, 2022). Excluding Papua New Guinea, over 90% of the population of the Pacific lives within 5 km of the coast. In the Solomon Islands and Vanuatu, over 60% of the population lives within 1 km of the coast (Andrew et al., 2019 *in* IPCC, 2022). Poor urban residents are particularly vulnerable as they are impacted by both climate hazards and poor infrastructure, with high rates of unplanned urbanisation and informal urban settlement (IPCC, 2022).

Local economies and labour markets

Most of the Pacific's workforce are employed in industries most vulnerable to the impacts of climate change – agriculture, fisheries, and tourism (ILO, 2019a) – making both individual livelihoods and Pacific Island economies highly vulnerable to climate impacts (IPCC, 2022). The region has large informal sectors with vulnerable employment rates of over 20% in the Pacific overall and above 50% in Papua New Guinea, Vanuatu, the Solomon Islands and Tonga (ILO, 2019c). Women and young people are over-represented in climatevulnerable industries and the informal sector. As such, they are likely to be disproportionately affected by climate-driven changes in labour demand (ILO, 2019c).

Poverty

Economic growth in the Pacific has been slow, except for Papua New Guinea and Timor-Leste. Poverty rates remain high (ADB, 2013), with one-third of the regional population of 3.5 million living under national poverty lines (ADB, 2017b). Inequality is also relatively high, and other indicators of development, including school enrolment rates and access to health services, show declining trends (IPCC 2022) which are likely to be exacerbated by climate change.

Peace and mobility

There is limited modelling of future climate-induced conflict, migration or displacement in the region (IPCC, 2022). However, current shocks and stresses are already exacerbating tensions over access to scarce resources including water, and also contributing to significant displacement and migration, some of which may be attributable to climate-induced factors, with Tonga and Samoa reporting over 30% of their population as migrants. International migration for work is common, with some formalised through seasonal labour migration schemes with Australia and New Zealand (Clement et al., 2021). Demand for these schemes may increase as employment opportunities in the region contract due to intensifying climate impacts (ILO, 2019).

Governments have begun systematic planning for significant population movements to accommodate sea level rise. Fiji plans to relocate more than 80% of coastal communities to higher ground (McKellar et al., 2019 in IPCC, 2022) and Carteret Islands and Takuu Atoll residents have already migrated to nearby Bougainville (Clement et al., 2021). The Coalition of Atoll Nations on Climate Change (CANCC), which includes Kiribati, Tuvalu, Tokelau and the Marshall Islands, has declared that climate change represents a 'major existential challenge' (Ellsmoor and Rosen, 2016), leading Kiribati to purchase land in Fiji to relocate vulnerable portions of its residents (Rosen and Zachary, 2016; Caramel, 2014 in IPCC, 2022), and Tuvalu to attempt to gain international commitment to continued recognition of the nation state and to preserve its state functions even if fully submerged. These moves raise new questions in international law concerning the possibility of statehood and citizenship rights in the absence of physical territory (Vouloumanos, 2022).

Some attempts at climate-related national migration strategies have exacerbated tensions in sending and destination locations (IPCC, 2022), and many of those who need to migrate due to inundation or other socioeconomic challenges lack the financial means to do so (Oakes et al., 2016 *in* ADB, 2017a).

Economic performance

Damage from climate-related weather events is already having a significant impact on economies in the region (IPCC, 2022, Chp.15). Cyclone Pam in 2015 caused losses to the agricultural sector in Vanuatu estimated at 8% of GDP (ADB, 2015), while destruction from tropical cyclone Winston in 2016 caused total damage equating to 20% of Fiji's GDP (Cox et al., 2018 *in* IPCC, 2022). Climate-related disasters are already causing estimated average GDP losses of over 4% per year in the region (ADB, 2019). This figure will rise as the frequency and severity of shocks increase.

Lack of economic diversity and reliance on industries particularly vulnerable to climate impacts (fisheries, agriculture and tourism) makes the Pacific especially liable to adverse economic impacts from climate change (IPCC, 2022). Without the rapid introduction of new and more efficient technologies, climate change will potentially reduce tourism revenue by between 10 and 15% by 2030 and by 20% by 2050. The total costs of climate change are estimated between 0.5 and 3% of GDP in Fiji, Samoa, the Solomon Islands and Vanuatu by 2030, rising to between 3 and 5% by 2050. In Papua New Guinea and Timor-Leste, the effects are more severe, rising to 9% of GDP by 2050 (ADB, 2013). This analysis does not consider tourism revenue loss, and may underestimate agricultural impacts, as more recent models estimate earlier yield reductions, indicating that overall climate costs may reach 10% of GDP across the region by 2100 (IPCC, 2022).



DAMAGE FROM CLIMATE-RELATED WEATHER EVENTS IS ALREADY HAVING A SIGNIFICANT IMPACT ON ECONOMIES IN THE REGION

3.4 Discussion on regional impacts, uncertainties and implications for social protection

3.4.1 Summary of regional impacts

The preceding sections show clearly that climate change is likely to create significant social and economic disruption across the region by 2030–50. All three subregions have already experienced average temperature increases, sea level rise, and a shift towards more pronounced and variable precipitation, which is projected to worsen, even over the short term. Over the medium and longer term the region is projected to see increased variability in average temperatures, precipitation and sea level rise (IPCC, 2021). Overall, northern and central regions in Asia will be impacted more by glacial melt and a shift towards arid and drier conditions, while equatorial regions will be more impacted by sea level rise, extreme rainfall events and hydrological disasters (IPCC, 2021).

In addition, the Asia-Pacific region is made more vulnerable by high levels of poor and exposed populations dependent upon climate-sensitive sectors, like agriculture (IPCC, 2022). Despite most of the region experiencing substantial decreases in poverty rates over the last 20 years, particularly in South Asia and South-East Asia, there are still large poor populations, particularly in the Pacific (ADB, 2017a; WBG, 2021). The region has high percentages of exposed populations and infrastructure, clustered in coastal cities, many of which are already being impacted by sea level rise (IPCC, 2022). Many will face livelihood losses from disruptions to sectors including agriculture, tourism and aguaculture, and whole populations will face significant food and water insecurity, increased morbidity and inadequate infrastructure, compounded by increasingly frequent and severe climate-related weather shocks. Losses areexpected to exceed US\$160 billion annually acrossAsia by 2030, 0.6% of GDP (UNESCAP, 2020).

Finally, all subregions have growing populations, particularly in urban areas, which are likely to strain infrastructure and resources, amplifying the impacts of climate change (IPCC, 2022). These factors are reflected in high rankings in international climateimpact indexes, including for vulnerability to disaster impacts⁶ (Germanwatch, 2021) and low readiness and adaptive capacity (University of Notre Dame, 2023.)⁷

These impacts mean that some communities will reach hard limits to adaptation, resulting in involuntary migration. Increased competition for basic resources is likely to increase tension and conflict at the same time as GDP growth is predicted to decrease significantly. These compounding impacts will result in increased poverty, inequality, and a widespread deterioration in wellbeing, leading to a very different development context from that experienced today. Many of these outcomes are now inevitable, under even the most optimistic climate scenario where the Paris target of 1.5°C is met, due to the hangover effects of existing GHG production. Under more realistic scenarios, where 1.5°C is exceeded, the impacts will be more severe and more rapid.

Figure 4 summarises the range of impacts anticipated across the region because of biophysical climaterelated and non-climate drivers. Appendices 1, 2 and 3 summarise (in table form) the key impacts across these impact areas for each subregion.

⁶ The global climate risk index refers to weather related loss 1997-2016, including deaths, injury, and loss and damage from climaterelated disasters.

⁷ The Notre Dame Global Adaptation Index (ND-GAIN) summarises a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience

Figure 4: Key socio-economic impacts of climate change in the Asia-Pacific region

Non-climate drivers

Urbanisation, population growth

Inequitable economic growth and labour

Structural political and institutional factors

Environmental degradation (ecosystems and biodiversity)

Key socio-economic impact areas

Food & water security

Increased water scarcity, decreased yields, areas where production no longer possible, reduced food security

Health and nutrition

Increased water & vector born diseases, heat stress, respiratory illness

Infrastructure

Loss and damage to physical infrastructure, disruptions of electricity generation, transportation, water supply, sanitation

Urbanisation

Inundation of coastal cities, growth of informal settlements

Local economy & labour markets

Limits to adaptation, loss of livelihoods, reduction in employment

Economic performance

Change in structure of economy, reduction in GDP, challenges to macro-economic stability

Peace & mobility

Increased internal & transboundary migration, competition for scarce resources, conflict

Poverty

Reduction in income/production, increased prices for basic goods, loss of informal safety nets

Biophysical climate drivers

Changes in climatological systems: Increased temperature Changes in precipitation Sea level rise

Changes in terrestrial & marine ecosystems: Reduced resource availability

Decreased biodiversity Shift in species' ranges

Changes in extreme weather events:

Increased frequency/ severity of flooding, clclones and storm surges Heat waves Prolonged droughts

Source: Authors, based on IPCC (2022)
3.4.2 Knowledge gaps and uncertainties

The analysis summarised in the preceding sections represents the narrative of likely climate impacts on specific regional outcomes as presented by the IPCC in the AR6. It is, however, important to contextualise these findings, considering the realities concealed in the presentation of average impacts, the challenges of identifying the interplay between different drivers, the single focus objectives of many of the cited studies, and the political economy context.⁸ Each of these considerations is briefly discussed below.

First, while models are based on agreed warming scenarios, the presentation of impacts in terms of regional averages can conceal the variability and severity of potential impacts. An average projected warming of 2.7–3 degrees by end-century may entail only modest or no temperature change in some areas, and a very large increase way beyond the average in others, rendering them uninhabitable.

In addition, current models struggle to map the complexity of socio-economic systems and their interaction with climate systems (IPCC, 2022). There is uncertainty around the relative influence of climatic and non-climatic factors on socio-economic impacts, the interplay between these factors, and the degree to which policy and governance interventions may affect outcomes (IPCC, 2022).

As a consequence, much of the literature focuses on exploring single sector impacts and does not consider the overlapping and compounding impacts of multiple simultaneous climate and systems impacts or the uncertainty presented by feedback loops and tipping points. Future scenarios may be more likely to be characterised by one-off rapid non-linear shifts and discontinuities rather than the slow incremental changes most models project (McGuire, 2022). This makes estimating overall regional impacts on poverty and inequality, which is of key interest for social protection, particularly difficult. Poverty and inequality are complex, influenced directly by biophysical changes in the climate systems, and also by secondary effects including food prices, employment opportunities, economic stability etc, all of which are also influenced by non-climatic drivers. Studies attempting to estimate poverty and distributional impacts (e.g. Hallegate et al. 2016; Jaffino et al. 2020) are still relatively high level and have not disaggregated impacts across different groups in the region. While research has linked increased inequality to climate vulnerability (IPCC 2022), no studies reviewed here project either the impacts of inequality on climate vulnerability or vice versa. Similarly, regional studies seldom disaggregate impacts by vulnerable populations, like women, girls, persons with disability and youths.

Moreover, it should be noted that while the IPCC report (on which much of this paper is based) presents the best science available, it is the output of a very careful and highly scrutinised science-based process within a United Nations' scientific body. While the analysis presents estimates with different degrees of confidence, it is likely that for those with the higher levels of confidence, the analysis in AR6 errs on the side of caution and could potentially understate future climate impacts for which the evidence is not sufficiently strong.⁹

Finally, one additional factor needs to be included in the discussion, namely the impact on poverty of the range of climate-change mitigation (CCM) interventions necessary for transitioning to net-zero. These factors were not included in the AR6, which focuses on direct impacts of climate change, but may themselves also have significant socio-economic effects. There is a body of literature modelling the poverty and distributional implications of policy measures to promote the green transition from carbon-intensive 'brown' to low-carbon 'green' economic activity and specific interventions to reduce carbon emissions, such as carbon pricing and energy subsidy reforms (see McCord and Costella, 2023).

⁸ These caveats relating to the IPCC AR6 were noted in the wider climate literature (see, for example, McGuire, 2022) and by several of the expert informants contributing to this paper.

⁹ Several expert informants raised this issue.

Regional CO₂ emissions per capita are relatively low in the Asia-Pacific region overall (excluding China), compared to developed regions (IEA, 2020), with Bangladesh, Pakistan, the Philippines and Sri Lanka, for example, consuming fewer than 20 gigajoules per capita per annum compared to an OECD average of 168 (BP, 2022). However, notwithstanding the comparatively low regional emissions, the transition to net-zero will mean introducing mitigation policies throughout the region. These interventions will entail job losses in 'brown' sectors and the local support services and increased prices for energy and associated goods, at least in the short term. Although there is little Asia-specific analysis, the literature consistently indicates that these interventions are likely to increase poverty headcount and depth, with particularly significant impacts where there is a concentration of high carbon industry or extensive energy subsidies (McCord and Costella, 2023). This may require – in the short to medium term – addressing the poverty and, potentially, the social instability impacts of climate change mitigation policies, as energy sector reforms have previously been met with significant resistance and even social unrest jeopardising roll out (Yemtsov and Moubarak, 2019).

For these reasons the analysis shared in this report may underestimate the scale and severity of climate impacts on specific socio-economic outcomes and on poverty overall. It is also critical to note that periods of incremental change may be punctuated with major non-linear discontinuities in both climate and environmental, economic and social systems.

3.4.3 Implications for social protection

There are profound methodological limitations associated with estimating the scale, timing and spatial location of future climate impact and inherent uncertainties to accommodate when estimating their interplay across multiple natural and social systems. These considerations make a detailed quantitative appraisal of the implications for future social protection problematic. Current estimates of livelihood and socio-economic impacts of climate change are subject to significant caveats. Most are modelled on existing trends rather than accommodating the discontinuities, biophysical and socio-economic feedback loops and tipping points outlined. However, while exact specification of impacts may not be possible, the presented analysis enables the drawing of some clear insights and profound lessons.

The key insights arising from this review of projected medium-term climate impacts are:

The Asia-Pacific region is already facing a wide range of direct and indirect threats from climate change which negatively impact poverty.

- » The region faces an increased frequency and severity of climate-induced shocks and an increase in climaterelated stressors.
- » The impact of these shocks and stressors on both natural and human systems are likely to increase over time, with significant negative consequences across a range of socio-economic areas in the medium term.
- The resulting livelihood disruption and economic dislocation are likely to drive significant increases in poverty and hardship.
- » These impacts will be compounding, and future changes in the climate and associated ecological and social systems may be non-linear rather than incremental.
- » Significant livelihood disruption, involuntary migration and impoverishment are likely.
- » The introduction of mitigation policies may cause further poverty through loss of income and price rises.

- » Because climate change tends to impact communities and large parts of societies as a whole, resources available for community-level informal social protection are likely to be compromised.
- » States are likely to experience reduced GDP and increased challenges in ensuring food and water security, the provision of basic services and income security.
- » These state challenges are likely to have adverse implications for the existing state citizen contract and political and social stability.
- » Competition for access to scarce basic resources such as food and water are likely to promote conflict within and between countries.
- » Implementation of CCM policies may have poverty impacts and create social discontent.
- » Many of the systems impacts driving these outcomes are already taking place.
- » Few regional actors are considering the cumulative effect of climate impacts across multiple systems and sectors simultaneously on poverty and inequality in the medium term.

This chapter's findings describe a major challenge for social protection – the widespread loss of income security and resulting expansion of needs. Although it is not possible to provide definitive estimates of climate impacts on poverty and inequality, it is evident that current systems, coverage and provision levels will be inadequate to respond to the increased scale of poverty and associated need for income support resulting from the profound socio-economic dislocation predicted in the medium term. Even maintaining current levels of provision in increasingly fiscally constrained contexts may be a significant challenge. Given this analysis, the critical question becomes, how can the sector transform to respond to the severe risk to human wellbeing represented by climate change in the medium term?

Chapter 4 reviews the current state of social protection and climate change programming globally and regionally.

Chapter 5 addresses some questions raised in this chapter, relating to the profound implications of climate change for social protection, and proposes initial steps to address the enormous poverty challenges it brings.

4 MAPPING THE GLOBAL AND REGIONAL LANDSCAPE: A REVIEW OF CCASP POLICIES AND PROGRAMS AROUND THE WORLD AND IN THE ASIA-PACIFIC REGION

4.1 Global CCASP: Approaches and evidence

4.1.1 Approaches

The relationship between climate change and social protection has been explored over the last decade in several conceptual frameworks. Framework approaches differ considering different aspects of the linkages. Some focus on social protection's capacity to provide responses to rapid or slow-onset climate shocks and disaster risk reduction. Others are more oriented toward resilience, adaptation and transformation. The main approaches – Adaptive and Climate-Responsive Social Protection; Shock-Responsive Social Protection; Anticipatory Action; Adaptation, Resilience and the Green Transition are briefly summarised below, as they are key to appraising the adequacy of current approaches to sector challenges.

Adaptive and Climate-Responsive Social Protection (ASP): Davies et al. (2008) first introduced ASP in 2008 and argued for integrating social protection, climate change adaptation and disaster risk reduction, with social protection having a primary role in addressing the structural causes of poverty (in Costella et al., forthcoming). Kuriakose et al. (2013) later built on this concept, proposing that 'climate-responsive social protection' could build ex-ante security against, and ex-post protection from, climate shocks and support long-term climate change adaptation (*Ibid*.). In recent years, newer literature on Adaptive Social Protection (Bowen et al., 2020) has sought to align ASP with the SRSP framework (see below), increasing its focus on disaster risk management and reducing its focus on the transformation needed to manage climate change impacts (Tenzing, 2020).

Shock-Responsive Social Protection (SRSP): Although not specific to climate change, the SRSP framework, and the large body of practice emerging from it, has been central in the discourse around social protection as a tool to manage the impacts of large shocks. The SRSP framework (O'Brien et al., 2018) focuses on the use of social protection to help households manage covariate shocks (which affect a proportion of the population simultaneously) rather than idiosyncratic shocks (affecting a single individual or household), which were the focus of traditional social protection interventions. SRSP has a strong focus on linkages between social protection systems, humanitarian assistance and disaster response. It includes the development of mechanisms to enable social protection systems to expand provision rapidly and flexibly in advance of or after large-scale shocks (O'Brien et al., 2018).

Anticipatory Action and Social Protection: As part of the interest in shock-responsive social protection, practitioners have increasingly focused on the linkages between anticipatory action and social protection (Costella et al. 2017; REAP, 2022). Anticipatory action refers to establishing climate-informed early warning and early action mechanisms allowing early action against the impacts of a (forecastable) hazard, even before a disaster occurs. Anticipatory action can potentially reduce losses and response costs by providing early support (REAP, 2022). While there is an expectation that SRSP could offer a platform for delivering Anticipatory Action and Social Protection at scale, this approach has still to be tested and operationalised at scale (Costella et al., 2017; Daron et al., 2020; Tozier de la Poterie et al., 2018; Weingärtner et al., 2019).

Resilience and Adaptation, including to slow-onset events: Several authors have developed frameworks exploring the potential for extending social protection's role in promoting climate resilience and adaptation, including facilitating climate change adaptation (Tenzing, 2021), mitigation (Malerba, 2021; Aleksandrova, 2019), and climate resilience (Agrawal et al, 2019; Ulrichs et al., 2019).

Green Transition and Social Protection: Emerging narratives incorporate social protection into a broader climate response to development, including the 'Just transition' (ILO), 'Green Transition' and 'Green New Deal'. The Just Transition is a policy and strategic framework promoted by international agencies, including ILO, to inform plans, policies, investments and concrete measures designed to move the world towards a future where jobs are green and decent, carbon emissions are net zero, poverty is eradicated, workers and their families enjoy their human right to social protection, and communities are thriving and resilient (ILO and AFD 2019). Social protection is central to this vision of a just labour market transition through skills training, social assistance and social insurance to cushion negative impacts and is also promoted as a means to support adaptation and mitigation.

These frameworks have informed strategic and operational agendas, and many institutions, including WFP, the World Bank (WB), the ILO and the European Union (EU). DFAT, FCDO and USAID have started to incorporate climate into their social protection portfolios through these approaches. The next section overviews global evidence and examples of application of these approaches.

4.1.2 Global evidence

The five main functions that social protection programs can have in relation to climate change risks were outlined in Chapter 2. Below we give a brief overview of the global experience of social protection programs across each of these functions.¹⁰

Reducing underlying vulnerability to climate change

Social protection programs typically reduce poverty, inequality, and social exclusion. There is extensive evidence that social protection transfers increase incomes and have a significant impact on food consumption, food security, savings and other wellbeing indicators (Bastagli et al., 2019). Programs aimed at reducing chronic poverty have also helped people manage the impacts of climate change. Findings from Kenya, Ethiopia and Uganda highlight the impacts of regular social protection provision on people's capacities to absorb the negative impacts of climate-related shocks, regardless of whether these programs explicitly aim to address climate risks (Ulrichs et al., 2019). In Zambia, the Child Grant Program has been found to moderate the negative effect of a weather shock by increasing food consumption and overall food security a priori and allowing poor rural households to use shock-coping strategies typically used by the non-poor, such as spending savings (Asfaw et al., 2017; Lawlor et al., 2015). In Mexico, a flagship conditional cash transfer program has been linked to better coping capacity in the face of hurricanes (Solórzano, 2016) and to a possible reduction in extreme heat influenced violence (Garg et al., 2020).

Social protection can also reduce social exclusion and decrease inequality, potentially promoting social inclusion and hence reducing the *ex-post* vulnerability of often marginalised populations – women, elderly, indigenous, disabled, class, caste – who tend to face disproportionate impacts of climate change (Bee et al., 2013). Social protection interventions have been noted to have positive outcomes for women and girls in increased school enrolment, participation and empowerment, which could also potentially contribute to positive climate-related gender outcomes (Aleksandrova et al., 2021), although there is no documented evidence linked specifically to climate risks.

10 This section is based on Costella, [...] McCord, et al. 2023, available at https://doi.org/10.1016/j.crm.2023.100501

Programs can achieve this reduction in a *priori* vulnerability through, for example, regular cash transfers to reduce chronic poverty; social insurance benefits that protect people from life-cycle shocks and reduce poverty and deprivation; or programs that promote economic or productive inclusion. However, most of these programs globally do not explicitly integrate climate considerations strategically or operationally and so do not measure climate vulnerability outcomes. Hence, the evidence on direct climate-related impacts remains limited to a small number of studies, including those highlighted.

Responding to climate shocks and disasters

All types of social protection programs, including social insurance, social assistance and labour market policies, can be used to protect people from the direct impact of shocks. This protection can be in anticipation of a shock or as a response to a shock. Social assistance interventions, especially cash or in-kind transfers and public works programs, have been widely adopted as responses to climate extremes such as floods, storms and droughts around the world, often as part of disaster response or humanitarian operations (Barca et al., 2019; Beazley et al., 2019; Bowen et al., 2020; Gentilini et al., 2018; O'Brien et al., 2018).

Cash transfers are the most frequently used instrument for shock response (Kuriakose et al., 2013; O'Brien et al., 2018, 2018b; Ulrichs et al., 2019). These are often based on social assistance schemes, that is, non-contributory cash and in-kind transfers, although social insurance and labour schemes (for example, pensions and wage subsidies) have also been used to respond to large covariate shocks, including COVID (Gentilini et al., 2021). The literature suggests that commercial disaster insurance schemes such as micro-insurance can also be used to respond to climate shocks, often with subsidised premiums and frequently with small farmers as the main target group (Carter et al., 2018; Davies et al., 2008; Heltberg et al., 2009), although the feasibility of adopting such schemes, or any insurance based instruments in contexts of increasing hazards and high vulnerability is increasingly recognised as problematic (Duus-Otterstrom & Jagers, 2011; Goldboom, 2013).

While these social protection instruments are normally implemented after a shock, there is also some potential for leveraging social protection for anticipatory action, that is, transferring income in advance of a shock based on forecast-based mechanisms (Daron et al., 2020; Weingaertner et al., 2019; Costella et al., 2017). While some programs have adopted this approach, these arrangements have still to be operationalised at scale (Daron et al., 2020; Tozier de la Poterie et al., 2018).

There is evidence that interventions using social protection to perform a shock-response function can limit the shock impact and even have some longerterm beneficial effects. For example, in the Philippines, emergency cash transfers and employment programs enacted in the aftermath of a cyclone helped restore consumption after the shock and improved income opportunities through self-employment (AFD & ILO, 2019b). However, despite this approach being frequently adopted, this report was not able to identify any systematic or rigorous large-scale impact reviews.

Offsetting negative welfare impacts of climate transition policies

Social protection interventions can protect those whose income or livelihoods are adversely affected by the fiscal, economic, social, infrastructural and environmental effects of measures to reduce emissions or promote climate change adaptation. Such adverse effects include the impacts of decarbonisation policies, such as subsidy removal, carbon pricing, and structural measures, such as the closure of highemitting industries. Replacing fuel subsidies with poverty-targeted transfers would result in significant gains, both in terms of poverty reduction benefits and cost-savings (that is, poverty-targeted cash transfers would cost less than current spending on subsidies) (Feng et al., 2018; MoE/UNDP, 2015; Schaffitzel et al., 2020). Using social protection in this way could make policy reform more acceptable and likely to be successfully implemented (Schaffitzel et al., 2020).

Social protection can also support populations affected by job losses due to the closure of high emission industries. For example, in China, rice subsidies and cash transfers were provided to informal workers when forest conservation measures were enacted, and job training and placement services were offered to nearly a million formally employed workers who lost jobs due to the same measure (AFD & ILO, 2019a; Györi et al., 2021) (the next section discusses this issue further and examines Asia-Pacific examples). While social protection has previously served functions such as offsetting household-level income losses arising from the removal of energy subsidies as well as job losses due to industry restructuring, there are not yet many examples of it being used explicitly to address climate-change-driven measures (McCord &Costella, 2023). Interventions will need to consider the differential gender impacts of climate transition polices and to ensure inclusive coverage.

Facilitating and enabling climate change adaptation options

Social protection can also support adaptation climate responses, particularly those that require adjustments in individual and community-level behaviour and practices. For instance, when combined with other interventions to promote economic inclusion or livelihoods, such as employment generation, asset transfers and asset building, climate-smart agriculture practices, training and skills development, microfinance, planned relocation and migration, cash transfers can enhance beneficiaries' capacity to adapt (FAO & Red Cross Red Crescent Climate Centre, 2019; Heltberg et al., 2009; Solórzano & Cárdenes, 2019). Evidence from Nicaragua, Ghana, and Bangladesh shows that combining social assistance with asset transfers and/or vocational training leads to positive outcomes around climate-related adaptation behaviour (Macours et al., 2022; Yiridomoh et al., 2021; Hossain & Rahman, 2018).

Furthermore, public works programs that specifically integrate environmental or climate objectives can potentially provide income while simultaneously contributing to nature-based adaptation and disaster risk reduction (McCord & Paul, 2019; Norton et al., 2020; Solórzano & Cárdenes, 2019). Evidence from flagship programs in India, Ethiopia, Mexico and South Africa shows that programs can improve naturebased outcomes such as land and water availability for sustainable agriculture, afforestation and drought proofing and also contribute directly to household resilience (Fischer, 2020; Norton et al., 2020). However, experience is limited outside this small number of flagship programs, and in most cases, the natural resource impacts of such interventions are not assessed (Levine et al., forthcoming), meaning that their effectiveness in promoting climate adaptation is not yet known.

Contributing to GHG emissions reductions or carbon sequestration

Social protection in the form of public works programs can directly support climate mitigation interventions that improve environmental or ecosystem outcomes and carbon sequestration or reduce emissions. Under Ethiopia's Climate Smart Initiative (CSI), attempts have been made to use the public works component of the Productive National Safety Nets Programme (PSNP) to address climate change through integrated watershed interventions which promote carbon capture and sequestration (Solomon et al., 2015). A study shows that the PSNP increased tree cover by 3.8% on average over 15 years in the districts of the Ethiopian highlands that participated and estimates that the annual negative CO2 emissions from the increased tree cover are equivalent to 1.5% of Ethiopia's annual emissions reduction pledged by 2030 in its Nationally Determined Contribution (NDC) climate action plan to cut emissions in line with the Paris Agreement (Hirvonen et al., 2022).

Linking cash transfers to environmental conditionalities is another potential way for social protection to contribute to mitigation, for example, adopting operational modalities and design from the Payment for Environmental Services approach (see, for example, Porras et al., 2013).

Social protection can also subsidise the adoption and implementation of housing, transportation and infrastructure measures and practices that contribute to emissions reductions (Gough, et al. 2008). For instance, programs in HICs have supported investments in low-emission housing and transport and incentivised the renovation of homes to make them more energy efficient in the face of temperature extremes (Etoka et al., 2021; Gough et al., 2008).

4.2 Regional mapping: Evidence, experiences and initiatives with climateresilient social protection

4.2.1 Social protection in the Asia-Pacific region

Social protection provision in the Asia-Pacific region has grown significantly over the last twenty years in coverage and the range of instruments (IPC-IG, 2019).¹¹ While some countries have well-established systems, most need to catch up in developing social protection systems, reflecting the historically low priority given to social protection by regional governments, with responsibility often delegated to families and communities rather than the state (ILO, 2021). Despite significant progress, coverage remains low. Almost 56% of the population has no access to any form of social protection, 70% if China is excluded. Overall public spending on social protection averages only 7.5% of GDP, with half of the countries spending 2.6% or less, compared to a global average of 12.9% (ILO, 2021). The 7.5% average regional spending level obscures significant subregional disparities, with South Asia and South East-Asia spending approximately 2.5% of GDP and 0.3 % in the Pacific Islands, compared to 9.0% in East Asia.¹²

Figure 5: Regional expenditure on social protection (as % of GDP)



Source: ILO, 2021

N.B. Asia and the Pacific includes Australia and New Zealand (ILO, 2021)

* Authors calculations based on the 10 Pacific Island countries for which ILO expenditure data is available, and excluding Australia and New Zealand

¹¹ This report follows the ILO definition of coverage, namely 'Population covered by at least one social protection cash benefit (effective coverage): Proportion of the total population receiving at least one contributory or non-contributory cash benefit, or actively contributing to at least one social security scheme

¹² Recent analysis on social protection expenditure in the Pacific Islands also highlights the differences across this subregion (see Knox-Vydmanov, C. et al, 2023).

Coverage is also highly differentiated across the subregions, with only 23% of the population of South Asia and 33% of South-East Asia having access to at least one social protection benefit, compared to over 70% for East Asia (ILO, 2021) (see Figure 6). There is also significant diversity of effective coverage among developing countries within the sub-regions, reflecting highly differing developmental, economic and political contexts, with levels ranging from 7% to 36% in South Asia (Afghanistan and Sri Lanka, respectively), 6% to 68% in South-East Asia (Cambodia/Myanmar and Thailand respectively), and 9.6% to 86% in the Pacific (Papua New Guinea and the Cook Islands, respectively) (ILO, 2021).

Figure 6: Percentage of regional population covered by at least one social protection benefit (effective coverage), 2020 or latest available year



Source: ILO, 2021 based on SSI; ILOSTAT; national source

NB: Asia and the Pacific includes Australia and New Zealand (ILO, 2021)

* Authors calculcations based on the 11 Pacific Island countries for which ILO coverage data is available, and excluding Australia and New Zealand

In most, although not all, countries in the region, contributory coverage is low, with provision generally limited to the minority of workers in formal sector employment (ILO, 2021). Non-contributory social assistance is available only to the poorest (UNESCAP and ILO, 2020) and is often categorically targeted, with children being the primary beneficiary group (IPC-IG, 2019). Older persons have the highest coverage, with a regional average of 74%, compared to 14% coverage of the unemployed, 18% of children or 22% of those with severe disabilities (ILO, 2021). Overall, there is considerable significant subregional variation in coverage levels, with South Asia and South-East Asia having significantly lower coverage than the rest of the region for all major transfers. Figure 7 illustrates this. These provision patterns indicate significant coverage gaps in many countries and the exclusion of many working-aged people, notably those working in the informal sector and migrants. In addition to this coverage deficit, another challenge in the current provision is the value of transfers, which needs to be higher to provide adequate protection (ILO, 2021). The extension of social protection in the region is currently constrained by the performance and reach of the operational systems required for effective administration, including registration and financing systems, and state reticence to take a more significant role in provision (ILO, 2021).

Figure 7: Percentage of eligible population covered by selected categorial transfers in the Asia-Pacific region, by ILO subregion



Source: Authors, based on ILO, 2021

NB: Asia and the Pacific includes Australia and New Zealand (ILO, 2021)

4.2.2 Mapping experiences and evidence in the Asia-Pacific region

This section considers current and recent climaterelated social protection programming in Asia-Pacific. It gives an overview of programming, providing examples and evidence, drawing in part on an ongoing global stocktake of climate-related social protection programs¹³ (Costella, forthcoming). In the absence of a database or repository of social protection programs that tracks climate-related features, the mapping is based on qualitative data collection and analysis. Program examples were identified through an analysis of academic and grey literature on social protection and climate change, combined with climate-related keyword searches of existing databases and listings of mainstream (not climate-specific). Identified programs were then reviewed against three criteria to be included in the review. They had to: be formal social protection interventions¹⁴; have an explicit climaterelated feature or have performed a climate-related function;¹⁵ have been implemented between 2010 and 2022. After capturing the relevant programs, we identified and reviewed evaluations, assessments, and other evaluative literature to explore them in more depth.

This methodology is unlikely to have captured all social protection programs with climate considerations in the region, and as such, the mapping is not exhaustive. However, it does provide a wealth of program experience, allowing for an appraisal of current activity in the sector in the region, both in general and across the five functions of this report's framework. As introduced in Chapter 2, these five functions are:

- 1. reducing underlying vulnerability to climate change
- 2. responding to climate shocks and disasters
- 3. offsetting the negative welfare impacts of climate transition policies
- 4. facilitating and enabling adaptation options, and
- 5. contributing to GHG emissions reductions or carbon sequestration

¹³ Costella C. (forthcoming) Global Review of Social Protection programmes with Climate Change Objectives.

¹⁴ To be considered a formal social protection program, three criteria needed to be satisfied: i) the program was designed to reduce and prevent poverty, vulnerability and social exclusion by addressing a life-cycle or other household level, income-related risk ii) it took the form of one of nine contributory and non-contributory benefit-types identified by the ILO as conferring social protection (child and family benefits, maternity protection, unemployment support, employment injury, sickness benefits, old-age benefits, disability benefits, survivors' benefits, and active labour markets benefits) excluding health-protection benefits, and iii) the program was led, implemented, or strategically or operationally supported by a government (programs led by humanitarian or civil society organisations that do not significantly involve government were not included, nor were informal social protection arrangements).

¹⁵ To satisfy this criterion, the program had to have a climate role. This was defined as either having an explicit climate-related feature in its design (objective, design, implementation); or, in the absence of explicit climate-related design features, it had to have performed one or more of the following climate-related functions: i) disaster or shock response in a context of a climate-related hazard, ii) supported climate change mitigation, adaptation or overall climate vulnerability reduction activities (for instance, a general pension program used to protect workers affected by a decarbonisation policy), or iii) supported climate change mitigation, adaptation outcomes (for instance, if there is documented evidence that a program has protected people from impacts of a climate hazard, even though the program has not changed in any way to do so).

Overarching Findings

Overall, we found forty social protection programs that met the outlined criteria and performed one or more climate-related functions (even if this was not the program's stated function): Fifteen programs in South Asia (twelve still active in 2023), fourteen in South-East Asia (ten active), and eleven in the Pacific (five active).

In general, programs tend to perform more than one climate function. By definition, all social protection programs have the potential to reduce climate vulnerability (function 1) by reducing poverty and deprivation. However, because climate vulnerability reduction is not assessed as part of the outcomes of most programs, it is not possible not ascertain how many programs actually play this function. Out of the forty programs, we were able to identify three which had explicitly reduced vulnerability to climate impacts, as per existing evaluations or rigorous assessments (see next subsection). It is methodologically easier to identify programs that perform climate-related functions 2 to 5. Almost half of the programs (nineteen out of the forty) play (or have played at some point in time) a shock or disaster response function (function 2).

Seven programs have played a role in offsetting the negative impacts of climate transition policies (function 3). Nineteen programs have features that facilitate and enable adaptation (function 4), while thirteen have features that contribute to GHG emissions reductions or carbon sequestration (Function 5). Figure 8 shows the number of programs that play each function by subregion, for functions 2 to 5.

We also categorised programs according to the type of social protection utilised: social assistance, social insurance and labour market interventions.¹⁶ Most of the programs across all functions were social assistance programs (thirty-two programs). Only two programs involved social insurance alone, and none were stand-alone labour market interventions. A few programs (six) involved a combination of instruments, most using labour markets and social insurance interventions together. The low incidence of labour market and social insurance-based interventions are likely to be partly due to the relatively low prevalence of these instruments in the region, and a bias in our methodology which prioritised documents and literature on social assistance.



Figure 8: Social protection programs by climate function 2 to 5, by subregion

Source: Authors

¹⁶ Social assistance comprises non-contributory in-kind and cash transfers, public works programs, and subsidies. Social insurance includes contributory unemployment support and pensions. Labour market interventions include skills and training, job search services, job subsidies and labour standards.

Overall, the regional program mapping indicates that there is an emerging body of programming linking social protection and climate change, which includes a diversity of interventions spanning the five potential functions identified in this report. Some of these initiatives were designed explicitly to address climaterelated issues, some are pre-existing social protection interventions adapted to address climate challenges, and some are social protection interventions not explicitly linked to climate but that have climatepositive outcomes around addressing socio-economic challenges arising from climate change or directly contributing to mitigation. Social assistance, social insurance and active labour market policies have all been adopted to address current climate challenges.

In the following sections, we characterise programs identified across the five climate functions, outline examples and highlight significant evaluation findings.

Function 1: Reducing underlying vulnerability to climate change

As a core function, social protection programs aim to reduce poverty and deprivation, reducing overall vulnerability to climate change. This core function is an essential way programs can help manage climate change impacts. By increasing income, even regular (not climate specific) social protection programs can reduce vulnerability to the multiple adverse impacts of climate change. While many examples in our mapping are likely to perform this vulnerability-reducing function, three programs had documented results which made this function explicit, with vulnerability reduction as the way that social protection enabled households to manage climate risks. These programs are Program Indonesia Pintar (PIP) and Program Keluarga Harapan (PKH) in Indonesia, and the Chars Livelihood Program (CLP) in Bangladesh. Box 3 gives more details of these programs.

Box 3: Programs reducing vulnerability to climate risks in the Asia-Pacific region

The Indonesian Program Keluarga Harapan (PKH) is a regular social protection program that provides a conditional cash transfer for poor families with children. Recent studies have shown that providing cash transfers reduced beneficiaries' overall vulnerability helping them deal with shocks, including climate shocks among others (Pfutze, 2021; Fitrinitia & Matsuyuki, 2022). These studies indicated that if PKH had not been in place, 6 to 10% of beneficiary households could have fallen into poverty after the Sulawesi Earthquake (Pfutze, 2021) and that PKH encourages exante and ex-post coping strategies for floods through providing a stable income (Fitrinitia & Matsuyuki, 2022).

In Bangladesh, the Chars Livelihood Program (CLP) was developed based on the theory that if households can overcome poverty and other socio-economic constraints, they can become more resilient overall, including to environmental and climate-related challenges. The program combines social assistance with economic inclusion interventions (including the provision of productive assets, training and financial services) to women in areas where households reside on chars, highly vulnerable river islands regularly created and destroyed by erosion. Program families were able to increase their productive assets and diversify their livelihoods to reduce their dependence on wage labouring. With more productive assets and various income sources, such as from milk and poultry sales, CLP families could accumulate cash savings. These interventions are combined with flood-protection measures, such as raising houses on plinths. A review of program impacts found that the increased productive assets and cash savings resulting from the program enabled households to withstand environmental and economic shocks, including annual flooding (DFID, n.d.).

Overall, social assistance, primarily in the form of cash transfer provision, is the dominant approach under this function. The region has a long history of using social protection to promote human and economic development to reduce the vulnerability of specific populations to a range of shocks and stressors. This approach includes a number of programs explicitly focused on vulnerability to climate and environmental shocks, although not explicitly linked to a wider range of climate-change impacts. This vulnerability response is primarily adopted for addressing rural challenges, with the conventional focus of social protection programs in the region being rural vulnerability, as currently experienced.

There is much evidence globally of social protection programs' ability to reduce poverty and food insecurity (key factors that increase vulnerability), as well as improve educational, health, and social inclusion outcomes (Bastagli et al., 2019). However, most social protection schemes have not been evaluated explicitly regarding their ability to reduce general vulnerability to climate change.

It is likely that, both now and in the medium to long term, regular schemes that do not integrate climate considerations will have a more limited impact on reducing vulnerability to increasingly complex and broader climate risks. There is already evidence that when programs do not adjust their benefits or eligibility criteria to the challenges of a given context, they are less effective in reducing poverty, food insecurity, or other vulnerability. For instance, having been designed as a program with a rural focus, the Philippines 4Ps transfer might be less effective in urban areas where food and fuel prices are more important determinants of poverty constraints (Archibald, 2021). In Nepal, beneficiaries of regular social protection programs (direct cash transfers and public works programs) are not necessarily those most affected by climate-related stressors and shocks, such as floods (World Bank, 2018). This indicates a need to accommodate climate-related criteria in the targeting of such programs.

Function 2: Responding to climate-related shocks and disasters

Social protection can have a direct shock response function, often coordinating with disaster response and humanitarian efforts. This function aligns closely with the concept of Shock-Responsive Social Protection (SRSP) as has been understood and promoted by the donor community over the last decade in the region (and globally). Shock-response primarily takes the form of a horizontal or vertical extension of existing social protection instruments, increasing the range of beneficiaries or the value of the transfer respectively to accommodate additional populations affected by shocks and to increase the transfer value to enable them to meet recovery needs. This shock-response function can be an explicit and deliberate aspect of program design or entail the ad hoc use of existing systems to deliver support. Response can occur on a one-off, repeated or seasonal basis.

Several regular social protection programs in the region have performed such a shock-response function, mostly social assistance schemes. Box 4 gives examples from the Philippines and Fiji, where social insurance schemes were used to provide a cyclone disaster response. The literature indicates that, for the most part, these have been relatively successful interventions, especially when the shock responses have utilised large, well-established social protection schemes or systems.

Box 4: Examples of disaster response through social protection

In the Philippines, the **Pantawid Pamilya** (4Ps) targets chronic poor households with children aged 0–14 years in poor areas. Transfers are contingent on beneficiaries meeting educational and health conditionalities. The program has been used to provide disaster response benefits to regular 4Ps beneficiaries. In 2013, in response to Typhoon Yolanda (known internationally as Typhoon Haiyan), the Government provided additional transfers and lifted conditionalities for program beneficiaries. At the same time, World Food Programme (WFP) and UNICEF provided additional top-up transfers for a subset of 4Ps households in affected areas, effectively scaling up the 4Ps grant amount during a time of increased need for disaster-affected beneficiaries (Bowen, 2016). No evaluations of the impacts or effectiveness of this response were found.

In Fiji, the Government used the existing social protection system to respond quickly to Cyclone Winston in 2016. Four weeks into the disaster, it disbursed US\$9.4 million (F\$19.9 million) through three regular social protection schemes: through the **Poverty Benefit Scheme** (PBS), 22,802 households were paid a lump sum of F\$600; through the **Social Pension Scheme** (SPS) 17,782 pensioners aged 68+ received an additional F\$300; and under the **Care and Protection Scheme** (CPS) 3,313 families received F\$300 in transfers. These cash top-up payments were intended to help people meet immediate expenses following the cyclone. They were provided to all existing beneficiaries, irrespective of whether they resided in the affected areas. In addition, the Fiji National Provident Fund (FNPF), the largest social insurance program in Fiji, allowed affected members to withdraw cash nine days after the cyclone, resulting in a significant cash injection into the economy.

An evaluation of Fiji's intervention showed that this disaster-responsive social protection approach, in the form of top-up transfers to beneficiaries, was effective three months after the cyclone. PBS beneficiaries were more likely to have recovered from the shock, compared to similar households not in receipt of additional assistance (Mansur et al., 2017).

In addition to social protection schemes responding to shocks ad hoc, several social protection programs have been designed explicitly to respond to covariate shocks and stresses, particularly seasonal ones. They predominantly use social assistance instruments, including public works, school meals, and direct cash transfers. Box 5 gives some examples.

Box 5: Examples of seasonal shock response through social protection

Bangladesh's Food for Work (FFW) – also now paid in cash – is one of the oldest social assistance schemes in the country and began primarily as a relief program in response to the 1974 famine, with the immediate objective of supporting the severely food insecure poor. The main FFW objective is to provide seasonal employment for the rural poor to limit the food insecurity experienced by those whose livelihoods are highly vulnerable to climate shocks and stresses. Although it might be used in some years to respond to large disasters, it mainly focuses on responding to seasonal stresses. The program appears to have contributed to stabilising seasonal food grain prices, but detailed program evaluations are lacking (Anwar et al., 2019).

The Indian **Mid-day Meal** program (MDMS) aims, among other objectives, to provide nutritional support to children in elementary schools in drought-affected areas during summer vacation and disasters (MoE, 2022). A 2012 evaluation of the program in Andhra Pradesh showed that the MDMS significantly counteracted the drought's effects on nutritional indicators for children (Singh et al., 2012).

New Zealand's **Winter Payment** supports those receiving a main welfare benefit (Superannuation or a Veterans Pension) through a top up that aims to help them heat their homes over the winter months. WEP amounts to a substantial fraction of recipient households' reported energy expenditures in winter (120% on average and 60% at the median) (Hyslop et al., 2022).

Evidence suggests that these interventions can protect people from the worst impacts of shocks and that some effects are longer term. In the Fiji example (Box 4) and in the case of DILEEP, an employment program enacted after a cyclone in the Philippines, social protection interventions helped restore consumption after the shock. In the Philippines, the program also improved long-term income opportunities through self-employment (AFD & ILO, 2019b; Mansur et al., 2017). It is uncertain how the performance of these programs compares to disaster response or humanitarian interventions. This report did not find evidence that the climate-related outcomes of ad hoc or regular social protection programs that respond to shocks have been systematically evaluated, especially for medium- to longer-term outcomes such as building climate resilience or reducing vulnerability to shocks in general.

Function 3: Offsetting the negative welfare impacts of climate transition policies

Social protection can play a role in offsetting the negative impacts of climate change mitigation and adaptation measures, limiting any increases in vulnerability that might result from implementing these policies. This report identified a small but significant number of programs in the region where social protection has played a role in offsetting income losses from environmental or energy-related policies. Box 6 gives more details of some of these programs. Although these programs were not established to offset the negative impacts of climaterelated policies, they illustrate how social protection could play a similar role and be used alongside policies to protect natural resources and reduce carbon emissions.

The social protection instruments used to offset the impacts of policy measures are varied. The region has, multiple times, adopted the strategy of introducing short-term cash transfers at the point of fuel subsidy reform to ensure reform acceptability. At the same time, introducing payments to offset livelihood restrictions which damage ecosystems has encouraged compliance, illustrating social protection's role in facilitating successful policy implementation and protecting the poor. Overall, cash transfers are most appropriate where the objective is to support households affected by price, food, or income shocks in general. Social insurance and labour market instruments, such as skills training or job search assistance, can be more relevant to support workers through labour market transitions, either into new, greener jobs or out of the labour market. There is yet only limited evaluation documenting the success or otherwise of such interventions in the region.

Box 6: Examples of managing climate transition policy welfare impacts through social protection

In 2003, the Government of **Bangladesh** created sanctuaries for hilsa fish and introduced seasonal bans on fishing for juvenile hilsa (jatka). The **Hilsa Conservation Program** targets vulnerable jatka fisher households. It provides them with 40 kg of rice per month for four months during the fishing season as the cost of the fishing prohibition falls almost entirely on the fishers who are already poor. This scheme's primary goal is conserving the hilsa and associated biodiversity; however, it is funded through a national social protection intervention, the **Vulnerable Group Feeding (VGF)** program, which aims to reduce food insecurity (Ahmed et al., 2009; Uraguchi, 2011 in Islam & Mohammed, 2018). As such, it is also intended to improve the socio-economic condition of affected fishers living inside and around the sanctuary areas (DoF, 2012; Haldar and Ali, 2014 in Islam & Mohammed, 2018) and limit the adverse impact of the fishing ban. Reports suggest that the program was successful in as much as the seasonal ban in Bangladesh increased the survival rate of juvenile *hilsa* (in Porras et al., 2017). However, the rice benefit received by fishers was insufficient to provide nutrition to their large households and the training offered was not appropriate to the needs, skills or opportunities available to fishing families (Porras et al., 2017).

Under the **Forest Conservation Program** China provided support for individuals whose employment was adversely affected by a ban on logging in 2010. It aimed to conserve 90 million hectares of existing forests and establish forests on 31 million additional hectares. Funds were distributed to 0.75 million affected workers by local governments. Work placements were made available to workers in specially created Forest Protection Units designed to manage the newly designated ecological forests. These units were staffed by workers previously working. in the FCP areas in logging and related processing activities. In these new jobs, salaried by the FCP, they worked to conserve and replant the ecological forests (AFD & ILO, 2019a). Workers leaving state-owned enterprises were enrolled in pension schemes. They received pension benefits on reaching pensionable age, while those who took early retirement before reaching pensionable age were offered either lesser pension benefits, paid directly by their former employer, or a lump sum severance payment. Evaluations show that the program successfully controlled timber production in the natural forests and protected forests and supported the income of forest workers (Yang, 2017).

In 2017, the Government of Indonesia reduced fuel subsidies and introduced the **Bantuan Langsung Sementara Masyarakat (BLSM)**, a temporary unconditional cash transfer program, to offset losses for the poor and near-poor households from the subsequent rise in fuel, food, and transport prices. The BLSM was coordinated by the Ministry of Social Affairs (MoSA), but its implementation was coordinated by the Vice President of the Republic of Indonesia, due to its critical importance in supporting the successful implementation of the fuel subsidy reform. BLSM transfers were designed to be sufficiently generous and widely targeted so that the pace of poverty reduction would not be slowed by the fuel and economy-wide price spikes resulting from the subsidy reduction. The program faced significant implementation challenges, including high inclusion and exclusion errors, and problems ensuring that beneficiary households received the correct transfer amount (World Bank, 2017). These challenges were mainly associated with weak delivery systems, such as outdated registries and payment mechanisms via post offices (World Bank, 2017).

Function 4: Supporting climate change adaptation options

Social protection interventions can also serve to enhance adaptation. Box 7 gives some examples in the region.

Box 7: Examples of social protection programs facilitating and enabling climate change adaptation options

In Bangladesh, the **Enhancing Resilience to Natural Disasters and the Effects of Climate Change** program aims to strengthen beneficiaries' economic resources while building community-based assets that protect development gains from natural disasters and climate change impacts (Staskiewicz & Khan, 2013). The program works by engaging communities and individuals in planning and constructing community assets, such as embankments-cum-roads or canals, and offering training in disaster risk reduction and climate change adaptation. It uses a combined food-and-cash-for work and training approach in which WFP provides food and the government cash (Staskiewicz & Khan, 2013). Evaluation findings show that beneficiaries had statistically higher income levels than non-beneficiaries, higher savings, and fewer loans, and they also recovered more quickly from shocks, particularly cyclones. The evaluation found that the program positively strengthened beneficiaries' capacity to better handle shocks and stressors and reduced negative coping strategies and enhanced adaptation (Hernandez et al., 2016).

In Fiji, the **Jobs for Nature** program was initiated in June 2021 by the Ministry of Waterways and Environment (MOWE) to support job creation in rural areas of Fiji through projects that focus on the protection, revitalisation, and rehabilitation of ecosystems, developed with community involvement. **Jobs for Nature 2.0** (JFN2) built on the original program and with support from the World Bank, aimed to reach a significantly larger population with an extended menu of green and inclusive labour-intensive public works activities. By focusing on works that supported wetlands protection, riverbank rehabilitation, coastal bank protection, and biodiversity enhancement, the program aimed to help Fijians manage climate change risks and reduce environmental degradation (World Bank, forthcoming).

In India, the main objective of the 2005 **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA)** is to enhance the livelihood security of rural households by providing at least 100 days of guaranteed wage employment each year to households whose adult members carry out unskilled manual work or associated tasks (MGNREGA Act, 2005). The program was not originally designed as a climate-response program. However, due to its contribution to the creation of environmentally focused community assets and ability to cushion seasonal unemployment effects, it has been viewed as having important potential to provide support for vulnerable rural populations in the context of climate change (Fischer, 2020). In recent years environmental and climate-related objectives have become explicitly included in the program. In 2016, a focus on Natural Resource Management (NRM) was adopted to support water conservation, irrigation and natural disaster mitigation with a particular focus on improving NRM and water resources in rural areas. The annual program circular for 2021–2022 explicitly noted that the Ministry of Environment, Forest and Climate Change recognised MGNREGA as one of the 24 key initiatives to address the climate change, largely through public works relating to natural resource management, while simultaneously improving the livelihoods of the poor.

Studies have captured the way that MGNREGA is generating multiple environmental and socio-economic benefits: improved water availability and soil fertility resulting in increased crop production; increased area under plantations and orchards potentially contributing to alternate incomes; increased employment generation and reduced migration; and reducing climate risks (Esteve et al., 2013; Fischer, 2020). In this way, the program facilitates climate adaptation, although no studies have yet explicitly evaluated it in terms of adaptation outcomes.

All programs in this report's mapping that fulfil this adaptation enhancement function were social assistance interventions, some also having additional labour-market components. Most took the form of public works programs (or included a strong public works programs component) and tended to contribute to nature-based or infrastructural adaptation. Mostly, these interventions did not have an explicit climate change adaptation objective, but the type of activities and actions they supported can be considered adaptation options.

Function 5: Contributing to GHG emissions reductions or carbon sequestration

Social protection programs can also contribute to emissions reductions or carbon sequestration. Box 8 gives some program examples.

The instruments used for this function range from Payment for Environmental Services and public works programs to direct subsidies and grants for adopting technologies that reduce emissions, such as the PMUY program in India (see Box 8). Generally, these programs did not have explicit emissions or sequestration objectives, but were intended to encourage the adoption of technological solutions to improve health-related outcomes, energy efficiency (to lower costs) and/or the reduction of pollution. As such the performance of these programs is not evaluated against explicit mitigation objectives or indicators.

Box 8: Examples of social protection programs contributing to GHG emissions reduction or carbon sequestration.

After two years of implementation (2019–2021), the project reported having planted 1 billion trees, restored nearly 500,000 hectares of forest and generated 65,000 jobs (Ashraf, 2022). The program is expected to promote CO2 capture (Ashraf, 2022), although it is unclear to what extent this outcome is being monitored and evaluated.

Pakistan's national **Ten Billion Trees Tsunami (TBTTP)** is a high-profile, large-scale afforestation project initiated by the Government of Pakistan. The project involves ecosystem restoration of degraded forests through three main components: enhancement of forest cover, biodiversity conservation and institutional strengthening. The program builds on the provincial Billion Trees Tsunami Afforestation Project (BTT AP), implemented from 2015–2018. The 'enhancement of forest cover' component of the program aims to plant 10 billion trees in a phased approach to forward the goals of i) reviving forest and wildlife resources, ii) improving the overall conservation of the existing protected areas, and iii) encouraging eco-tourism, community engagement and job creation through conservation (GOP, 2019 in Ashraf, 2022). The target number of trees is to be achieved through a mix of assisted natural regeneration (60% of total target) and new tree plantations (40% of total target).

After two years of implementation (2019–2021), the project reported having planted 1 billion trees, restored nearly 500,000 hectares of forest and generated 65,000 jobs (Ashraf, 2022). The program is expected to promote CO2 capture (Ashraf, 2022), although it is unclear to what extent this outcome is being monitored and evaluated.

4.2.3 Policy initiatives in the Asia-Pacific region

In addition to the emerging programming work linking social protection and climate change, some important policy initiatives potentially provide space for greater discussion of social protection's role in climate response.

For example, there is significant work at regional and subregional levels by governments and international agencies to integrate climate analysis into national policy and programming. Currently, work focuses on regional policy coordination and information sharing around climate change. However, some initiatives have also started to accommodate aspects of social protection, albeit primarily from a Disaster Risk Management (DRM) and Disaster Risk Reduction (DRR) perspective. Other issues under consideration include the role of social protection in adaptation and the need for basic social protection systems development. Regional and subregional initiatives of potential relevance to integrating social protection and climate programming are briefly introduced below. (Appendix 6 describes the initiatives in more detail.)

Multiple initiatives have been established to support adaptation and climate-resilient development. These include <u>UNEP's Asia-Pacific Adaptation Network</u> (APAN), a regional program for managing and applying adaptation-related knowledge, and the Regional Climate Consortium for Asia and the Pacific (RCCAP), a knowledge hub and information base developed by CSIRO and funded by the ADB to promote the development, dissemination and application of climate information. UNEP's <u>sub-regional Environmental Policy</u> Dialogue (SEPD) supports an intergovernmental forum for dialogue on emerging environmental issues and meets annually to identify and discuss emerging issues and guide UNEP's regional programs. The Pacific Resilience Partnership (PRP), an umbrella implementation mechanism for the Framework for Resilience Development in the Pacific (FRDP), provides high level strategic guidance to enhance resilience to climate change and disasters. Its Disaster Risk Financing Working Group has incorporated adaptive social protection as a key instrument in its roadmap to support the financial resilience of households.

Several subregional governmental initiatives are underway to promote overall policy coordination around climate policies. Examples include: the South Asia Cooperative Environment Programme (SACEP), a longstanding intergovernmental initiative aiming to promote regional cooperation in responses to climate change; the UNEP-funded South East Asia Network of <u>Climate Change Offices (SEAN-CC)</u> supporting ASEAN countries to meet their UNFCCC commitments; the ASEAN Climate Change Strategic Action Plan (ACCSAP) (2023–2030), currently under development to provide regional strategic guidance until 2030 to harmonise and accelerate adaptation and mitigation in line with the ASEAN Climate Vision 2050; the Secretariat of the Pacific Regional Environment Programme (SPREP), which assists Pacific governments in their work to ensure the protection and sustainable development of the region's natural resources.

Several initiatives have been developed explicitly to support the promotion of DRM and DRR, including providing climate shock-responsive transfers. In South-East Asia, much activity on these issues is coordinated or led through the Agreement on Disaster Management and Emergency Response (AADMER), supported by ASEAN and ADB, which seeks to strengthen regional cooperation and reduce the social and economic impacts of shocks. It supports work on risk assessment, prevention, mitigation, preparedness and response, and the current AADMER <u>work program</u> includes technical support to increase regional cooperation on transboundary risks. The 2021 <u>Guidelines on Disaster Responsive Social</u> <u>Protection to Increase Resilience</u>, produced under AADMER highlight social protection's potential to address both climate-related disasters as well as the longer-term implications of climate change, noting that:

'Effective, broad-based social protection is a powerful means to help poor and vulnerable households cope with disasters, especially recurrent small-scale disasters. Regular social protection benefits enable beneficiaries – in particular vulnerable households – to cope with small-scale disasters and stresses without resorting to negative damaging coping actions. They provide much needed stability for vulnerable households to build and diversify their livelihoods, human capital and assets and to address the longer-term impacts of climate change. Social protection is also an important means of enabling households to prepare for, cope with and recover from disasters (ASEAN, 2021).

DFAT is supporting Pacific initiatives encouraging climate resilience and disaster response programming, including: the APCP, which works with governments to support climate and disaster resilience and low carbon growth; the <u>Climate Resilient by Nature</u> <u>Initiative (CRxN)</u>, which aims to increase resilience to climate shocks; the AIFFP and COSSPPAC programs that promote sustainable infrastructure and the capacity to manage and mitigate the effects of climate variability (respectively); and the <u>Partnerships for Social</u> <u>Protection (P4SP)</u> program, which supports social protection systems development.

These initiatives indicate that there is already some recognition of social protection's potential role across the region, particularly concerning adaptation, resilience building and DRR. There is still little integration of medium-term climate-based social protection needs analysis. However, some regional and subregional climate policy processes offer potential entry points for promoting social protection as part of the regional climate change management discourse.

4.3 Discussion and critique of current regional and global social protection and climate change approaches

Having mapped the international and regional experience of climate and social protection programming, this report now critically discusses this portfolio in light of the regional climate context and projected climate impacts set out in Chapter three.

Global level

At the global level, various policy and program initiatives linking social protection and climate have been developed during the last decade. However, a number of challenges are directly affecting the operationalisation of this agenda, the most critical of which are a focus on a limited and short-term set of climate impact drivers, and a limited understanding of the scope of impacts that are relevant for social protection and which climate change is likely to create.

First, globally, the focus of social protection practice in relation to climate change remains on shocks and climate extremes. The literature and practice around social protection and climate change overwhelmingly focus on social protection's role in the management of sudden-onset shocks, missing the significant slowonset, climate-related events and stressors likely to become more relevant over time. The impacts of climate change discussed in Chapter 3 – on food production, migration and economic growth, etc.which are likely to materialise over the coming decades are not yet being strategically considered in analyses of poverty and associated social policy needs or social protection responses. Where climate change is incorporated into social protection, its role is limited to current needs, either as a complement to humanitarian shock-response or as a tool to enhance resilience and adaptive capacity at household level to current shocks and stressors. The social protection sector has yet to recognise its potentially central role in realising the net-zero visions of the 'Just' and 'Green Transition' approaches and achieving the structural and economic transformation needed to adapt to and mitigate climate change.

Second, the scope of the potential impacts of climate change seems still underrecognised by social protection policy makers and practitioners. A fundamental assumption in the sector seems to be that climate hazards and their associated impacts on socio-economic systems will be incremental. While this belief is not untrue, it misses the complexity of climate risks, including interactions between hazards and associated compounding effects, tipping points, and domino effects likely to drive radical step changes in chronic poverty and significant changes in the nature, scale and frequency of shocks in the not-so-distant future (see Chapter 3). A focus on incremental change, leads to social protection approaches that focus more on 'tweaks' to existing social protection systems (such as adding contingency protocols for early action), using traditional instruments and providers rather than radically and strategically reconsidering the potential for increased needs and changing demand in a new climate context. This approach may be characterised as business-as-usual rather than accommodating the fundamental implications of the issues this report identifies, such as reaching the limits to livelihoods adaptation, temperatures rendering areas uninhabitable, and increased migration in a context of constrained GDP growth and structural economic dislocation. They miss, in the end, the more profound socio-economic dislocations which are likely to drive the need for, and simultaneously constrain the supply of, social protection in the medium term.

Finally, at the global policy level, existing frameworks offer little in terms of strategic policy alignment between social protection and climate, or the integration of social protection into strategic climate responses. The social protection sector remains separate from, and uninformed by, the broader climate discourse and medium- to long-term scenarios outlined in the AR6 (IPCC, 2022). Further, the climate community still needs to understand and recognize the significant role social protection as a sector can play in strategically contributing to adaptation to, and mitigation of, climate change.

Regional Level

At the regional level, similar challenges emerge, with nascent efforts to link social protection and climate change ongoing, but overall limited scope and strategic vision.

The mapping of regional programs in this Chapter (section 4.2.2) illustrates that there are a wide variety of innovations, programming options and experiences to inform a potential expanded social protection role in climate change management in the region. This role could include both direct poverty reduction in response to the diverse and compounding impacts that climate change will generate and also contributing more broadly to climate policy objectives relating to vulnerability reduction, shock response, adaptation, policy acceptance and even mitigation.

The primary focus in the region to date – at policy and programming level – has been the use of social protection to provide responses to climate-related shocks (function 2 of our framework). These efforts are generally undertaken in the context SRSP approaches that seek to prepare social protection to function as a form of disaster relief across a range of shocks, not just climate-related ones. SRSP, which mostly uses existing social assistance programs to deliver support in case of shocks, was widely adopted in the region during the COVID epidemic (Lowe et al., 2022). The approach is at the interface of the humanitarian-development nexus as a way to render shock responses more effective and less costly, while contributing to the development of future social protection systems. It is closely associated with the discourses of Disaster Risk Management, Anticipatory Action and Disaster Risk Financing. While shock-responsive approaches are a critical tool in managing the impacts of climate change, an overwhelming focus on them seems to overshadow other important risks besides those associated with climate extremes, as just discussed above.

Beyond the focus on shock-responsive social protection, the mapping shows that few efforts exist to explicitly promote other roles of social protection in relation to climate change in the region. As the financial resources for humanitarian responses in the region have become increasingly strained by rising demands, a focus on disaster risk reduction and preparedness is potentially helping expanding interest in the vulnerability reduction role of social protection a *priori* (function 1 of our framework). However, interventions are not yet designed to explicitly reduce climate vulnerability, for instance by integrating explicit objectives to do so, or by accommodating the changing vulnerabilities that will soon arise from climate change.

The region has experimented with using social protection to help manage the negative effects on the poor of policies that are similar to those that would need to be put in place for managing climate change (function 3). For instance, social assistance, social insurance, and labour market interventions have been used to respond to policies and bans that seek to protect ecosystems or to reduce the consumption of certain fuels. While they can certainly have positive climate adaptation and mitigation effects, these policy reforms, however, have seldom been enacted as a response to climate change per se. The region has to some extent adopted social protection to support climate change adaptation (function 4), for instance through public works programs which promote natural resource management or offer technologies, training and approaches to support adaptation. Social protection programs have also played a direct role to promote carbon sequestration through afforestation (function 5). In all these initiatives, climate change adaptation or mitigation are seldom the explicit or primary program objective, and hence their climate related outcomes are mostly unknown.

Moreover, while much individual program innovation addresses aspects of climate change, these programs are isolated from each other and from most mainstream social protection programming, and in many instances, not directly aligned with national or regional climate policy. Their coverage and impacts are fragmented, with mostly a small scale of operation, including only subsets of currently vulnerable rural populations. There has, to date, been limited evaluation of programs' effectiveness in terms of the five climate functions, their cost effectiveness compared to alternative means to deliver income support and climate functions, and the feasibility of large-scale replication. This lack of evidence hinders practical engagement with the broader climate response discourse.

At the policy level, the current regional climate focus is on subregional policy coordination and information sharing around climate change impacts and responses. As yet, there is little recognition of the future role of social protection as a key policy instrument for responding to medium-term climate challenges or integration of social protection into the regional climate discourse, although there is some innovation around this in the Pacific region.

A key policy and programmatic challenge for social protection in the context of climate change in the Asia-Pacific region is the extremely limited coverage of social protection across the region overall, particularly in South and South-East Asia. With the exception of some public works programs, this coverage challenge is particularly acute with regards to the working age population in informal employment, whose needs are likely to increase significantly given the anticipated economic dislocation that climate change will generate. Currently, social protection only reaches a small subset of the poor and vulnerable. Unless coverage increases, this will represent a vanishingly small proportion of the increasing numbers impoverished by and vulnerable to climate change impacts, as illustrated by Figure 9.

The limited level of provision in the region reflects the immaturity of many social protection systems, comprising only a limited set of social protection interventions rather than a systematic set of programs comprehensively addressing current poverty or needs. Further, many existing social protection interventions are spatially limited rather than implemented nationwide, often covering selected rural areas and largely excluding urban populations. No national systems are yet able to offer transboundary support accommodating migrants other than through internationally assisted humanitarian interventions, which are not integrated into the social protection system.



Figure 9: Stylised representation of existing social protection coverage in relation to current and projected medium-term poverty and vulnerability needs resulting from climate change

Source: Authors

In many instances, administrative capacity and national financial resource availability determine the region's scale of provision rather than demand or needs. Administrative and operational systems limitations have been identified as key factors constraining the extension of social protection provision (see for example UNICEF, 2019), even under existing demand. The absence of national ID systems and registries and the lack of systems integration with digital service providers are significant constraints to scaling up provision both for shock response as well as in response to green transition and adaptation measures. Weaknesses in early warning systems and implementation modalities are constraining large-scale anticipatory responses, and overall limited financing means that many initiatives are not implemented at scale.

Overall, these factors mean that social protection is currently neither able to meet chronic needs adequately or additional need created by the shocks which are already being experienced. Hence responding to the needs of the expanding number of poor and a growing vulnerable population under the climate scenarios outlined in Chapter 3, including previously largely unsupported groups (such as the working age poor, urban populations and the vulnerable non-poor) represents a major challenge.

There is a need to build on existing regional initiatives, recognise the limits of current programming and develop a regional social protection agenda informed by emerging climate challenges and a vision of a rapidly changing future characterised by escalating and changing needs.

5 RECONCEPTUALISING SOCIAL PROTECTION TO ADDRESS CLIMATE CHANGE

Chapter 4 illustrated four key challenges concerning social protection's ability to address climate challenges in the region: social protection systems provide only limited coverage and are not adequate to meet existing social protection needs; social protection policy is, in general, not informed by or integrated into climate policy; climate-aware social protection efforts are nascent, highly fragmented, and trivial in their coverage; and the region is not prepared for the increasing and changing social protection needs that climate change will engender. This critique of existing provision in the region mirrors the wider global context (Costella et al, 2021; Costella et al, 2023)

This chapter identifies the implications of mediumterm climate change impacts for social protection needs. It sets out how responding adequately to these changing needs may require a rethinking of the policy and program design orthodoxies that have characterised provision over the last decades. The chapter closes with a series of recommendations for policy, programming and research to support this urgent process of reconceptualisation.

5.1 Changing risks, changing need for social protection

This report has outlined the complex and intersecting nature of climate risks and their likely medium-term socio-economic consequences. It has documented how this is likely to result in significant increases in income poverty and food insecurity, profoundly undermining basic income security, and that social protection is a key policy option to respond to this growing need. The nature of social protection needs is, however, likely to be significantly changed in terms of scale, type, duration, and spatial distribution in this period.

Scale of needs

The manifold climate-related factors outlined will increase the scale of risk and vulnerability. If the current warming trajectory is maintained, climate hazards will intensify, likely impacting lives, livelihoods and well-being and increasing the numbers of people that need support. It has been estimated that climate change will push up to 130 million additional people into extreme poverty just by 2030 (Jafino et al., 2020), even before the medium- and long-term effects discussed in Chapter 3 materialise. The vast majority of those entering extreme poverty are in South Asia and Sub-Saharan Africa. At the same time, implementing the adaptation and mitigation policies necessary for achieving a green transition will contribute to structural economic and labour changes, which are likely to increase needs further.

These large-scale increases in the size of populations unable to meet their basic needs without external support will have implications for social protection systems around the world. Most fundamentally, social protection systems will need to expand coverage – raising questions around the merits of universal versus targeting approaches, and the allocation of significantly increased financial resources.

Type of needs

In addition to an increase in the scale of needs, the type of needs arising from climate change is likely to differ from those that social protection currently responds to, as impacts increasingly occur on a population-wide basis. Extreme events, slow-onset events and the adverse effects of policy responses to climate change are likely to significantly increase covariate needs rendering whole populations in need of support simultaneously. Sea level rise, for example, will affect populations *en masse*, in coastal communities and cities alike. Groups not conventionally supported by social protection will be vulnerable and potentially need support, including those in rural areas and the non-poor. At the same time, idiosyncratic needs will change in relation to individuals' livelihoods and jobs. The labour market disruption arising from the reduction of brown sector (high greenhouse gas and carbon emitting industries) employment will challenge social protection systems with less well-developed active labour market components that do not traditionally provide localised employment, training and job search support and those without established unemployment insurance or pension provision.

Moreover, how needs are met could also change. The increasing scarcity of essential resources, including food, water and energy, will render availability and accessibility barriers to purchasing vital commodities. This eventuality could create a challenge for social protection systems which provide cash-based support on the assumption that affordability rather than availability is the primary constraint.

The specific nature of needs arising from climate change will differ over time and space, with significant implications for social protection policy, program design and delivery choices. Addressing covariate needs will require institutionally robust social protection systems with effective operational systems (including comprehensive ID systems and registries). Accommodating more idiosyncratic needs arising from the green transition will necessitate extending active labour market interventions and developing or adapting existing social insurance provision. Accommodating resource scarcity as well as other complex impacts could require reconsidering instrument design and shifting to direct commodity provision over cash, and overall require both institutional and programmatic flexibility.

Duration

Another way that climate change will affect social protection needs is that the increasing frequency and severity of shocks will create spikes in the acute, short-term need for social protection support. The cumulative effect of more frequent and intense shocks, combined with an increased occurrence of slow-onset stressors, will result in incremental chronic poverty increases. This situation is likely to be exacerbated by periodic step changes in underlying poverty due to crossing social, economic and environmental tipping points. Figure 10 graphically represents the implication of the coincidence of these acute, incremental and step changes in social protection 'need' induced by climate change.

These changes in the duration and persistence of needs will have implications for the coverage and targeting of social protection provision and for operational systems, flexible programming and financing. Responding will require policy alignment and institutional collaboration across social protection and humanitarian actors.



Figure 10: Schematic representation of growing social protection need due to rising chronic poverty, non-incremental changes and increased shock frequency and intensity due to climate change over time

Source: Authors

Spatial distribution

Social protection needs arising from climate changes are also likely to be spatially distinct from current needs, with an increase in the need for urban provision. Seasonal heat extremes in urban areas, affecting morbidity and productivity and driving a temporary need for income support, may increase the need for urban provision. Unemployment-related needs arising from the green transition as urban industrial jobs are lost, and increasing demand from rural-to-urban climate migration will also increase such need.

Climate change is likely to change transnational and domestic mobility patterns, increasing ruralurban and rural-rural flows, as climate migrants seek alternative livelihoods. This change will drive an increase in demand for support from internally displaced people (IDP) and from populations displaced across borders (climate refugees). Receiving areas may need more administrative or fiscal capacity to extend support through existing social protection systems. Humanitarian systems, already forced to ration support in the region due to budgetary constraints and unable to meet their existing humanitarian mandates, are unlikely to be able to expand to meet this new caseload.

The changing spatial distribution of needs will have significant national and transnational implications in policy design, institutional mandates, operational systems and financing.

These medium-term changes in the predicted scale, type, duration and spatial distribution of social protection needs have significant implications for the conceptualisation of social protection, both regionally and globally. Addressing this changing context may require revisiting some of the tenets which have informed the sector over the last decades.

Fig. 11 provides an overview of the changing needs for social protection, as well as the areas of social protection that require reconceptualisation, which are discussed next.

Figure 11 Implications of climate change on SP needs and areas for reconceptualisation



Source: Authors

5.2 Reconceptualising social protection

This section considers the implications of the changing needs identified in the previous section concerning current policy and programming practice and norms. It explores the future relevance of some conventional approaches in the sector and identifies areas where more radical rethinking may be necessary across six domains: institutions and mandates; policy alignment; coverage and targeting; instruments and program design; operational systems; and financing. It also raises questions for the social protection community regarding each domain and shares options for consideration.

5.2.1 Institutions and mandates

If social protection is to play an effective role in addressing future climate-induced poverty in this changing landscape, policy makers will need to consider the adequacy of the existing institutional context and potentially rethink the institutions, mandates and even the rights framework that currently govern social protection provision both nationally and internationally. The current allocation of sovereign and internationally negotiated mandates for social protection delivery may not be adequate for the changing context.

National governments in many LMICs in the Asia-Pacific region are struggling to provide even basic levels of social protection for their citizens. They are likely to lack the administrative or fiscal capacity to provide the significantly increased levels of provision required to meet the growing needs of their own citizens and potentially also climate refugees. It will be necessary to reconsider the mandates and capacity of national institutions and agencies mandated to deliver both social protection and disaster response. Regional or international institutions may have a role to play in supporting or directly delivering provision in instances where climate-induced domestic needs exceed national governmental resources, in line with climate justice. This may entail consolidating the work of multilateral agencies and INGOs currently operating in the social protection sector. Moreover, new institutions and rights frameworks may be required to ensure adequate levels of future provision.

Most national social protection legislation explicitly restricts eligibility on the basis of citizenship, excluding provision for cross-border population flows. Hence there is a need to consider how national institutions and mandates might be extended to accommodate the rising needs of both domestic and migrant populations and how national and supranational institutions might share these responsibilities.

Currently, populations displaced across borders largely rely on support based on international humanitarian law, often by external providers. However, with the humanitarian system under extreme strain and its future role under question (Spiegel, 2017), it is uncertain whether the humanitarian system should (and could) remain the primary mechanism for transboundary provision in the future, and if not, how this challenge might be addressed. This discussion will be rendered increasingly urgent by the scale of dislocation and the national and internationally destabilising effects of large flows of involuntary migration.

The allocation of responsibilities and mandates between national, host country and international agencies need to be reconsidered to ensure that the basic entitlements and the right to social security set out in international law are met for both those affected who remain in their own country and those forced to migrate.¹⁷ For social protection, this will entail considering welfare portability and options relating to the creation of transboundary administrative, implementation and financing structures and the allocation of responsibility for transboundary provision for climate migrants. Transboundary provision may entail clarifying and revising the mandates and obligations of host governments, governments of origin and international agencies and ensuring that these arrangements are incorporated into international and sovereign legislation and rights frameworks.

It will also be necessary to navigate tensions between the current localisation agenda, promoting the decentralisation of social protection with devolved governance, and the strategic central leadership, coordination and prioritisation required for managing climate response.

¹⁷ The right to social security set out in the Universal Declaration of Human Rights (UDHR) and the right to an adequate standard of living in the International Covenant on Economic, Social and Cultural Rights (ICESCR).

5.2.2 Policy alignment

When assessing the implications of climate change for social protection, a picture emerges of increased need and also increased complexity, which will require service delivery across boundaries in response to a multitude of new hazards. These enlarged and increasingly complex needs will require a more strategic and policy vision for social protection developed collaboratively with other sectors.

Most fundamentally, social protection policy needs to be directly informed by an understanding of climate change implications and designed to address the needs of populations identified as vulnerable in climate impact modelling. To this end, social protection policy needs to be integrated closely with national DRM, food security, livelihoods, poverty reduction, labour market and climate change mitigation policies so that its design can respond to these sectors' identified challenges as part of a just transition. Such integration includes explicitly aligning social protection policy and program design with climate policy objectives, for example, shifting the design of public works programs and Payment for Environmental Services to directly contribute to national climate change management objectives (ecosystems restoration, carbon sequestration, water conservation) and active labour market or social insurance interventions to support green structural change policy.

There is also a need for regional policy alignment based on a shared analysis of future poverty scenarios and a linking of national policy explicitly into regional policy initiatives, including planning for transboundary provision.

However, such a vision does not currently exist at a policy level in any country in the region. A small number of social protection schemes are starting to visualise social protection as a tool for responding to the environmental, social and economic challenges associated with climate change (most notably, MGNREGA in India). In most countries, though, the existing vision of national social protection provision is still to be integrated with or informed by future poverty needs analysis and cross-sectoral climate management priorities.

5.2.3 Coverage and targeting

For social protection to play a significant role in responding to the growing scale of chronic poverty and shock-related needs, systems must expand to accommodate significantly increased coverage within the medium term. Such an expansion represents a challenge given the low levels of coverage throughout most (although not all) of the region today. Another challenge is that provision is largely targeted or discretionary rather than needs based, and eligibility tends to be limited to citizens. The covariate impacts anticipated under climate change threaten the collapse of the informal safety nets provided by family and community, which currently sustain most of the poor in many LMICs, who lack access to formal provision. In this context, increased formal provision will be critical but will represent a major shift in current provision norms and a challenge given the significant capacity and resource constraints facing the sector.

In addition to extended coverage, eligibility criteria and targeting norms will need to be revisited in response to covariate shocks and stressors. Coverage will need to extend beyond those traditionally targeted in the social protection discourse, including urban populations, the non-poor and those not traditionally considered and IDP and migrants. The poverty targeting approach, which has dominated the discourse in recent decades, often based on Proxy Means Test (PMT) approaches, may not be appropriate in large covariate shocks. The occurrence of multiple compounding shocks and stressors (as outlined earlier) will affect significant segments of the population simultaneously, including the less- or non-poor. Consequently, the poverty and vulnerability indicators traditionally adopted to target social protection provision may be inadequate to identify potentially new or different vulnerabilities related to climate change.

Moving away from current targeting practices based on poverty and individual characteristics towards geographical and universal approaches to achieve efficient and needs-based provision may be appropriate. Where provision needs to be rationed, it may be more effective to adopt a 'targeting out' approach (starting with the whole population and then identifying and excluding the least needy from provision) rather than the current 'targeting in' approach (in which the poorest are identified for inclusion). A 'targeting out' approach is less likely to result in significant exclusion errors (an approach used in some COVID-19 responses to ensure adequate coverage of the poorest, (Lowe et al, 2021). A geographical-targeting approach driven by climate considerations could also identify areas where interventions should (or should not) operate to support adaptation, mitigation, or other environmental goals. For instance, this approach would be appropriate for areas where environmental considerations need to be prioritised (for example, forests) and where social protection interventions might be ineffective because of adaptation limits.

5.2.4 Instruments and program design

Climate change introduces new considerations for policymakers and practitioners around program selection and design. It presents a significantly changed context from models underlying current social protection systems and instrument design options.

Climate change is likely to lead to increased chronic poverty, spikes in covariate needs, and protracted crises, all occurring simultaneously. Such a context will require cost-efficient, simple to execute and inclusive programs, such as universal programs to address chronic poverty, layered with complementary additional support as needed. Especially in contexts where states and other implementing agencies face significant and increasing capacity and resource constraints, distinctions between humanitarian and development programming are likely to become fuzzier, and the current distinction between these approaches may not be as useful.

Availability of food and other basic resources might also influence the design of social protection transfers. In contexts where food and water are scarce, the decision whether to provide in-kind or cash-based support will need to be based on an assessment of resource availability and accessibility. In some instances, in-kind social protection in the form of food and water provision may become more relevant than cash.

More broadly, current social protection programs will need to consider that, in certain contexts, climate change impacts will mean that adaptation limits are being reached. In those contexts, existing interventions risk generating maladaptive and unsustainable outcomes. A careful analysis and instrument design is needed to ensure that social protection transfers do not incentivise populations to remain in locations or livelihoods that are unviable because of climate change. Population mobility will require a new program design approach that will not inhibit internal and transboundary migration. Currently, many programs explicitly exclude internal migrants or link payment to continued home domicile as a disincentive to population mobility. For example, programs offer support only to those remaining in rural areas rather than migrating to cities or other regions. However, as some areas reach limits to adaptation, programs linked to continuing residency in a particular location may no longer be adequate. They may even promote maladaptation, encouraging populations to remain where livelihoods are no longer sustainable. Programs that accommodate and support mobility within and between countries may be more appropriate in reach and effectiveness. These program types, however, present significant administrative and cost challenges which current operational and financing systems are not well placed to address.

As risks increase and covariate shocks become more frequent, the viability of private or social insurancebased provision may diminish. Disruption to livelihoods and employment due to shifts in the structure of local, national and regional economies may reduce the reach and relevance of employment-based provision, rendering active labour market interventions and non-market employment in public works programs increasingly appropriate, as in other periods of severe global economic dislocation (such as the industrial revolution in the nineteenth century and the great depression in the twentieth (McCord et al., 2021)).

Finally, social protection programs can be designed to contribute directly to achieving climate goals, such as those stated in regional and national climate policy, including Nationally Determined Contributions (NDCs). This design is particularly relevant for social protection programs explicitly promoting adaptation, natural systems restoration and mitigation. Cash transfers can potentially incentivise positive climate activities and livelihoods development, using hard or soft climate conditionalities linked to payment for environmental services schemes. Public works programs could harness surplus labour to support climate policy objectives, enabling mass climate mitigation and adaptation interventions.

5.2.5 Operational systems

The scale and efficacy of social protection provision are currently constrained in many LMICs by the quality of operational systems. Many existing operational systems (including registries and management information systems) have been developed to enable the delivery of specific programs within a national or subnational context and are inadequate to meet the climate-induced need for expanded domestic social protection provision, the accommodation of climate migrants or transboundary provision. Robust registration, payment and monitoring systems will be necessary to provide large-scale provision in response to increasing chronic and acute needs within and across national boundaries. Given the covariate nature of future climate impacts, these systems will need to be interoperable across borders and accommodate whole populations rather than specific subsets.

Such shifts will necessitate investment in developing national single registries and/or foundational ID systems and payment systems with cross border functionality, requiring regional or international harmonisation based on agreed norms and interoperability protocols. One example is the transnational ID initiative under development by Caribbean Community (CARICOM) in the Caribbean to assist in the transboundary provision of support in response to regional climate shocks.

5.2.6 Financing

Domestic financing for increased social protection provision in LMICs will be problematic. The viability of the orthodox social protection financing approach, where national governments receiving external overseas development assistance (ODA) financing for systems development and implementation gradually assume an increased role in funding, may be compromised as governments face rising chronic demand and shockresponse needs in the medium term. Constraints faced by governments in attempting to finance even current costs are likely to be exacerbated as climate costs (excluding social protection) reduce the fiscal space for domestic provision. Taxation, expanding contributory social insurance and exploration of innovative instruments, such as carbon market revenues, fossil fuel subsidy removal, debt restructuring and green bonds (for example, Durán Valverde et al., 2020; Aleksandrova and Costella, 2021) offer options for increased revenue to finance expanded provision. However, in poorer countries, particularly those with low carbon footprints, the potential for recycling may be limited (McCord and Costella, 2023), and overall domestic fiscal space for social protection is likely to be challenged by climate change. The availability of ODA and current humanitarian funding resources to respond to the growing need for social protection provision in the medium term is likely to be limited.

In a resource-constrained environment, funding efficiencies will be increasingly critical. Investment in social protection offers a cost-effective way to manage climate impacts on poverty. The a *priori* reduction of vulnerability through the provision of social protection to address chronic poverty, combined with large-scale, shock-response provision through existing national social protection systems, represent a cost-effective investment relative to the provision of *ex post* humanitarian interventions (Cabot Venton, 2018). Hence, social protection is likely to offer a costefficient response to climate induced poverty.

A closer alignment of social protection, disaster response, and humanitarian action can potentially reduce costs, while integrating the two currently separate approaches may ultimately offer the most efficient approach.

Climate disruption will increase the total demand for social protection, shock-responsive social protection and humanitarian support and render the boundaries between these intervention forms increasingly fuzzy and maintaining multiple separate approaches increasingly inefficient. Similarly, consolidating financing streams for social protection provision to address climate-induced poverty or creating an international fund would significantly increase efficiencies and reduce the burden on climate-affected and climate refugeehosting countries. Pending this, climate financing is an option to support extended social protection provision, potentially using the financial mechanisms established under the UNFCCC and multilateral and bilateral climate and development funds (Aleksandrova and Costella, 2021). This approach could be facilitated by adopting indicators to monitor how social interventions contribute to climate resilience, adaptation and mitigation and a broader understanding of these pathways. Robust tracking of climate-specific social protection program outcomes would be critical to facilitate this approach. The current lack of evidence on the impact and cost-effectiveness of climate change and social protection (CCASP) interventions would also need addressing while increasing sector accountability and learning,

In this context, as climate-induced shocks affect growing proportions of the population and covariate risks increase, the viability of the currently popular insurance-based risk pooling financing mechanisms may diminish, and its attractiveness for private investors decline. This change represents a significant challenge to the sustainability of national and international insurance and contingency financing initiatives developed in recent years. The viability of standard social protection based on formal employment may also be challenged by increased risk and a shrinking pool of contributors in an increasingly dislocated labour market in the medium term.

5.2.7 Challenges to existing social protection norms – conclusion

The discussion above problematises existing thinking around institutions and mandates; policy alignment; coverage and targeting; instrument and program design; operational systems; and financing in the light of climate change. Table 1 summarises the main concerns under each area and the issues that need to be addressed to enable social protection to play a significant role in responding to future climate-induced poverty.

SP policy and implementation area	Climate change challenge to existing orthodoxy	Areas for reconsideration
Institutions and mandates	 Limited domestic capacity to meet growing climate needs. Multiple international institutions working on social protection but limited focus on addressing medium-term climate challenge and ensuring adequate provision at scale. Continued separation of humanitarian/disaster response and social protection institutions and mandates in a changing context with increased incidence of covariate climate-induced challenges Distinction between humanitarian and social protection mandates is likely to become increasingly blurred. Increase in transnational issues requiring regional/ international governance, including transnational mobility and coordinating response to regional shocks and stressors. Existing national social protection legislation and policy exclude migrant provision and structure for responding to transboundary climate refugee flows. Tension between strategic climate response and localisation agenda. Current allocation of mandates not well matched to ensure meeting of future entitlements to social protection support in context of climate change. 	Consider revising international architecture in terms of rights, institutions and mandates to best support/deliver mass social protection provision in line with future climate-induced needs. Consider possible limits to national mandates regarding social protection entitlements in light of climate justice considerations and alternative approaches. Accelerate the integration of social protection and humanitarian response institutions and mandates (financing, support and delivery). Formalise institutional framework for transboundary rights and provision, including consideration of portability of rights. Develop regional frameworks for social protection provision and/or governance.

Table 1: The implications of climate change for social protection policies and programming

SP policy and implementation area	Climate change challenge to existing orthodoxy	Areas for reconsideration
Policy alignment	National social protection policy not yet directly informed by climate-sector analysis or recognition of changing and increasing medium-term need.	Ensure social protection policy informed by medium-term climate sector analysis.
	Social protection contribution to climate change management not accommodated in national climate change policy or Nationally Determined Contribution (NDC) climate action plans. Social protection policies not aligned with or contributing to climate management policy priorities in key sectors, including environment, energy, agriculture, industrial policy. Regional social protection policy response to future challenges, including transnational considerations (mobility and displacement, resource scarcity, regional-level covariate shocks) not yet initiated. Role of social protection as key policy to promote social and political stability in context of climate disruption.	Align social protection interventions with climate, energy, agricultural and industrial policy climate management objectives. Integrate social protection policy into national climate policy, using social protection to repair ecosystems, promote carbon sequestration and incentivise behaviour change. Design social protection policy to support energy sector transformation, the implementation of decarbonisation policies and the green structural transition as part of the policy package to achieve net zero.
		in social protection to maintain stability in the context of social and economic dislocation.
Coverage and targeting	Low coverage of existing populations needing social protection coverage. Significant increases in needs anticipated due to increased chronic poverty and shocks.	Significantly increase scale of coverage – both ongoing and shock response. Move away from conventional targeting criteria and approaches to accommodate changing vulnerabilities and extended poverty.
	New groups becoming vulnerable (for example, non-poor, urban) and increase in covariate shocks. Changing spatial distribution of poverty.	
		Rethink poverty targeting versus universalism and geographical targeting to enhance coverage and efficiency.
		Accommodate displaced populations both domestically and internationally.

SP policy and implementation area	Climate change challenge to existing orthodoxy	Areas for reconsideration
Instruments and program design	Significantly changed context from the mid- twentieth century social, economic and labour market model underlies current conception of social protection systems and instrument design.	Consider new instruments and program design options which accommodate increased poverty and large-scale covariate risks. Ensure instruments accommodate internal and transboundary migration as adaptation strategy and recognise limits to adaptation.
	Compounding shocks blur the distinction between humanitarian and development needs, shock response and chronic poverty. Increasing overlap between humanitarian, development, apticipatory and secondsize	
	interventions and instruments.	
	Programs linked to domicile can disincentivise mobility and promote maladaptive or unsustainable responses.	provision to address availability constraints (for example, food or energy provision).
	Some populations and livelihoods will experience limits to adaptation.	Consider future viability of insurance-like instruments in a context of increasing risks.
	Scarcity and competition for basic resources such as food, water and energy mean that availability rather than access is the key constraint to adequate consumption.	
		Changed evaluation norms are required to appraise performance of climate-
	The frequency of covariate shocks and disruption of formal employment may limit viability of insurance-based instruments.	responsive programming, including agreed indicators on climate performance to inform future programming. Consider using SP programs to support national adaptation and mitigation at scale. Shift away from small-scale, project-based programming with improved cost efficiency and delivery.
	Climate change and social protection	
	based – not playing strategic or significant role.	
	Lack of evidence on impact of current climate- responsive programming hindering program choice.	
	Need for efficiency in provision due to increasing demand in context of resource constraints.	
	Potential to use social protection interventions directly to address climate adaptation and mitigation as part of climate strategy.	Link program design to national climate management priorities.
Operational systems and delivery	Increase in need and requirement for extended coverage to address covariate shocks, not matched by capacity of existing systems – systems deficiencies are constraining potential for extended provision.	Develop essential operational systems including national ID, national registry and payment/ delivery systems with potential for regional interoperability.

FinancingBudgets for climate-responsive and conventional social protection provision likely to be increasingly integrated as the boundaries between the interventions blur in the medium term. Governments will face increasing needs and a simultaneous contraction in fiscal space due to climate impacts constraining capacity for financing for social protection as the macro- economic impacts of climate change are experienced by donor governments.Plan for the integration/ consolidation of humanitarian, crisis response and ongoing social protection financing for climate response.Currently social protection as the macro- reconomic impacts of climate change are experienced by donor governments.Plan for the integration/ consolidation of humanitarian, crisis response and ongoing social protection financing for climate response.Currently social protection sector and climate frunds, humanitarian financing sources and social protection sources. The use of multiple sources will become increasingly complex and inefficient for governments.Plan for the integration/ consolidation of humanitarian, crisis response and ongoing social protection financing instruments based on pooled risk and insurance-based approaches likely to decrease in viability as covariate risks accelerate.Plan for the integration/ consolidation of humanitarian, crisis response and ongoing social protection financing instruments based on pooled risk and insurance-based approaches likely to decrease in viability as covariate risks accelerate.Plan for the integration/ consolidation of humanitarian, crisis response.Reconsider future viability of contributes to the development of future funds to ensure they accommodatePlan for the integration/ consolidation of humanitarian,<	SP policy and implementation area	Climate change challenge to existing orthodoxy	Areas for reconsideration
both core and climate- responsive social protection and the development of the operational systems crucial for these.	Financing	 Budgets for climate-responsive and conventional social protection provision likely to be increasingly integrated as the boundaries between the interventions blur in the medium term. Governments will face increasing needs and a simultaneous contraction in fiscal space due to climate impacts constraining capacity for financing increased provision. ODA likely to be constrained as a source of financing for social protection as the macroeconomic impacts of climate change are experienced by donor governments. Currently social protection sector and climatefunds, humanitarian financing sources and social protection sources. The use of multiple sources will become increasingly complex and inefficient for governments. National and international financing instruments based on pooled risk and insurance-based approaches likely to decrease in viability as covariate risks accelerate. 	Plan for the integration/ consolidation of humanitarian, crisis response and ongoing social protection financing for climate response. Interrogate the future viability and sustainability of public and private insurance-based financing mechanisms in the medium term in the context of increased frequency and intensity of covariate shocks. Reconsider future viability of contributory forms of social protection and domestic financing. Explore alternative international financing models, including climate financing and contribute to the development of future funds to ensure they accommodate social protection provision. Review long-term financing models which accommodate both core and climate- responsive social protection and the development of the operational systems crucial for these.
5.3 Priority issues and way forward

This report identifies examples of innovative programming across the five functions of social protection and climate change in the Asia-Pacific region. It documents a context with highly developed integration of climate considerations into development discourse at country and regional levels. However, the region has yet to strategically integrate social protection and climate responses beyond the shock narrative of DRM and SRSP. It also has yet to acknowledge the profound implications that climate disruption is likely to have for social protection by 2050, in increased need, change in the nature and location of need and the challenges to current practice implied in meeting these needs.

The report confirms that the key challenges for most Asia-Pacific countries are that low coverage and financing of basic social protection constrain social protection's ability to manage increasing climate risks. That is, the strategic integration of social protection and climate policies and sectors is low at regional and country levels, and climate risks still need to be significantly quantified and integrated into social protection programming.

Integrating the climate and social protection agendas is critical to address these gaps, as is promoting a social protection vision adequate to respond to the medium-term needs likely to emerge. Integration can be taken forward simultaneously at program and policy level levels. Investment in programmatic and strategic innovations will be required to develop the region's climate change and social protection agenda so that it can adequately respond to the challenges of climate change-induced poverty in the medium term. At the program level, the immediate priority is to enhance and adapt individual instrument and program design and evaluation to inform efficient and effective expansion of provision able to contribute to climate management and to develop new programming models and approaches. At the policy level, the priority is to shift the broader discourse to ensure that sectoral development is informed by an understanding of the future implications of climate change and that profound changes in the institutional and policy establishment in the sector are undertaken.

The following sections set out recommendations for taking forward this new agenda, to reframe social protection to address the challenges of climate-induced poverty. They accommodate policy, programming and advocacy interventions and relate to national country contexts, regional and international and cover the six key areas discussed earlier (see Section 5.2). They also include the critical first step of promoting an understanding of the medium-term implications of climate change for social protection needs.

5.3.1 Promoting understanding

- » Promote understanding of medium-term climate impacts, their implications in terms of social protection needs and the role of social protection in climate change response.
- » Promote understanding among social protection actors of the socio-economic implications of climate change and the significant increases in poverty and vulnerability that this is likely to induce.
- » Increase understanding of the distributional impacts of climate change, especially across groups that are most vulnerable to its impacts. In particular, understanding disaggregated impacts for women, girls, and youths as well as other groups such as indigenous populations is important for the design of adequate policy responses.
- » Promote awareness among social protection and climate change actors of the potential role of social protection in responding to this challenge.
- » Inform climate actors about current and potential social protection responses.
- » Increase understanding of the role of informal social protection, including remittances, the challenges, opportunities, and their complementarity with formal social protection in a context of climate change.

5.3.2 Policy

Advocate for and support policy integration

- » Ensure social protection is informed by climate realities and promote the strategic integration of social protection and climate strategies by bringing together social protection and climate change actors and processes. Currently, the two discourses remain separate from a strategic perspective.
- » Initiate interagency discussion among UN agencies, multi and bilateral donors and INGOs on revisiting the international architecture as it pertains to support for the delivery of social protection and humanitarian interventions in the context of an analysis of future needs – to include a review of the adequacy of the existing rights framework.
- » Develop regional social protection provision and/or governance frameworks, including transboundary provision.
- » Promote strategic investment in social protection to maintain stability in the context of social and economic dislocation.
- » Carry out national analysis of climate implications for social protection needs in the medium term.
- » Initiate dialogue between key actors across the range of conceptual approaches to climate change, including ASP, SRSP, AA and DRM, with the aim of promoting a shared vision of the challenge and exploring practical steps for integration or harmonisation.
- » Update social protection policies to accommodate medium-term climate change vision and pathways for developing appropriate provision.
- Align social protection interventions with climate, energy, agricultural and industrial policy climate management policies.
- » Integrate social protection policy into national climate policy, using social protection to repair ecosystems, promote carbon sequestration and incentivise behaviour change.
- » Design social protection policy to support energy sector transformation, the implementation of decarbonisation policies and the green structural transition as part of the policy package to achieve net zero.
- » Include social protection as one of the set of policies adopted to contribute to emissions reduction and adaptation in the Nationally Determined Contribution (NDC) climate action plans.

5.3.3 Program development and implementation

Review existing interventions, identify where current approaches are in tension with the changing climate induced needs and identify development options to:

- » Link program design to national climate management priorities.
- Initiate dialogue around the program-design implications of using social protection to respond to climate-induced poverty needs in the medium term.
- » Set timeframe and process for redesigning national social protection systems to support national adaptation and mitigation at scale.
- » Shift away from small-scale project-based programming.
- » Develop new or adapt existing instruments and program-design options which accommodate increased poverty and large-scale covariate risks.
- » Explore options for in-kind provision to address availability constraints (for example, food provision).
- » Identify alternative targeting criteria and approaches to accommodate changing vulnerabilities and extended poverty across different population groups such as women, men, children, people with disabilities, indigenous groups, and other intersectionality.
- Consider the viability of universalism and geographical targeting over poverty targeting to enhance coverage and efficiency.
- Explore national and regional options for accommodating internally displaced and climate refugee populations into social protection systems.
- » Consider the future viability of insurance-based instruments in the context of increasing risks.
- » Appraise carbon pricing and green structural change implications for social protection needs.
- Invest in development of interoperable operational systems which enable future provision, both nationally and regionally.
- » Appraise mobility implications for national provision and develop instruments to accommodate internal and transboundary migration as an adaptation strategy and recognise adaptation limits.
- » Develop and implement rigorous evaluation norms to inform future policy and programming, including indicators on climate performance and appraisal of scalability, affordability and cost effectiveness compared to alternative policy responses

5.3.4 Financing

- » Analyse the cost and fiscal implications of extended provision in the medium-term
- Assess the viability of program extension using domestic resources and the availability of international financing options.
- » Initiate a process for the integration/consolidation of humanitarian, crisis response and ongoing social protection financing for climate response.
- » Interrogate the future viability and sustainability of public and private insurance-based financing mechanisms in the context of increased frequency and intensity of covariate shocks.
- Initiate donor dialogue on alternative and more efficient international financing modalities, including climate financing.
- » Ensure new climate funding sources accommodate social protection provision.
- » Adopt project financing criteria that consider scalability, replicability, and contribution to future sector portfolio development in terms of strategic climate-related needs.
- » Promote both climate justice and stability narratives to support strategic investment in social protection to maintain stability in the context of social and economic dislocation nationally and internationally.

Together, these recommendations are designed to contribute to developing a changed social protection discourse which accommodates the medium-term challenges of climate-induced poverty.

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7 APPENDICES

Appendix 1: Overview of climate impacts for South Asia by socio-economic impact area

Socio-economic	Projected medium-term impacts (2030 to 2050)		
impact area			
Food and water insecurity	 Crop reductions by 2030 » Loss of productive land by SLR » 2 to 12% yield reductions for rice and wheat by 2030 and from 17 to potentially 50% by 2050 Reduction in fishery capacity and maximum total catch » Large increases in food insecurity » Region with largest number of food-insecure people by 2050 » Additional 22.7 million people at risk of hunger by 2030 under high warming scenario » 11 to 20% increase in individuals at risk from extreme hunger by 2050 Decrease in water availability. » Large losses of ground and freshwater resources from SLR, climate-related disasters and increased demand » Water demand exceeding water supply in India and the Maldives by 2030 		
Infrastructural stress	 Negative impacts on infrastructure, especially electricity, transport, sanitation, and housing 4 to12% of infrastructure impacted by 2085 from SLR under a medium-warming scenario 		
Health and nutrition	 Increase in morbidity and rates of diseases, illness, and malnutrition. » Increases in excess annual deaths by 2030, Increase in child deaths due to malnutrition » Increase in heat-related deaths. » Some areas will experience heat exceeding the wet bulb threshold of survivability. » Increase in deaths due to vector-borne diseases 		
Urban pressure	 Increase in pressures on urban areas. South Asia is the second fastest urbanising region in the world with a high number of megacities and coastal cities at risk of extreme heat, SLR and climate-related disasters 		
Poverty and inequality	 Increase in poverty rates. » Extreme poverty rates forecast to increase over 15% in Bangladesh, up to 25% in India, over 25% in Pakistan and 30% in Sri Lanka in the medium term under a high emission scenario. » Increased impacts expected for vulnerable and marginalised groups. » Between 14 and 36 million additional people in extreme poverty by 2030 » The main drivers are increased food prices, disasters, and health shocks 		

Socio-economic impact area	Projected medium-term impacts (2030 to 2050)
Peace and mobility	 Increase in internal migration. » Up to 40 million climate-induced migration by 2050 under a high-warming scenario » Large annual displacements due to climate-related disasters already occurring. » Uncertain impacts on international migration
Local economies and labour markets	 Increase in unemployment and livelihoods loss. » High numbers of individuals and households reliant on climate-vulnerable sectors, such as agriculture and aquaculture » Up to 5.3% of total working hours expected to be lost to heat stress by 2030
Production	Decrease in GDP » Net decreases ranging from 6.5 to 12.6% of GDP under a high-warming scenario by 2050

Note: All empirical projected impacts are provided for the medium term (2030-50), unless otherwise specified. Sources: IPCC, 2022; WHO, 2014; IFPRI, 2022; Jafino et al, 2021

Appendix 2: Overview of climate impacts for South-East Asia by socio-economic impact area

Socio-economic impact area	Projected medium term impact(s) (2030–2050)
Food and water insecurity	 Decline in crop yields. 7 to 9% decline in crop yields under a medium-warming scenario by 2050. 6 to 12% decline in rice yields by 2050 under a medium warming scenario Up to 4.7% of arable land lost in the Mekong River Delta from a 30 cm SLR, with larger potential losses from salinisation Decrease in aquaculture capacity and total maximum catch. Particularly Vietnam and the Philippines) Increase in food insecurity. Between 30 to 50% increase in food insecurity by 2030 under a high-warming scenario Decrease in water availability and security.
	 Increased extreme precipitation, will causing contamination and infrastructural loss and prolonged, severe droughts
Infrastructural stress	 Increase in infrastructural stress South-East Asia has some of the most exposed nations to infrastructural stress from climate impacts (especially SLR), including Indonesia, Vietnam and the Philippines The region's rapidly growing and urbanising population is already straining energy and electricity infrastructure.
Health and nutrition	 Increase in morbidity and rates of diseases, illness and malnutrition. » Increase in deaths due to heat stress by 2030 which will increase significantly by 2050 » 12.7% increase in excess deaths under a high-warming scenario by 2100 » increased deaths due to vector-borne and diarrheal diseases » Some areas may experience days with heat exceeding the wet bulb threshold of survivability
Urban pressure	 Increase in urban pressures. » South-East Asia has many of the fastest growing cities with large, informal populations. » Many cities are in vulnerable, low-lying coastal areas vulnerable to SLR and coastal flooding » There is limited investments in adaptive infrastructure and planning policies in many cities in the region

Socio-economic impact area	Projected medium term impact(s) (2030–2050)		
Poverty and inequality	 Increase in poverty rates » Between 3 and 7.5 million additional people in extreme poverty by 2030 (in East Asia and Pacific) » Main driver of poverty is health related impacts. 		
Peace and mobility	 Impact on internal migration 2 million internal climate migrants in the Lower Mekong region under a highwarming scenario Significant migration expected out of low-lying coastal regions, particularly in the Philippines and Vietnam Impact on international migration Already large numbers of international migration for work, likely to increase 		
Local economies and labour markets	 Increase in unemployment » High numbers of the workforce employed in climate-vulnerable sectors including agriculture and fisheries Increase in days lost to heat stress » 3% of working hours in Asia and the Pacific lost to heat stress by 2030 		
Production	Decrease in GDP » Up to 5% loss in GDP by 2050 under a high-warming scenario Decrease in tourism revenue » Declines of up to 17% in some regions by 2050		

Note: All empirical projected impacts are provided for the medium term (2030-50), unless otherwise specified. Sources: IPCC, 2022; WHO, 2014; IFPRI, 2022; Jafino et al, 2021

Appendix 3: Overview of climate impacts for the Pacific by socio-economic impact area

Socio-economic	Projected medium-term impact(s) (2030 to 2050)		
impact area			
Food and water insecurity	Decrease in crop yields		
	 » Up to 30% decrease in cassava, 10% decrease in sweet potato and 16% decrease in rice in some regions by 2050 under a high-warming scenario 		
	Decreases in total maximum catch		
	» 50% decline in catch potential by 2100 under medium-warming scenarios		
	Increase in food insecurity		
	 » 21 and 45% increase in people at risk of hunger in PNG and the Solomon Islands, respectively, under a high-warming scenario by 2050 		
	 » Large number of individuals and households dependent on agriculturally- based livelihoods 		
	» Regional dependence on food imports likely to become more expensive		
	Loss of arable land		
	» Agricultural land is already limited and will be further reduced by SLR, coastal flooding and salinisation		
	Increase in water insecurity		
	 » Limited freshwater resources mean that even limited SLR (0.4 m) will substantially reduce water availability 		
	 Increases in groundwater use and pressures from urbanisation will amplify water scarcity 		
Infrastructural stress	Increase in infrastructural loss and damage		
	 Most Pacific nations have >50% of infrastructure in low-lying coastal zones (some over 95%) making them highly vulnerable 		
	» Tropical cyclones and coastal flooding are already causing substantial annual damage and will worsen		
	Increase in infrastructural stress		
	» High rates of urbanisation, informal settlement and limited land will		
	compound infrastructural stress		
Health and nutrition	Increase in excess morbidity and rates of diseases and illness		
	» Increase in deaths due to environmental risks		
	» Increase in deaths due to malnutrition and food insecurity due to reduction in locally available food by 2050		
	» Increase in health risks due to infrastructural failure following disasters		
	» Increase in mental health problems		
Urban pressure	Increase in urban pressures		
	 Pacific nations have high levels of urbanisation 90% of the population lives within 5 km of the coast – highly vulnerable 		

Socio-economic impact area	Projected medium-term impact(s) (2030 to 2050)		
Poverty and inequality	Increase in poverty and inequality		
	 » High dependence on climate-vulnerable sectors, including tourism, agriculture and fishing resulting in reduced income 		
Peace and mobility	Increase in internal migration		
	 Migration (planned and unplanned) from more vulnerable to less vulnerable nations in the region is already taking place 		
	» Some settlements will face inundation in the short to medium term		
	Potential for increases in international migration		
	» Already large numbers of international migration for work		
Local economies and	Increase in unemployment		
labour markets	» Most of the workforce is employed in agriculture, fisheries and tourism		
	» Large numbers of individuals employed in the informal sector		
Production	Decrease in GDP		
	» 2 to 4% decrease in GDP by 2030 and 2.5 to 4.5% decrease by 2050 for most nations under a high-warming scenario		
	» Over 3% annual loss in GDP from climate-related disasters for some nations		

Note: All empirical projected impacts are provided for the medium term (2030-50), unless otherwise specified. Sources: IPCC, 2022; WHO, 2014; IFPRI, 2022; Jafino et al, 2021

Appendix 4: Percentage of national population covered by at least one social protection benefit (effective coverage) 2020 or latest available year



Source: ILO, 2021, based on SSI; ILOSTAT; national sources

Appendix 5: International organisations and groupings hosting data platforms or knowledge hubs of studies on the Asia-Pacific region

Regional consortium for Asia and the Pacific (RCCAP)

RCCAP is a knowledge hub and information base developed by CSIRO and the ADB to facilitate, disseminate and support the development and application of climate information for Asia and the Pacific. The platform hosts several data portals of biophysical climate impacts and a catalogue of national-level profiles of social impacts specific to each Pacific Island nation.

The Asia-Pacific Adaptation Network (APAN)

APAN is a regional program for managing and applying adaptation knowledge in the region. It supports governments and other organisations working on adaptation, with special emphases on the management of knowledge and capacity building. APAN activities are carried out by the Institute for Global Environmental Strategies (IGES), Regional Resource Centre for Asia and the Pacific (RRC.AP) located at the Asian Institute for Technology (AIT), and Stockholm Environment Institute (SEI) representing two programs coordinated by the UNEP Regional Office for Asia and the Pacific (ROAP) and merged as one program in 2011.

Asia-Pacific Climate Change Adaptation Initiative Platform (AP-PLAT)

AP-PLAT is a web-based information platform for national and local policymakers, researchers, businesses and individuals seeking practical, up-to-date information on climate change adaptation and relevant science. AP-PLAT's goal is to contribute to the sustainability and resilience of the Asia-Pacific region by informing decisions and supporting adaptation actions.

Other international platforms that do not focus on the Asia-Pacific region but include relevant information include:

Climate Central

Climate Central uses science, big data and technology to generate thousands of local storylines and compelling visuals that make climate change personal and show what can be done about it. They address climate science, sea level rise, extreme weather, energy and related topics.

Internal Displacement Monitoring centre (IDMC)

IDMC provides high-quality data, analysis and expertise on internal displacement with the aim of informing policy and operational decisions that can reduce the risk of future displacement and improve the lives of internally displaced people (IDP) worldwide.

Global Climate Risk Index

The Global Climate Risk Index presents estimates of national-level risks from climate-related disasters worldwide annually, ranking nations for their relative vulnerability to climate-related disasters and mapping these rankings.

Notre Dame Global Adaptation Initiative (ND-GAIN)

The ND-GAIN Country Index is a measurement tool that helps governments, businesses and communities examine risks exacerbated by climate change, such as over-crowding, food insecurity, inadequate infrastructure and civil conflicts. Free and open source, the Country Index uses 20 years of data across 45 indicators to rank over 180 countries annually based on their level of vulnerability and their readiness to successfully implement adaptation solutions. An array of analytic tools allows users to examine trends, play out scenarios and investigate components over time.

Green Growth Knowledge Partnership (GGKP)

The Green Growth Knowledge Partnership (GGKP) is a global community of policy, business and finance professionals and organisations committed to collaboratively generating, managing, and sharing knowledge on the transition to an inclusive green economy.

Climate Change Knowledge Portal (CCKP)

The Climate Change Knowledge Portal (CCKP) is the hub for climate-related information, data and tools for the WBG. Users can access and explore global data on historical and future climate vulnerabilities and impacts. Climate data aggregations are currently offered at national, sub-national and watershed scales.

Appendix 6: Major regional and subregional initiatives relevant to the integration of social protection and climate programming

Program/Activity	Key actors	Description
Regional		
Climate Action Programme (CAP)	ASEAN & KfW/GIZ	CAP's goal (2022–24) is to promote cooperation around ASEAN climate policies including green recovery, living income and linking social protection to Early Warning Systems (EWS)
Implementation of Agreement on Disaster Management and Emergency Response (AADMER)	ASEAN with ADB support	AADMER is a legally binding regional agreement, signed in 2005, to address vulnerability to natural disasters and guide regional cooperation on disaster risk reduction (DRR) and climate change adaptation. The 2021–2025 work program aims to enhance ASEAN's DRR and DM capabilities through inter- sectoral cooperation, capacity building, scalable innovation, resource mobilisation, new partnerships and stronger coordination among ASEAN Member States. The program incorporates the main provisions of the ASEAN Vision 2025 on Disaster Management; ASEAN Declaration on One ASEAN One Response (OAOR), the ASEAN ICT Roadmap on Disaster Management and other regional agreements. It aligns itself with the Sendai Framework for Disaster Risk Reduction 2015–2030 (SFDRR), the Paris Agreement on Climate Change and 2030 Agenda on Sustainable Development.
Implementation of Guidelines on Disaster- Responsive Social Protection to Build Resilience	ASEAN, ADB, UN	The 2021 guideline provides frameworks, guiding principles and key considerations that are critical for social protection programs to deliver on resilience outcomes. It also identifies practical steps for policy makers and practitioners from key sectors including social welfare and development, DRM and public health to work together to leverage adaptive social protection systems based on ASEAN case studies (ASEAN, 2021).
Asia Pacific Adaptation Network (APAN)	UNEP	APAN is a regional program that works with governments and organisations to share knowledge about adapting to climate change and to support implementation of adaptation measures.
Asia-Pacific Ministerial Conference on Environment and Development	UNESCAP, UNDP, ADB and UNEP	Held every five years, this meeting includes a Thematic Working Group on Environment and Disaster Management, cochaired by UNEP, UNESCAP and OCHA.

Program/Activity	Key actors	Description
Sub-regional Environmental Policy Dialogue (SEPD)	UNEP	SEPD meets annually to discuss emerging issues and provide guidance to UNEP programs in the region advising on enhanced global and regional delivery and identifying emerging environmental issues at the regional level. It comprises participants of the five subregional intergovernmental bodies.
Poverty-Environment Action (PEA) for Sustainable Development Goals (SDGs)	Ministries of Finance, Planning, Environment, Natural Resources and sectoral line Ministries, supported by UNEP & UNDP	PEA for SDGs works to prevent environmental degradation that harms the poor and marginalised (current focus Bangladesh, Lao PDR, Myanmar and Nepal).
<u>Australian Climate Finance</u> Partnership (ACFP)	Managed by ADB and DFAT	ACFP is a concessional finance facility supporting climate action in SEA and the Pacific.
Regional Climate Consortium for Asia and the Pacific (RCCAP)	ADB	RCCAP is a community of practice established to facilitate the development, dissemination and application of climate information in support of climate-resilient development in ADB Developing Member Countries
South Asia		
South Asia Cooperative Environment Programme (SACEP)		SACEP is an inter-governmental organisation, founded in 1982 that aims to promote regional co- operation in the field of environment, both natural and human, and associated issues of economic and social development; support conservation and NRM and work with all national, regional, and international institutions, governmental and non-governmental, as well as experts and groups engaged in such co- operation and conservation efforts in line with The Colombo Declaration on SACEP. Member countries are Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka.
South-East Asia		

Program/Activity	Key actors	Description
South-East Asia Network of Climate Change Offices (SEAN-CC)	UNEP	Founded in 2009, SEAN-CC is a regional network with the objective of supporting ASEAN countries to meet their UNFCCC commitments
Pacific		
2050 Strategy for the Blue Pacific Continent	Pacific Islands Forum Secretariat	The strategy, developed in 2022, was prepared to promote regional coherence and collective action on seven thematic areas: political leadership and regionalism; people-centred development; peace and security; resource and economic development; climate change and disasters; ocean and natural environment; and technology and connectivity.
Australia's Science and Technology for Climate Partnerships (SciTech4Climate)		SciTech4Climate brings together Australian scientists, climate specialists and development partners in the Indo-Pacific to ensure regional responses to climate change are supported by the best available science and technological advances.
<u>Pacific Roadmap for</u> <u>Sustainable Developmen</u> t	Pacific Islands Forum Secretariat	The roadmap was developed to guide regional efforts and support to countries for implementation, monitoring and reporting on global and regional SDG commitments for the achievement of the 2030 Agenda and includes 132 Pacific Sustainable Development Indicators (PSDI).
Secretariat of the Pacific Regional Environment Programme (SPREP)	Supported by Council of Regional Organizations of the Pacific & UNEP	SREP is a regional intergovernmental regional organisation established by the Governments of the Pacific to ensure the protection and sustainable development of the region's natural resources.
<u>Australia Pacific Climate</u> Partnership (APCP)	APCP support unit financed by DFAT	APCP works with Pacific Island governments to support climate and disaster resilience and encourage low carbon growth in the region.
<u>Climate Resilient by Nature</u> (CRN)	DFAT	The CRN program works with local communities to restore and protect critical ecosystems, build sustainable livelihoods and increase resilience to climate shocks in the Pacific.
Pacific Insurance and Climate Adaptation Program (PICAP)	United Nations Development Programmes (UNDP)	PICAP (2021–25) supports the extension of parametric market-based climate risk insurance (micro-insurance) to improve the financial preparedness and resilience of Pacific governments and communities, specifically vulnerable segments of society and economic sectors, towards climate change and natural hazards through the development and implementation of innovative and inclusive Climate Disaster Risk Financing and Insurance (CDRFI) instruments. PICAP includes Fiji, Vanuatu and Tonga in the inception phase.

Program/Activity	Key actors	Description
Partnerships for Social Protection (P4SP)	DFAT	Partnerships for Social Protection (P4SP) is an Australian Government initiative which partners with governments to design and strengthen national social protection systems and support networking, learning and knowledge sharing on social protection, grounded in experience and evidence from countries in the region to develop formal social protection systems in Pacific Island Countries and Timor-Leste.
<u>Australian Infrastructure</u> <u>Financing Facility for the</u> <u>Pacific (AIFFP)</u>	DFAT	AIFFP is partnering with governments and the private sector in the Pacific and Timor-Leste to provide grant and loan financing for high quality, transformational energy, water, transport, telecommunications and other infrastructure.
<u>Climate and Oceans Support</u> <u>Program in the Pacific</u> <u>(COSPPac)</u>	DFAT	COSPPac enhances the capacity of Pacific Islands to manage and mitigate the impacts of climate variability and tidal events, working with stakeholders to forecast and report on climate, tides and the ocean.