2022 Review of Climate Ambition in Asia and the Pacific

Raising NDC targets with enhanced nature-based solutions

ESCAP 75 MOVING FORWARD TOGETHER
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2022 Review of Climate Ambition in Asia and the Pacific

Raising NDC targets with enhanced nature-based solutions

With a Special Feature on Engagement of Children and Youth in Raising National Climate Ambition

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Foreword

The 27th United Nations Climate Change Conference of the Parties (COP27) marks the 30th anniversary of the adoption of the United Nations Framework Convention on Climate Change (UNFCCC). Ahead of this milestone, the United Nations Secretary-General António Guterres has called "for commitments to deliver on emissions reduction by 45 per cent by 2030", and for working together to "steer humanity to the path of living in harmony with the planet". The Egyptian COP27 Presidency is also emphasizing the need to accelerate global climate action through reducing emissions, scaling-up adaptation efforts, and enhancing flows of appropriate finance for a rapid and 'just transition'.

Nowhere is the urgency for action more apparent than in the Asia-Pacific region. In 2022, countries experienced unprecedented climate-induced disasters, such as dreadful typhoons and floods, as well as heatwaves and droughts, resulting in human and economic losses that are undermining hard-won development gains in developed and developing countries alike.

The historic responsibility for ensuring a healthy, safe and promising future for the next generation is weighing heavily on today's policymakers. As this report explains, it is children, currently aged ten or younger, who are expected to experience a nearly four-fold increase in extreme events. More violent storms, more severe heatwaves and more perilous floods and droughts will create unliveable conditions for the next generation. It is our responsibility and duty to act now and do everything in our power to create a better future for our children.

Civil society, and especially young people, are leading the charge. They are championing more urgency, faster action and greater ambition. Strong commitments to carbon neutrality by 2050 and 2060 are on the rise. As this ESCAP, UNEP and UNICEF joint assessment report shows, 39 out of the 49 Asia-Pacific member States have made carbon neutrality and net-zero pledges, and have started developing enabling frameworks and strategies for implementation of their commitments. This progress must be applauded. However, many countries are yet to develop, or update, their long-term low emission development strategies to support achieving carbon neutrality and net-zero commitments. Action to address this crisis cannot be strong enough or come fast enough.

This assessment report conveys several recommendations for a 1.5°C pathway:

First, align the National Determined Contributions (NDCs) with long-term low emissions development strategies, and with other development policies, to support a 45 per cent reduction in emissions by 2030 and climate neutrality commitments by 2050-2060.

Second, develop and implement deep decarbonization sectoral pathways for energy, transport, urban development, trade and investment, by utilizing new forms of technology and innovation, in order to facilitate more ambitious NDCs and carbon neutrality/net-zero commitments.

Third, invest in nature-based climate solutions (terrestrial and marine) by capitalizing on Asia-Pacific's distinctive ecosystem and carbon sequestration potential, and build on the plans for nature-based climate solutions already underway in 37 countries to increase carbon sequestration and to support adaption efforts.

Fourth, scale up innovative financial instruments tailored to country-specific conditions, such as debt for climate swaps and climate bonds to mobilize finance from capital markets, as well as emissions trading schemes and carbon taxes to mobilize domestic resources.

Fifth, create a seat at the table for all stakeholders, with a particular focus on engaging children and young people in the design, development and implementation of climate action policies, programmes and decisions.

ESCAP, UNEP, UNICEF, the regional UN development system, and other development partners are fully focused on supporting the Asia-Pacific region to realise its pivotal role in overcoming the global climate crisis and implementing the carbon neutrality and net-zero pledges.

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Executive summary

As of August 2022, 39 out of the 49 Asia-Pacific member States included in this report, have made carbon neutrality and net-zero pledges, and have started developing enabling frameworks to the support implementation of their commitments. However, very few of these pledges are supported by updated and ambitious NDC commitments that will scale down greenhouse gas emissions to keep global warming within 1.5°C pathway . The Asia-Pacific region will only be able to drive ambitious climate action when such pledges are supported with higher ambition of NDC commitments.

Since COP26, 13 countries have updated their approach to fight climate change. Progress is being made across different subregions, and by countries with different income levels. While there is some progress in developing synergies between green growth, development strategies and long-term low-emissions strategies, more can be achieved during the NDC updates process, which can start any time with a final submission in 2025. Indeed, those Asia-Pacific countries that have included innovation and roll out of decarbonization technologies will be at an advantage during the implementation of their commitments.

Given the current volume of greenhouse gas emissions in the Asia-Pacific region, it is important to focus on removing the barriers to decarbonization of key and carbon-intensive sectors through phasing down and phasing out coal, reducing dependence on other fossil fuels, scaling up penetration of renewable energy resources and e-mobility, and enhancing energy efficiency, as well as encouraging low-carbon recovery from COVID-19 pandemic, which can create jobs and contribute to sustainable economic revival.

With the current turmoil in energy markets and fast declining costs of renewables, now is the time for Asia-Pacific countries to aggressively scale up investments in renewable energy production and improve energy efficiency in order to enhance decarbonization efforts substantially.

Additional opportunities to scale up decarbonization and enhance current NDC commitments as recommended by the Glasgow Climate Pact, include increased investments in nature-based solutions (NbS), and ensuring protection of that natural wealth, which can help reduce the gap between the current NDC commitments and the required greenhouse gas emissions reductions to keep global warming within 1.5°C pathway. Most governments in the Asia-Pacific region have indicated, in their NDCs, that the delivery on nature-based solutions (NbS) is contingent on external financing. However, international financing for NbS is contested and limited.

Further, in recent years, youth and children have begun to recognize their potential as agents for raising climate ambition and are voicing their concerns regarding current insufficient climate action. This prompts governments to ensure that the youth and children can take a seat at the decision-making table, and that their concerns are taken into account when reviewing the next steps for NDC commitments.

Key findings

Regional NDCs continue to fall short of the required climate ambition to effectively reduce regional greenhouse gas emissions in support of the 1.5°C global warming pathway.

- Very few countries have undertaken a review of their NDC commitments after COP26, with the Republic of Korea and Viet Nam standing out with enhanced climate ambition targets.
- 39 countries have made climate neutrality pledges, and several have advanced in developing national laws, strategies and implementation plans aligning these with NDC commitments and long-term low emissions development strategies.
- Levels of commitment differ, ranging from carbon neutrality and net-CO_2-zero to net-GHG-zero targets.
- National development plans are not sufficiently aligned with NDC commitments and carbon neutrality pledges and need to be further enhanced to include these targets.

Key recommendations include:

- Conduct a critical review of current NDC commitments and strengthen mitigation targets to ensure implementation of carbon neutrality pledges and long term low-emissions development strategies that will enhance Asia-Pacific contribution to the reduction of global greenhouse gas emissions aligned with the 1.5°C goal.
- Strengthen the provisions for national nature-based solutions-related measures in the updated NDCs in 2025, including specific commitments and implementation plans, aligned with international initiatives for terrestrial and marine NbS, and make more ambitious commitments.
- Provide enabling conditions and enhanced financial flows for scaling up investments in NbS actions that address climate change adaptation and mitigation, as well as support sustainable development and biodiversity conservation.
- Develop key instruments and good practices for empowering indigenous peoples in NbS initiatives and facilitate engagement in decision-making related to climate action.
- Roll out innovative decarbonization technologies across the critical sectors in the updated NDCs and in long-term development strategies.
- Remove barriers to decarbonization within economies, cities, industries and energy production, supply chains, transport and commuting sectors, and in buildings and other infrastructure.
- Develop timelines for phase down and phase out of coal, reduce dependence on other fossil fuels, and accelerate penetration of renewable energy resources.
- Develop national policies to support capacities and human resources for innovation, governance, and roll out of innovative decarbonization technologies that have a positive impact on the climate and for economic recovery.
- Set targets for investments in R&D and deploy innovative decarbonization technologies to develop local manufacturing and accelerate national climate actions.

- Create a favourable environment by providing incentives and tax reductions and ensure that market instruments are in place to encourage private sector investment in decarbonization technologies and industries for both short-term and long-term climate action.
- Identify opportunities to protect the rights of children and youth through NbS within the context of a climate action.
- Develop a national enabling environment to engage the youth in climate action and NDC implementation policies.
- Strengthen regional cooperation including through:
    - Building a regional platform to facilitate the exchange of best practices and lessons learned from policies and projects supporting NDC implementation and updates, and increase technical cooperation for developing, deploying and replicating decarbonization technologies;
    - Engaging multiple stakeholders and increasing public awareness activities to support NDC updates and implementation;
    - Building a regional programme to unlock the potential, energy and knowledge to drive climate action;
    - Building regional dialogue around new technologies, including those on carbon dioxide removal to determine effectiveness, scientific soundness, and deployment of such technologies;
    - Increasing transboundary ecosystem adaptations and finding NbS for building the region's resilience, moving towards net-CO_2-zero and achieving climate resilient development for all.

Explanatory notes

This report includes 49 of the ESCAP member States in Asia and the Pacific, which are listed in groupings of countries and territories/areas listed alphabetically as follows:

- **49 ESCAP member States:** Afghanistan; Armenia; Australia; Azerbaijan; Bangladesh; Bhutan; Brunei Darussalam; Cambodia; China; The Democratic People's Republic of Korea (the); Fiji; French Polynesia; Georgia; Guam; Hong Kong, China; India; Indonesia; Iran (Islamic Republic of); Japan; Kazakhstan; Kiribati; Kyrgyzstan; the Lao People's Democratic Republic; Macao; China; Malaysia; Maldives; Marshall Islands; Micronesia (Federated States of); Mongolia; Myanmar; Nauru; Nepal; New Zealand; Pakistan; Palau; Papua New Guinea; the Philippines; Republic of Korea (the); Russian Federation (the); Samoa; Singapore; Solomon Islands; Sri Lanka; Tajikistan; Thailand; Timor-Leste; Tonga; Türkiye; Turkmenistan; Tuvalu; Uzbekistan; Vanuatu; and Viet Nam.
- **Least developed countries:** Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, the Lao People's Democratic Republic, Myanmar, Nepal, Solomon Islands, Timor-Leste, Tuvalu, and Vanuatu. Samoa was part of the least developed countries prior to its graduation in 2014.
- **Landlocked developing countries:** Afghanistan, Armenia, Azerbaijan, Bhutan, Kazakhstan, Kyrgyzstan, the Lao People's Democratic Republic, Mongolia, Nepal, Tajikistan, Turkmenistan, and Uzbekistan.
- **Small island developing States:** Cook Islands, Fiji, Kiribati, Maldives, Marshall Islands, Micronesia (Federated States of), Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Timor Leste, Tonga, Tuvalu, and Vanuatu.
- **East and North-East Asia:** China; The Democratic People's Republic of Korea (the); Hong Kong, China; Japan; Macao, China; Mongolia; and Republic of Korea (the).
- **North and Central Asia:** Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Russian Federation (the), Tajikistan, Turkmenistan, and Uzbekistan.
- **Pacific:** American Samoa, Australia, Cook Islands, Fiji, French Polynesia, Guam, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.
- **South and South-West Asia:** Afghanistan, Bangladesh, Bhutan, India, Iran (Islamic Republic of), Maldives, Nepal, Pakistan, Sri Lanka, and Türkiye.

Bibliographical and other references have not been verified. The United Nations bears no responsibility for the availability or functioning of URLs.

Data for this assessment report was used from a consistent and credible scientific source: Our World in Data, "Data on CO_2 and Greenhouse Gas Emissions by Our World in Data", 2022. Available at https://github.com/owid/co2-data.

Abbreviations

ACE	Action for Climate Empowerment
ADB	Asian Development Bank
AFOLU	Agriculture, Forestry and Other Land Use
APDRN	Asia-Pacific Disaster Resilience Network
BAU	business as usual
BTRs	Biennial Technical Reports
BURs	Biennial Update Reports
CBD	Convention on Biological Diversity
CCRI	Children's Climate Risk Index
CDM	Clean Development Mechanism
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CIF	Climate Investment Funds
COP	Conference of the Parties
CO_2	carbon dioxide
CPEIR	Climate Public Expenditures and Institutional Review
EAP	East Asia-Pacific
EbA	ecosystem-based adaptation
EbM	ecosystem-based mitigation
Eco-DRR	ecosystem-based disaster risk reduction
ESCAP	United Nations Economic and Social Commission for Asia and the Pacific
EEZ	Exclusive Economic Zone
ETF	Enhanced Transparency Framework
ETS	Emissions Trading System
FCPF	Forest Carbon Partnership Facility
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenrarbeit
GNI	gross national income
GT	giga ton
IPCC	Intergovernmental Panel on Climate Change
IRENA	International Renewable Energy Agency
IUCN	International Union for Conservation of Nature
IPMG	Indigenous Peoples' Major Group for Sustainable Development
LDCs	least developed countries
LT-LEDS	Long-Term Low Emissions Development Strategies
LTR	Lands, Territories and Resources
LULUCF	Land Use, Land-Use Change and Forestry
MDBs	Multilateral Development Banks
MEA	Millennium Ecosystem Assessment
MRV	Monitoring, reporting and verification
NAPs	National Adaptation Plans
NbS	Nature-based Solutions
NCS	Natural climate solution
NDCs	Nationally Determined Contributions
NGO	non-governmental organization
PES	Payment for ecosystem services
R&D	Research and Development
PIPA	Phoenix Island Protected Area
REDD+	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
REEEP	Renewable Energy and Energy Efficiency Partnership
SADDD	sex, age and disability disaggregated data
SDG	Sustainable Development Goals
SIDS	small island developing States
SMEs	small and medium-sized enterprises
V-ETS	Voluntary Emissions Trading System
UNEA	United Nations Environment Assembly
UNEP	United Nations Environment Programme
UNICEF	United Nations International Children's Emergency Fund
UNDP	United Nations Development Programme
UNDRIP	United Nations Declaration on the Rights of Indigenous Peoples
UNFCCC	United Nations Framework Convention on Climate Change
UNSAID	United States Agency for International Development
UN Women	The United Nations Entity for Gender Equality and the Empowerment of Women
YouCCAN	Youth Network for Climate Change and Clean Air
YOUNGO	Children & Youth Constituency of the UNFCCC
VCM	Voluntary Carbon Market

Acknowledgements

This joint ESCAP, UNEP and UNICEF report on *2022 Review of Climate Ambition in Asia and the Pacific*, is the second critical review of the current NDC commitments of the regional member States after Glasgow COP26 and of the regional carbon neutrality pledges. The report assesses how these NDC commitments and pledges contribute to keeping global temperatures well below 2°C as per the Paris Agreement, with the aim to stay below 1.5°C. The report includes an assessment of the status of enabling frameworks that support implementation of NDC and carbon neutrality pledges, an assessment of enhanced investments in nature-based climate solutions to accelerate implementation and develop ambitious NDC reviews and makes a case for the inclusion of children and youth in climate action.

The report has been developed by a joint team led by Aneta Nikolova, including Frank Thomalla, Hannah Ryder, Hitomi Rankine, Maya Tsuboya Newell, Poonperm Vardhanabindu (ESCAP), Mimansha Joshi and Nicholas Rees (UNICEF), Mozaharul Alam (UNEP), that was guided with substantive inputs from Katinka Weinberger, Chief, Environment and Development Policy Section, Environment and Development Division, ESCAP. Specific inputs to Chapter 3 were provided by the Carnegie Climate Governance Initiative (C2G) team, and by the UNESCO communication teams of the GreenTech Cluster and the Energy Transitions Commission. The report was peer reviewed by the IBC/RCM members, including Jens Radschinski and Banashri Sinha (UNFCCC/RCC for the Asia-Pacific region), Sudhir Sharma (UNEP), and Deo Gabinete and Putera Zenata (NDC Partnership).

The report was prepared under the overall direction of Kaveh Zahedi, Deputy Executive Secretary and Sangmin Nam, Director, Environment and Development Division (ESCAP), Dechen Tsering, Regional Director for Asia and the Pacific (UNEP), and Debora Comini, Regional Director for East Asia and Pacific (UNICEF).

Data management and graphs were provided by Poonperm Vardhanabindu, Consultant and Maya Tsuboya Newell, Consultant, Environment and Development Division. Anoushka Ali edited, proofread, and finalized the publication. Final design, layout, artwork and refined graphs were done by Kunthara Poonjaruwat. Siriwat Theerawong, Environment and Development Division arranged for the timely online publication and ensured that the report is accessible to readers worldwide.

The Strategic Communications and Advocacy Section of ESCAP collaborated in disseminating and communicating the findings of the report through media outlets.

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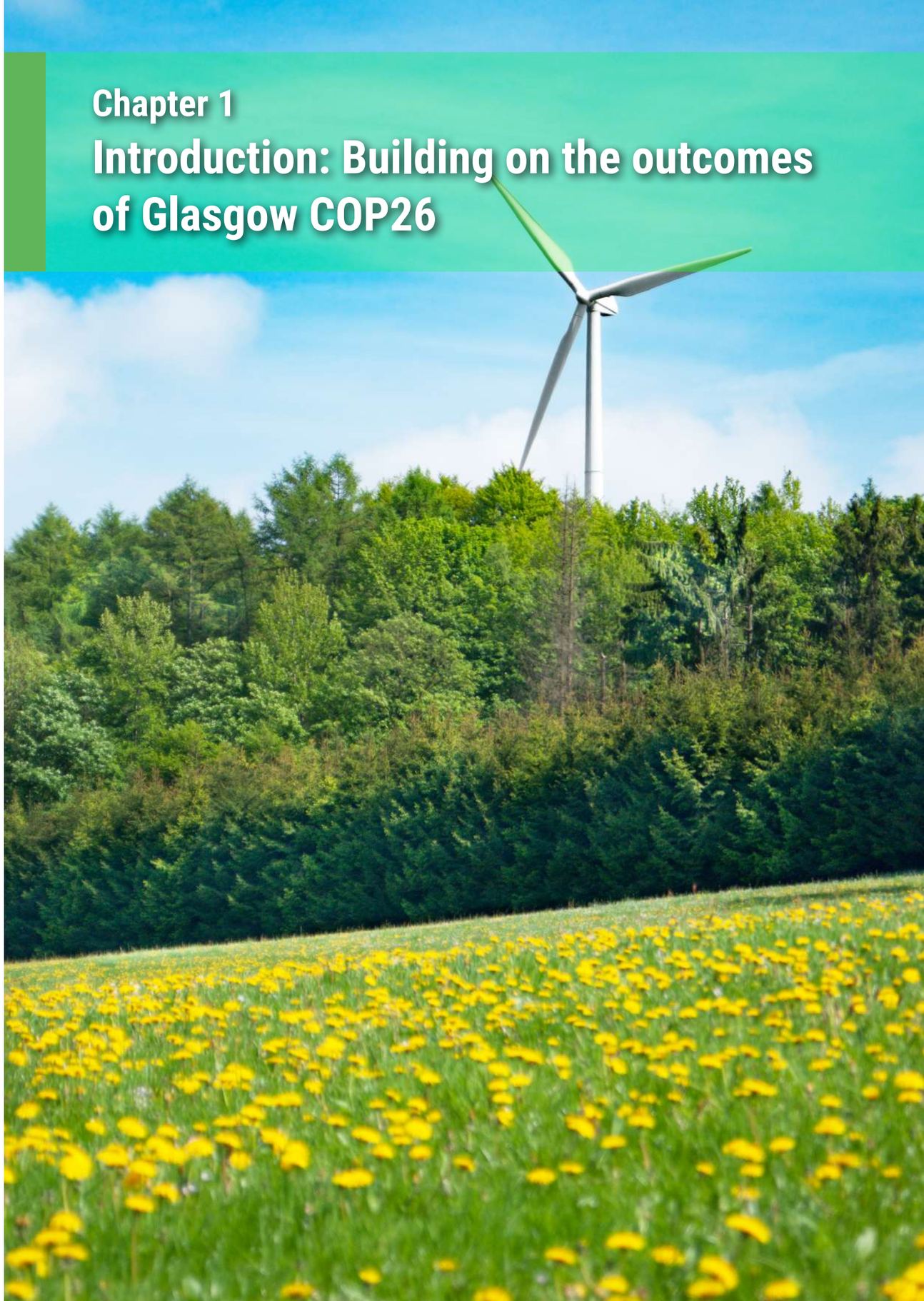

Chapter 1
Introduction: Building on the outcomes of Glasgow COP26

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At the High-Level Political Forum on Sustainable Development, held in July 2022, the United Nations Secretary-General, Antonio Guterres, called for urgent climate action to reach the 1.5°C goal and noted that current pledges for reduction of emissions will still result in a 14 per cent increase in emissions by 2030 as compared to 2010 levels. The Secretary-General described this lack of ambition to drastically reduce global greenhouse gas emissions as "collective suicide". Furthermore, the Secretary-General highlighted that "the international community is far from powerless and has the knowledge, technologies and financial resources to reverse these trajectories".

At the same time, the Asia-Pacific region, despite its considerable influence on global climate and high potential for innovation and technological advancement, continues to follow a slow-paced and insufficiently ambitious climate action, and does not take into account the increasing socioeconomic risks of climate change. ESCAP analysis, based on the Sixth Assessment Report of the IPCC, shows that under all climate change scenarios, and in comparison, to global averages, Asia and the Pacific will be most impacted by heavy precipitation, followed by agricultural drought, hot temperatures/ heatwaves, warming winds with intensifying tropical cyclones, rising sea levels and impacts on coastal zones (ESCAP, 2022a).

This report, which builds on the findings and approach of the 2021 study, highlights several key issues for the Asia-Pacific region. These are:

How and to what extent have Asia-Pacific countries increased their climate ambitions as agreed at Glasgow COP26? Chapter 2 assesses the actions taken, both in terms of levels of ambition and creating enabling frameworks, after the Glasgow COP26. Updated scenarios and pathways, building on the 2021 edition of this report (ESCAP, 2021), are also provided in this chapter. Chapter 2 also provides a better understanding and analysis of terminology surrounding net-zero and carbon neutrality pledges, and of the progress achieved in the Asia-Pacific region in converging the NDCs and climate neutrality pledges with national development plans of member States. The role of decarbonization technologies and innovation as a powerful enabler for ambitious climate action in Asia-Pacific region is also discussed in this chapter.

How well-understood is the potential of nature-based solutions (NbS) as a cost-effective natural climate solution (NCS) and a provider for a third of the mitigation interventions needed to halve emissions by 2030 by the regional governments? An overview and assessment of this, based on the Asia-Pacific NDC commitments, is provided in Chapter 3 of this report.

Are governments in the Asia-Pacific region creating enabling environments and actively engaging youth in climate action at the national level? Chapter 4 analyses and highlights the importance of engaging the youth in national climate actions. It discusses the responsibility that leaders, across the Asia-Pacific region, have to create a seat at the table to allow youth voices, and to generate opportunities for them to engage in work towards building more climate resilient futures. Furthermore, a mapping of how far Asia-Pacific member States have reflected the engagement of youth in NDC implementation is also included in the Special Feature on Engagement of Children and Youth at the end of the report.

The assessment and scenarios of greenhouse gas emissions in the Asia-Pacific region, presented in Chapter 2 of this report, are based on the analysis of the data on current emissions and recently-updated regional NDC and INDC commitments of 49 of the ESCAP member States. The provided scenarios, which are developed on the data in the NDCs include: business-as-usual projections (BAU), based on the BAU estimates of the NDCs; projected trajectories of greenhouse gas emission reductions for conditional and unconditional targets by 2030 (assuming those will be implemented in full; and a joint trajectory combining the carbon neutrality commitments of 39 Asia-Pacific member States with continued commitments that are aligned with the current NDC greenhouse gas emissions reductions to demonstrate the gap in achieving net-zero by 2060 (assuming that there is no overshoot after 2030). An additional regional scenario, based on the IPCC recommended 45 per cent reductions from 2010 levels of greenhouse gas emissions by 2030, is also presented to demonstrate the gaps between NDC and INDCs commitments and the requirements of 1.5°C pathway.

Chapter 2
Gaps and opportunities to raise climate ambition in the region

CHAPTER 2

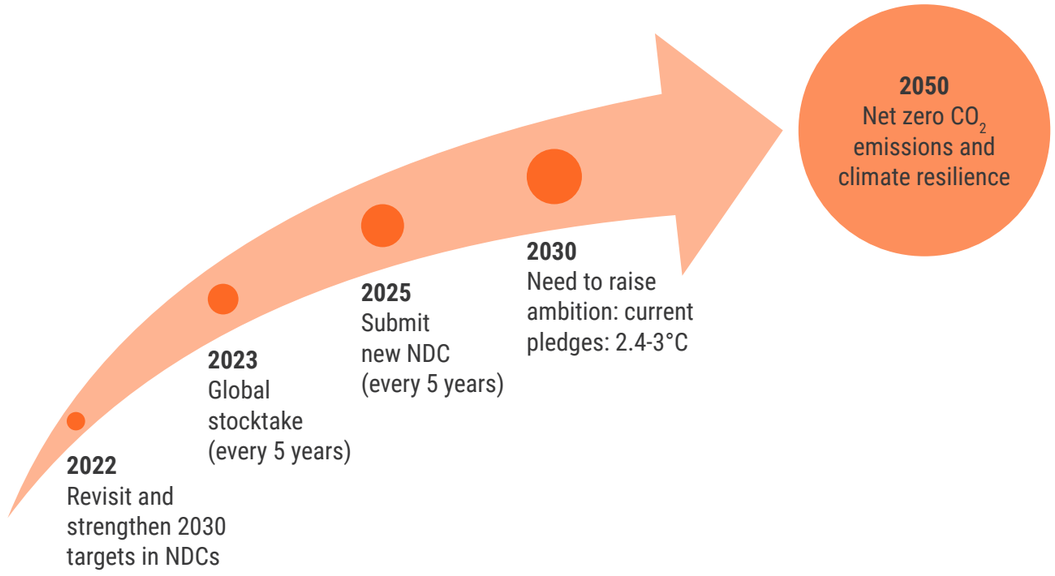
Gaps and opportunities to raise climate ambition in the region

1. Assessment of revised climate ambition commitments after Glasgow COP26

This section provides an assessment of how the climate ambitions of the 49 ESCAP member States, in Asia and the Pacific, have evolved after the Glasgow COP26, including current review processes, net-zero pledges (CO_2 and GHG emissions), and long-term low emissions development strategies. The section also reviews progress in commitments toward reduction of greenhouse gas emissions, with a view on closing the gaps in terms of climate ambition. An update of the regional greenhouse gas emissions scenarios is also provided in this section.

As a follow up to the agreements reached at the Glasgow COP26 and the Climate Pact (provided in Annex II, Annex III and Annex IV of this report), governments in the region now need to accelerate transition to low-carbon development, and work together to address the timelines for climate action activities for 2030 and beyond (Figure 1). This requires a critical review of current NDC commitments as recommended by the Glasgow Climate Pact, and national GHG emissions reduction scenarios in order to keep global warming below 1.5°C.

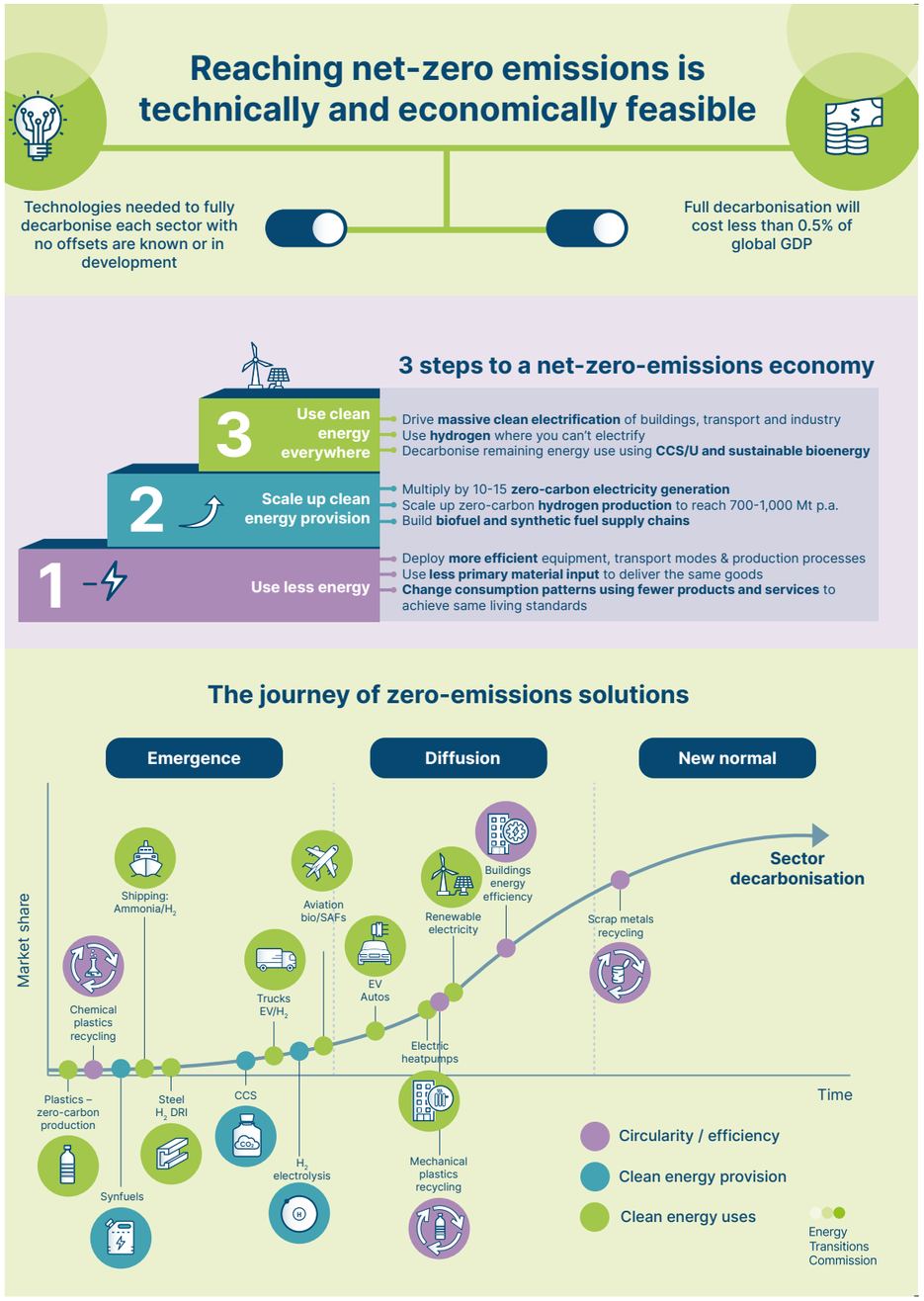
Figure 1 | Timeframe of climate action activities till 2050



The tasks that lie ahead of the global community and Asia-Pacific member States is to achieve, between now and 2050, net-zero carbon dioxide emissions and, net-zero greenhouse gas emissions by 2060, to scale up emission reductions which are consistent with the recommended pathways to limit global warming to 1.5°C, with no or limited overshoot.

So, the world community needs to work out how to build a global economy which can both enable developing countries to attain developed world standards of living and ensure that the world limits global warming to well below 2°C, and as close as possible to 1.5°C. Recent studies of the Energy Transition Commission advocate that it is technically and economically possible to achieve net-zero GHG emissions with deep decarbonization by around mid-century, and investments in natural climate solutions and engineered carbon dioxide removal solutions will compliment those efforts and create negative emissions. Figure 2 describes how to make deep decarbonization a mission possible to achieve net-zero emissions economy by 2050 (Energy Transitions Commission, 2020).

Figure 2 | Reaching a net-zero emissions economy is technically and economically feasible by 2050



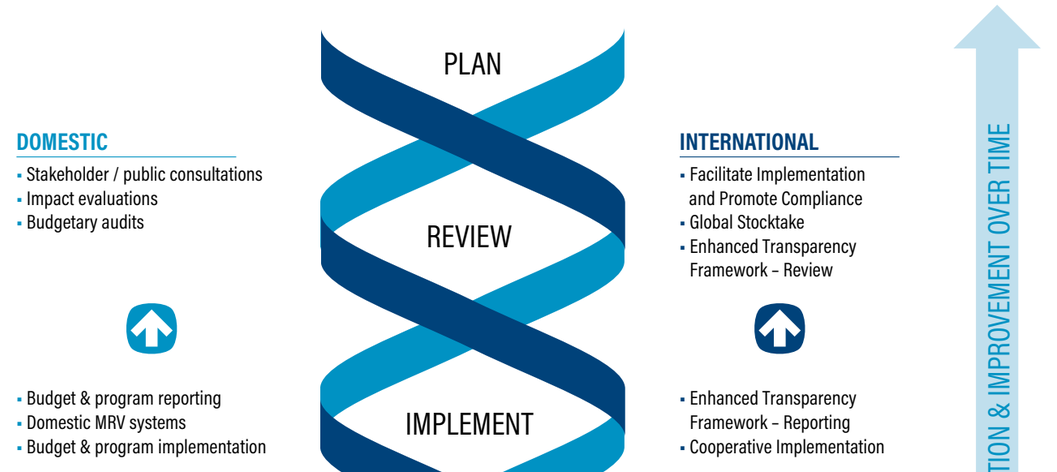
Source: Energy Transitions Commission (ETC), "Making Mission Possible: Delivering a Net-Zero Economy", 2020. Available at https://www.energy-transitions.org/wp-content/uploads/2020/09/Making-Mission-Possible-Executive-Summary-English.

So, the big question now is are those targets achievable, given the status of current NDC commitments and greenhouse gas emissions in the Asia-Pacific region?

Status of NDCs in the Asia-Pacific region

The implementation of the Paris Agreement and its ambition cycle revolves around the NDCs, which creates the synergy between evolving national and international climate ambition action to achieve the above-mentioned tasks.

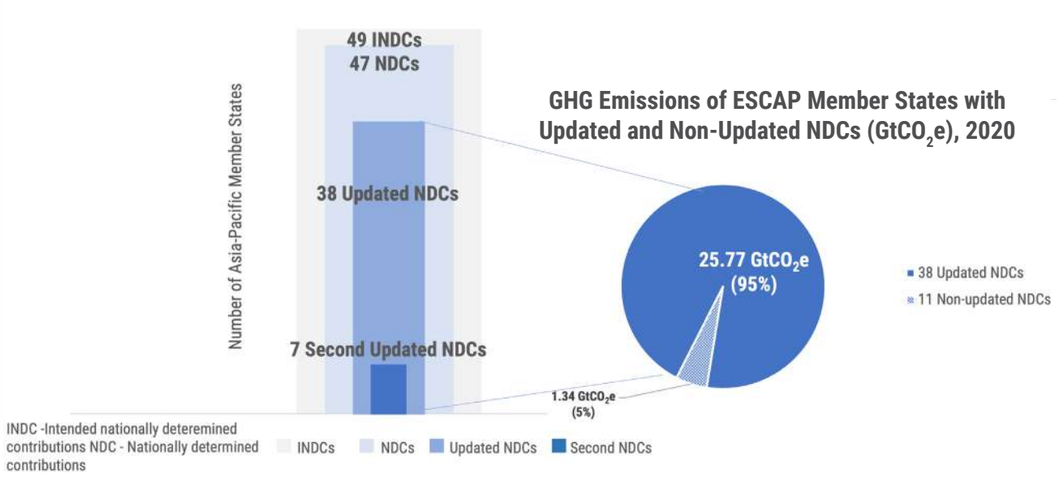
Figure 3 | Implementation of the Paris Agreement and Ambition Cycle



Source: Yamide Dagnet and others, "Setting the Paris Agreement in Motion: Key Requirements for the Implementing Guidelines", World Resources Institute, Working Paper, 7 August 2018. Available at https://www.wri.org/research/setting-paris-agreement-motion-key-requirements-implementing-guidelines

As of August 2022, 47 ESCAP member States have submitted Nationally Determined Contributions (NDCs), from which 38 have submitted updated NDCs and 7 member States submitted a second updated NDC as shown in Figure 4.

Figure 4 | Status of ESCAP member States with NDC submissions and their GHG emissions share ($GtCO_2e$), October 2022



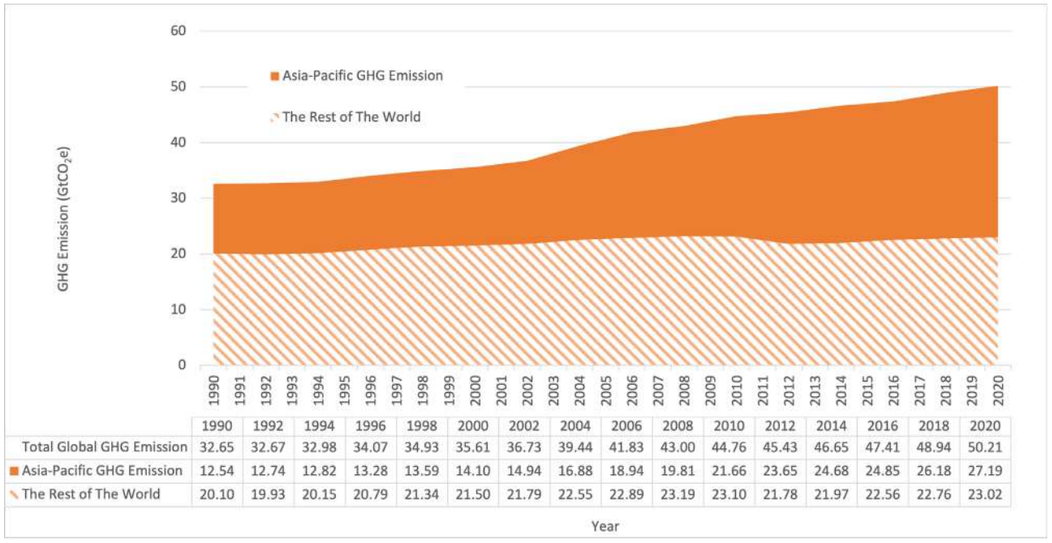
Source: ESCAP, updated from *Is 1.5°C within Reach for the Asia-Pacific Region? Ambition and Potential of NDC Commitments of the Asia-Pacific Countries* (United Nations and greenwerk publication, 2021). Available at https://www.unescap.org/kp/2021/15degc-within-reach-asia-pacific-region-ambition-and-potential-ndc-commitments-asia-pacific

After the Glasgow COP26, strong commitments to carbon neutrality in the Asia-Pacific region are on the rise. The number of Asia-Pacific member States making carbon neutrality pledges has risen from 19 countries to a total of 39 countries by August 2022. The commitments vary from achieving carbon neutrality and net-zero carbon dioxide by 2050, to net-zero greenhouse gas emissions by 2060. Tables 1 and Figure 7 provide an overview of the developmental stage of the national plans for implementation of these pledges.

Status of peak carbon emissions in the Asia-Pacific region

More than half of ESCAP member States have either announced their estimate for peak carbon emissions or have already peaked their carbon emissions. Announcements of peak carbon emissions estimates around COP26 included big emitters, such as China,[1] and India (UNEP, 2021).[2] However, the analysis of trends of greenhouse gas emissions of the Asia-Pacific region shows a stable growth, and almost doubling of emissions by 2021, as compared to 1990, as shown in Figure 5.

Figure 5 | GHG emissions trends of the Asia-Pacific region compared to the rest of the world, 1990-2020 ($GtCO_2e$)



	1990	1992	1994	1996	1998	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020
Total Global GHG Emission	32.65	32.67	32.98	34.07	34.93	35.61	36.73	39.44	41.83	43.00	44.76	45.43	46.65	47.41	48.94	50.21
Asia-Pacific GHG Emission	12.54	12.74	12.82	13.28	13.59	14.10	14.94	16.88	18.94	19.81	21.66	23.65	24.68	24.85	26.18	27.19
The Rest of The World	20.10	19.93	20.15	20.79	21.34	21.50	21.79	22.55	22.89	23.19	23.10	21.78	21.97	22.56	22.76	23.02

Source: ESCAP, based on data of GHG emissions in the Asia-Pacific region.

Collectively, the 49 countries in Asia and the Pacific emitted 27.19 $GtCO_2$ in 2020. Current NDC commitments for GHG emission reduction and regional GHG emissions trajectories are projected to result in GHG emissions of 25.2 $GtCO_2e$ in 2030. This as shown in Figure 6 represents a 16 per cent growth from the 2010 levels, rather than the 45 per cent reductions required by the 1.5°C pathway. It is important to highlight that the Asia-Pacific region's contribution to greenhouse gas emissions until 2030 is critical to reducing global emissions by 45 per cent, compared to 2010 levels to ensure global warming to stay on the mid-century 1.5°C pathway. Despite ongoing revisions of NDC commitments by several Asia-Pacific member States, most have not undertaken such review processes and have not initiated the development and updates of long-term low-emissions strategies that are aligned with carbon neutrality and net-zero pledges.

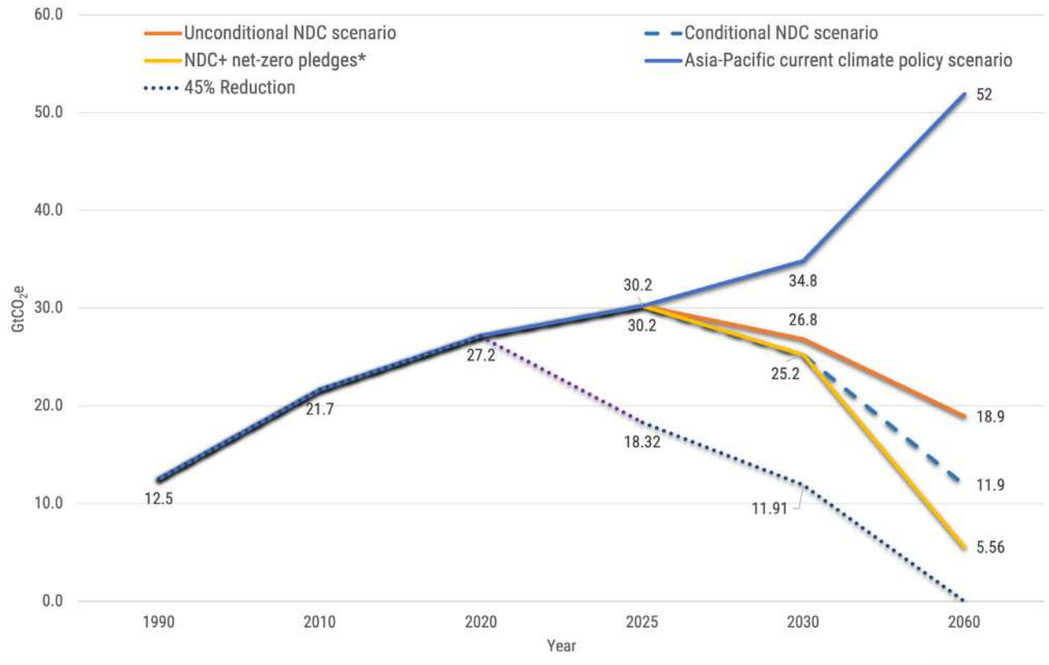
[1] President Xi Jinping stated that China will strive to peak carbon dioxide emissions before 2030 and achieve carbon neutrality before 2060.

[2] India's Environment Secretary, Rameshwar Prasad Gupta, estimated that the country's carbon emissions would peak between 2040-2045.

Most countries in the region, and at all levels of income, have an abundance of enabling conditions to help drive up their climate ambition. That creates opportunities to introduce high-ambition targets and measures to address climate change. However, countries continue setting less ambitious greenhouse gas emissions reductions which are often below their estimated capacities, and more needs to be done. The current gap in the regional NDC commitments needs to be addressed at the national level to avoid large overshoot, with collective efforts to contribute to a considerable increase of the regional mitigation ambition to support mid-century climate neutrality trajectory, and to keep the region within the 1.5°C target.

Key area is achieving net-zero energy sector by 2050 with energy efficiency measures that can reduce energy demand, and support renewable energy generation infrastructure that will slow down addition of coal power (IEA, 2021). Asia-Pacific member States can adopt a 3 per cent per annum reduction with energy efficiency, and that would be helpful in achieving the carbon neutrality and net-zero pledges in long run.

Figure 6 | GHG emissions scenario with compounded NDC and carbon neutral pledges for the Asia-Pacific region, ($GtCO_2e$), 1990-2060



Source: Updated from *Is 1.5°C within Reach for the Asia-Pacific Region? Ambition and Potential of NDC Commitments of the Asia-Pacific Countries* (United Nations and greenwerk publication, 2021). Available at https://www.unescap.org/kp/2021/15degc-within-reach-asia-pacific-region-ambition-and-potential-ndc-commitments-asia-pacific

Findings, discussed in Chapter 3, confirm that scaling up investments in terrestrial and marine NbS in the Asia-Pacific region to enhance natural climate sinks can greatly assist in bridging the gap to reaching net-CO_2-zero in the region with sequestering close to 5.6 Gt CO_2e by 2050.

The Asia-Pacific region is yet to reach its potential in terms of ambition of NDC commitments, even with the latest updates after COP26. As highlighted previously, more ambition is needed to decarbonize and scale up new energy and electrification combined with increased energy efficiency targets and phase down of the use of coal.

Only by adhering to implementing the current NDC commitments, and by undertaking ambitious update in alignment with targets for carbon neutrality by 2050-2060 and low-carbon emissions development strategies with higher greenhouse gas emission reductions in each of the sectors, the Asia-Pacific member States would be able to contribute to curbing global greenhouse gas emissions growth to keep within the 1.5°C climate pathway. It important for the Asia-Pacific region to do so because even if the global mean temperature increase would be within 1.5°C-2°C range, some of the Asia-Pacific countries will experience much higher temperatures even within the range of 4°C-5°C, which will have an incredible impact on their natural ecosystems and their services.

Status of carbon neutrality pledges in the Asia-Pacific region

When describing global carbon neutrality and the global net-zero carbon dioxide (CO_2) emissions, the definition that was established by the IPCC reads that "carbon neutrality and net zero carbon dioxide (CO_2) emissions are achieved when anthropogenic CO_2 emissions are balanced globally by anthropogenic CO_2 removals over a specified period" (IPCC, 2018a), through the planet's natural absorption (United Nations Climate Change, 2021). In other words, to speed up climate action by national government, industry or private sector were allowed to purchase offsets.

While "offsets" can be generated through carbon removal, however, they are currently not always carbon removal, and indeed those represent a small share of the market now. Most offsets have been created to balance the common but differentiated aspects of the UN climate action framework. Many offsets can be generated even through emissions increase, if those increases represent a reduction on business-as-usual emissions in a "developing country" that is not subject to absolute emissions reduction provisions. This broadening has therefore created additional complexity in being able to account for "offsets". Once the detailed implementation framework for Article 6.4 is well established, and developing countries continue to enhance their NDC commitments, absolute emissions reductions are expected to become a significant contributor to achieving the 1.5°C pathway.

Scientists and engineers worked further to understand better how to achieve carbon neutrality and net-zero carbon dioxide (CO_2) emissions at the national, sectoral, enterprise and individual levels and have come up with a practical recommendation. These climate action experts advocate that net-zero carbon dioxide (CO_2) should focus on robust abatement/mitigation of the CO_2 emissions at source, based on an accurate footprint assessment, and should use offsetting for the residual emissions after all possible reductions (Torill Bigg, 2021). Box 1 provides a clarification on the scope of those terminologies at the national level.

Box 1 | Neutrality and net-zero from global definitions to the national levels

- **Carbon neutrality** is defined as "net zero carbon dioxide (CO_2) emissions, achieved when anthropogenic CO_2 emissions are balanced globally by anthropogenic CO_2 removals over a specified period" (IPCC, 2018a). At the national level CO_2 reductions or removals are currently mainly claimed through purchasing offsets (ESCAP, UNEP, UN-Women, and the greenwerk, 2021).
- **Climate neutrality** is the concept of a state in which human activities result in no net effect on the climate system. Achieving such a state would require balancing of residual emissions with emission (carbon dioxide) removal as well as accounting for regional or local bio-geophysical effects of human activities that, for example, affect surface albedo or local climate (IPCC, 2018a).
- **Net-zero carbon dioxide emissions** is defined similarly as carbon neutrality in achieving a contribution to global CO_2 emissions at net-zero levels (IPCC, 2018a), however with dedicated abatement action for bringing carbon emissions to the lowest level possible and offsetting as a last resort.
- **Net-zero greenhouse gas emissions** refers to a state in which the greenhouse gases going into the atmosphere are balanced by their removal over a period of time. In other words, it entails cutting greenhouse gas emissions to as close to zero as possible with mitigation measures, with any remaining emissions re-absorbed from the atmosphere, by 'carbon sinks' for example (IPCC, 2018a).

Currently, there are 39 ESCAP member States, almost 80 per cent of all regional member States, that have thus far declared pledges to decrease emissions by a target year (by 2050-2060) through carbon neutrality and net-zero (net-CO_2-zero and net-GHG-zero) pledges, which constitute a precursor to achieving net-zero commitments.

Table 1 demonstrates the differences between the carbon neutrality pledges of Asia-Pacific member States and implementation instruments, which range from laws, policy documents to spoken and written declarations.

Table 1 | Status of carbon neutrality pledges of Asia-Pacific member States, 2022

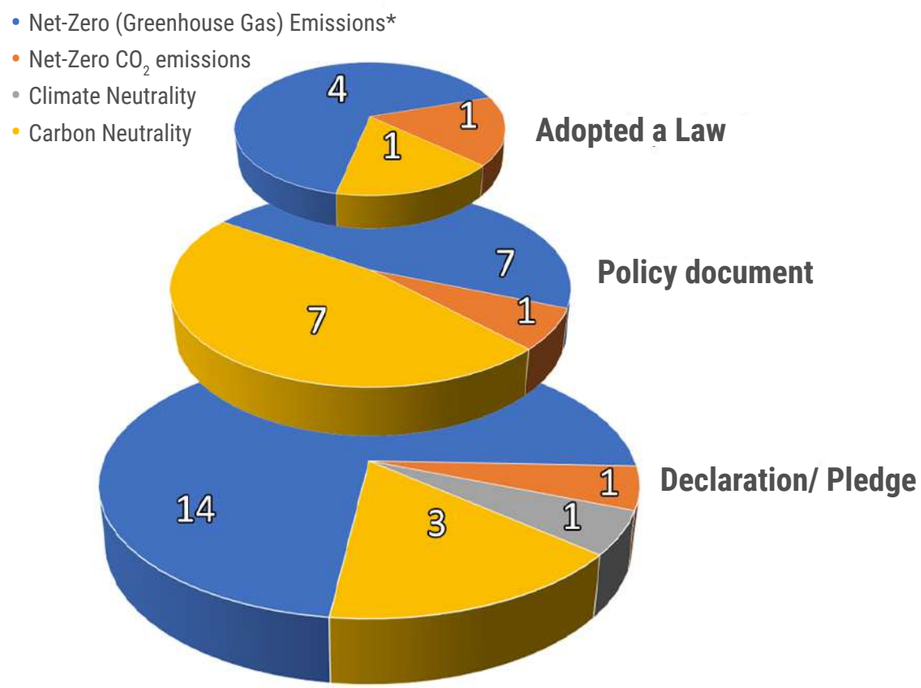
Achieved	Adopted a Law	Policy Document		Declaration/Pledge		Not Yet Considered
Bhutan	Fiji	Australia	Cambodia	Afghanistan	Pakistan	Azerbaijan
	Japan	China	Indonesia	Armenia	Palau	Bangladesh
	Maldives	Kazakhstan	Lao People's Democratic Republic	Brunei Darussalam	Papua New Guinea	Georgia
	New Zealand	Malaysia	Marshall Islands (the)	Kyrgyzstan	Russian Federation (the)	Iran (Islamic Republic of)
	Republic of Korea (the)	Nauru	Nepal	Kiribati	Samoa	Tajikistan
		Singapore	Solomon Islands	India	Tonga	Democratic People's Republic of Korea (the)
		Sri Lanka	Thailand	Micronesia (Federated States of)	Türkiye	Philippines
		Uzbekistan	Viet Nam	Myanmar	Tuvalu	Mongolia
					Vanuatu	Timor-Leste
						Turkmenistan

While the pledges listed in Table 1 demonstrate the commitment of the Asia-Pacific member States to move towards decarbonization, there is a need for clear understanding of the current climate terminology when it comes to describing emission reduction goals.

All net-zero targets require an initial carbon footprint measurement/assessment, which can be achieved with regular and up-to-date GHG inventories followed by a long-term low emissions development strategy outlining strategic greenhouse gas emission reduction targets and benchmarks. This can be coupled with implementation of mitigation measures, including renewable energy solutions and decarbonization of transport, and investments in enhancing nature-based mitigation solutions, which are all aligned with more ambitious NDC updated commitments to ensure implementation success.

Bearing in mind these differences, Annex IV provides a more granular analysis of the pledges according to the greenhouse gas emissions reduction targets made by 40 Asia-Pacific member States and using the four classifications of pledges described in Box 1. Figure 7 illustrates that 19 of these carbon pledges, with 14 countries, which committed to net-zero targets are still at the stage of declaration and yet to develop their policy frameworks. Only six of the Asia-Pacific countries have walked the mile toward firming their net-zero commitments with the adoption of a law.

Figure 7 | Level of ambition of carbon neutrality pledges of Asia-Pacific member States



Source: ESCAP, based on data on carbon neutrality pledges.

Note: Many countries have used the terminology 'net-zero emissions' in their pledges without specifying if this refers to greenhouse gas emissions or just CO_2 emissions. The number indicates the number of countries.

Further analysis of the carbon neutrality pledges made by Asia-Pacific countries reveals that:

- **Most pledges have 2050 as a target year.** Most countries have pledges up to 2050, with some countries, such as India and China, with target years beyond 2050. Some countries have earlier targets. For example, Maldives aims to achieve net-zero emissions by 2030.
- **Most pledges focus on net-GHG-zero emissions, but not all are clear on the scope of reductions.** While the vast majority of pledges, even those converted into law/policy documents, use the most stringent terminology, there are some major emitters or higher income countries that remain in the least stringent camp, such as China, the Republic of Korea and the Russian Federation. Furthermore, Türkiye, for example, has pledged to reach net-zero by 2053, but there have not been many details released regarding the scale and scope of this pledge. Therefore, it is difficult to analyse the ambition levels of certain pledges. There is also sometimes a lack of clarity regarding the emissions reductions for different sectors of the economy, and whether certain economic sectors are excluded from targets.

- **Some pledges use different climate terminologies interchangeably.** Countries sometimes use different terminology in the same policy documents that can make it difficult to ascertain the details of national targets. For example, Japan's NDC uses the terms 'net-zero greenhouse gas emissions' and 'carbon neutrality' interchangeably in the same document. This lack of clarity is especially pertinent for countries that have not yet integrated their pledges into policy documents or laws, with media coverage also often using different terms to describe the pledges.
- **Some pledges do not include all of the main greenhouse gases.** Some pledges cover all greenhouse gas emissions, while some focus on CO_2 alone. For example, New Zealand's law on achieving net-zero emissions excludes biogenic methane from its targets. However, its NDC provides a detailed accounting of all emissions with targets. New Zealand did however sign the Global Methane Pledge at COP26 in Glasgow. In addition, some pledges are occasionally adapted to the national circumstances of countries. For example, the Solomon Islands stated in its NDC that it only includes CO_2 in targets as it constitutes 95 per cent of overall national emissions.
- **Many pledges are conditional on international support.** Many countries require external financing for mitigation and adaptation activities in order to achieve their climate targets. For example, the Maldives stated, in its updated NDC in 2020, that it will reach net-zero by 2030 depending on the level of international support received.
- **Limited number of countries developed LT-LEDS to achieve their carbon neutrality/net-zero commitment.** While the COP21 invited Parties to submit their long-term low emissions development strategies (LT-LEDS) by 2020 in accordance with the Article 4 of the Paris Agreement, so far, only 13 Asia-Pacific member States have submitted a (LT-LEDs),[3] and 3 others are currently developing a LT-LEDS.[4]

[3] The 13 member States that have submitted their LT-LEDS include: Australia, Cambodia, China, Fiji, Indonesia, Japan, the Marshal Islands, Nepal, New Zealand, the Republic of Korea, Singapore, Thailand, Tonga.
[4] The 3 member States that are currently developing their LT-LEDS include: India, Kazakhstan, Viet Nam.

2. How can carbon neutrality pledges be supported by mutually reinforcing enabling frameworks?

As discussed in section 2.1, a significant number of Asia-Pacific countries have made net-zero carbon or GHG commitments, with various deadlines and categories of pledges. If these commitments are implemented, the greenhouse gas emissions trajectory for the Asia-Pacific region will improve significantly, and greatly contribute to the efforts to keep global warming within 1.5°C.

However, the pertinent question remains: in view of the current turmoil in the energy markets, what is the likelihood that these commitments are actually going to be implemented? How can the Asia-Pacific countries turn this challenge into an opportunity to decarbonize their economies and do they have the enabling frameworks in place to deliver on this transformation?

The 2021 assessment report by ESCAP, UNEP, UN-Women, and the greenwerk made clear that, across the region, both ambition and the sophistication of frameworks to enable this ambition to become a reality remain highly differentiated.[5] Nevertheless, countries across the region can watch and learn from each other as measures and policies are implemented.

This year's assessment reviews a subset of ambition and enabling factors in comparison to the 2021 assessment. Specifically, the report reviews ambition in terms of carbon neutrality, and enabling frameworks, and whether the current NDCs can create transformation trajectories towards achieving climate neutrality and net-zero pledges. Furthermore, the analysis looks at possible convergences between green growth or long-term emissions reduction strategies, and/or low-carbon development strategies. It also examines the strength of these strategies within domestic law/enforcement, which can provide powerful policy tools to support decarbonization pathways.

Update of enabling frameworks

First, it is important to note that since the 2021 assessment, 13 countries from all Asia-Pacific subregions have updated or brought in new tools, have further enhanced their enabling frameworks to increase their climate ambition, and have supported the efforts of countries to implement their net-zero/carbon neutrality pledges. These subregional achievements are listed in Table 2. Furthermore, Table 3 demonstrates how ambition can be translated into a range of different enabling frameworks. These recently introduced frameworks can also serve as inspiration to other countries in the region (Table 3), which have been designated as being most 'ready' or 'primed' to meet their announced climate goals.

[5] Brunei, Cambodia, China, Fiji, Nauru, New Zealand, Pakistan, Palau, Papua New Guinea and Singapore.

Table 2 | Updates of enabling frameworks for climate action since September 2021

East and North-East Asia	
China	• China published the Action Plan for Carbon Dioxide Peaking Before 2030 in October 2021. The medium and long term plan for the development of the hydrogen energy industry (2021-2035) was approved in March 2022, and encourages the development of low-carbon hydrogen and a move away from grey hydrogen. Furthermore, the 14th Five-Year Plan on Modern Energy System Planning sets out further policy points to achieve peak emissions by 2030 and carbon neutrality by 2060. • China's Ministry of Ecology and Environment updated the National Strategy for Climate Change Adaptation in February 2022 to include new adaptation goals up to 2035. • China's National Green Development Fund, the first national-level green investment fund, has begun making investments in the country's green finance area, for example in the decarbonization of the steel sector. • The Wetlands Conservation Law of the People's Republic of China was approved in December 2021. The law increases protection for ecological functions and biodiversity and requires local governments to take measures to ensure the protection of wetlands. • China passed the Notice on Financial Support for Carbon Neutralization in 2022.
Japan	• Japan published its Long-Term Strategy and announced the Green Growth Strategy in October 2021. The strategy outlines the policies and measures across different economic sectors to achieve net-zero by 2050. • The policy document establishes the Green Innovation Fund (JP¥ 2 trillion), a climate fund that has been created to promote innovation and the move to a carbon-neutral society. • The strategy also highlights the importance of private green investment and the use of public-private partnerships (PPPs) to achieve mitigation and adaptation measures.

The Republic of Korea	• The Republic of Korea introduced the Carbon Neutrality and Green Growth Act for Climate Change, also known as the Carbon Neutrality Act. This entered into force in March 2022. Some key requirements of the Act include:
	  • The Act requires the Government to cut GHG emissions by 33 per cent by 2030 and to reach carbon neutrality by 2050. The Act established the national carbon-neutral green growth master plan;
	  • The improvement of MRV and climate impact assessment;
	  • Climate-responsive budgeting. The Act also established the Climate Response Fund, which is needed to promote a just transition to carbon neutrality;
	  • The Act requires the state to implement economy-wide mitigation and adaptation measures;
	  • The Act serves as a legislative basis for the economic and social transition that will ultimately enable the Republic of Korea to achieve its NDC.
	• The presidential committee on carbon neutrality also published the 2050 carbon neutral scenario roadmaps in October 2021. These were released in October 2021. One roadmap analyses Scenario A, wherein carbon emissions are reduced as far as possible with a turn away from thermal power, for example. Scenario B analyses the removal of technologies, such as CCS, used to compensate for the remaining of some of the thermal power capacity.

Pacific States	

Australia	• The Australian Government released The Plan to Deliver Net Zero The Australian Way in October 2021. The plan includes several national and regional climate-related funding, for example:
	  • A$ 1.9 billion for the Great Barrier Reef 2050 Long-Term Sustainability Plan.
	  • A$ 5 billion Future Drought Fund
	  • A$ 866 million in the 2021/22 budget to support the Ag2030 goal to support agriculture, fisheries, and forestry sectors.
	  • A$ 1.4 billion for Building Better Regions Fund
	  • A$ 464 million for Clean Hydrogen Industrial Hubs.
	• The Government also updated the Low Emissions Technology investment 2021, which announced A$ 1.7 billion new government funding for low emissions technology and committed to at least A$ 20 billion in government investment in low emissions technologies up to 2030. This aims to promote more than A$ 80 billion in public and private investment and support 160,000 jobs.

Fiji	• The parliament of Fiji approved the Climate Change Bill 2021 in September 2021, which:
	  • establishes the legal framework for Fiji's net-zero emissions target for 2050 and requires the establishment of a carbon budget to promote economy-wide emissions reductions;
	  • supports the establishment of climate budget coding and tracking systems;
	  • supports monitoring and evaluation of domestic climate finance sources, private sector sources and insurance initiatives;
	  • supports the creation of a private sector advisory committee to promote dialogue with the sector, promote sharing of knowledge and promote the environment for PPPs that will help achieve the goals of the Bill;
	  • requires climate action coordination with local governments and provincial administrations.

New Zealand	• The Financial Sector (Climate-related Disclosures Matters) Amendment Act 2021 was passed in October 2021. It requires large financial institutions to report and act on climate related risks and opportunities for their businesses.
	• New Zealand also published its Long-Term Low-Emissions Development Strategy in November 2021. It states that:
	  • the upcoming Government Budget will further develop existing funds, such as the Government Investment in Decarbonising Industry Fund, the Low Emissions Transport Fund and the Technology Demonstration Funding Programme.
	  • support with private investment through co-funding and regulation will be ensured.
	• New Zealand passed its first Emissions Reduction Plan (ERP) in 2022.

Tonga	• Submitted its Low Emissions Development Strategy 2021-2050 in November 2021.
	  • It aims to strengthen PPPs, with the government providing up to 50 per cent of funding on high-return efficiency projects (for projects such as the roll out of LED streetlamps and interior LED lamps).
	  • It promotes continued coordination with local actions and traditional knowledge to combat climate change.

North and Central Asia	

Georgia	• Georgia's State Budget for 2022, which was approved in December 2021, includes several climate-related clauses where funding will be directed:
	  • The development of renewable energy sources will be promoted alongside technology upgrades;
	  • Investment will be attracted in green sectors of the economy and green growth will be promoted;
	  • The EU4Environment program will be implemented;
	  • The development of a taxonomy for sustainable financing.

Kyrgyzstan	• Kyrgyzstan approved its National development strategy 2018-2040 in October 2021.
	  • Section 3.2 explores the importance of environment, climate change adaptation and disaster risk reduction.
	  • Highlights the importance of expanding green space in order to reduce risks of climate change, land degradation and air pollution.
	  • For private investment, the strategy states the need to attract private investors for development of the hydropower sector. It also intends to develop PPPs in the energy sector.

South and South-West Asia	

Nepal	• Nepal published its Long-term Strategy for Net Zero Emissions in October 2021. Some key points from the strategy include:
	  • Sectoral strategies for achieving net-zero before/by 2045 and negative carbon emissions by 2050;
	  • The government plans to mobilize large amounts of investment from the domestic private sector and commercial banking sector, as well as developing PPP projects;
	  • The strategy reaffirms the importance of climate budgeting and tracking.

India	• India released its strategy on green hydrogen: Green Hydrogen/Green Ammonia Policy. Some key points from the policy include:
	  • The policy permits green hydrogen/ammonia manufacturers to purchase renewable energy and create their own renewable energy capacity;
	  • Green hydrogen/ammonia manufacturers will be connected to grid infrastructure as a priority;
	  • Inter-state transmission charges will be waived for manufacturers for 25 years.

Türkiye	• The Ministry of Trade released the Green Deal Action Plan in August 2021. The Action Plan puts forward the country's strategy for an economy-wide green transition and to further align Türkiye with the European Union's Green Deal.

South-East Asia	

Cambodia	• Cambodia published its Long-Term Strategy for Carbon Neutrality (LTS4CN) in December 2021. Some key points from the strategy include:
	  • A proposed public financing plan that will devote 1 per cent of new public borrowing to the LTS4CN and, 2 per cent from shifting public spending on economic services (to supply approximately 50 per cent of financing needs for the LTS4CN). This will be combined with international climate finance;
	  • The continued implementation of carbon neutrality goals through national and subnational planning and budgeting;
	  • The implementation of a MRV framework for the LTS4CN that tracks and reports on progress on adaptation and mitigation, finance, and capacity support.

Thailand	• Thailand published its Mid-century, Long-term Low Greenhouse Gas Emission Development Strategy in October 2021. Its policy implementation includes:
	  • "Build capacity in the public and private sectors to integrate mitigation action into their respective plans or enterprises";
	  • "Raise awareness on climate change, Thailand's LEDS and NDCs among relevant stakeholders and the general public".

It is important to note that these 13 countries are not necessarily the 'top performers' when it comes to enabling frameworks in the region; some countries that did not update their enabling tools and can still be 'top performers', and other countries are in need of significant updating. Nevertheless, it is important to recognize progress and climate action measures undertaken since September 2021, as provided in Table 2.

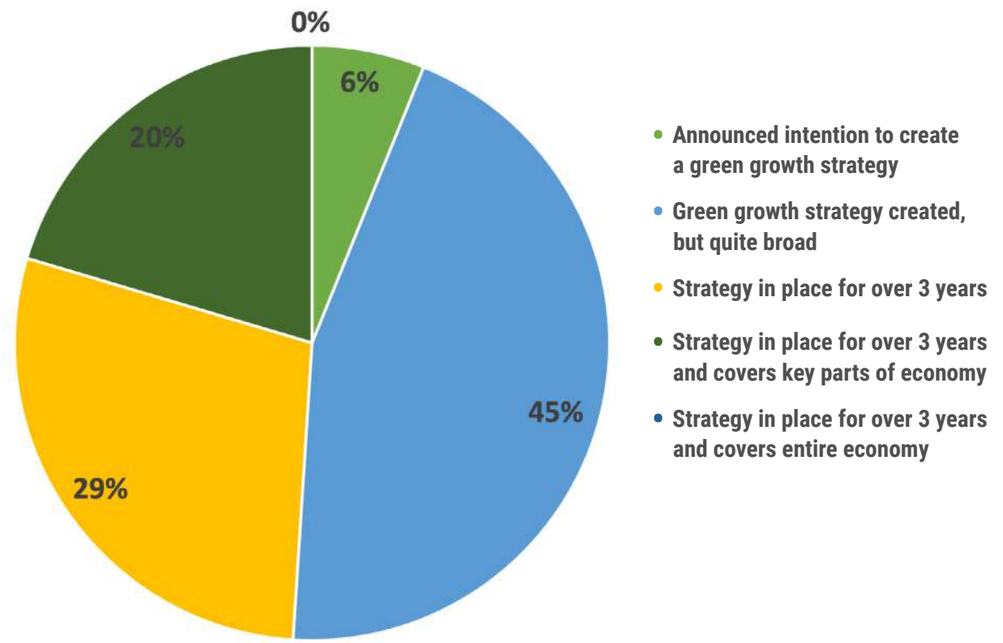
Policy support for the implementation of carbon neutrality

Current analysis demonstrates that, across the Asia-Pacific region, few countries have either not already developed or are in the process of developing a green growth or long-term low-emissions and/or low-carbon development strategies. Three countries, namely Afghanistan, Azerbaijan, and Nepal, have only announced their intention to create a green growth strategy but have not yet initiated the process of development. All other countries have introduced such a strategy. Similarly, only Vanuatu does not refer to climate action in its development plan/strategy. All other countries do so, to various degrees.

Furthermore, the depth of these strategies differs widely. Amongst the 46 countries with green growth strategies, only 10 (i.e., just over 20 per cent) have had these strategies in place for over three years, with the strategy covering key carbon intensive sectors of the economy.[6]

Similarly, when it comes to development strategies, only 5 amongst the 48 countries with development plans that mention climate change (i.e., 10 per cent), refer to significant climate targets and actions.[7] The vast majority are broad and not specific, as Figures 8 and 9 demonstrate.

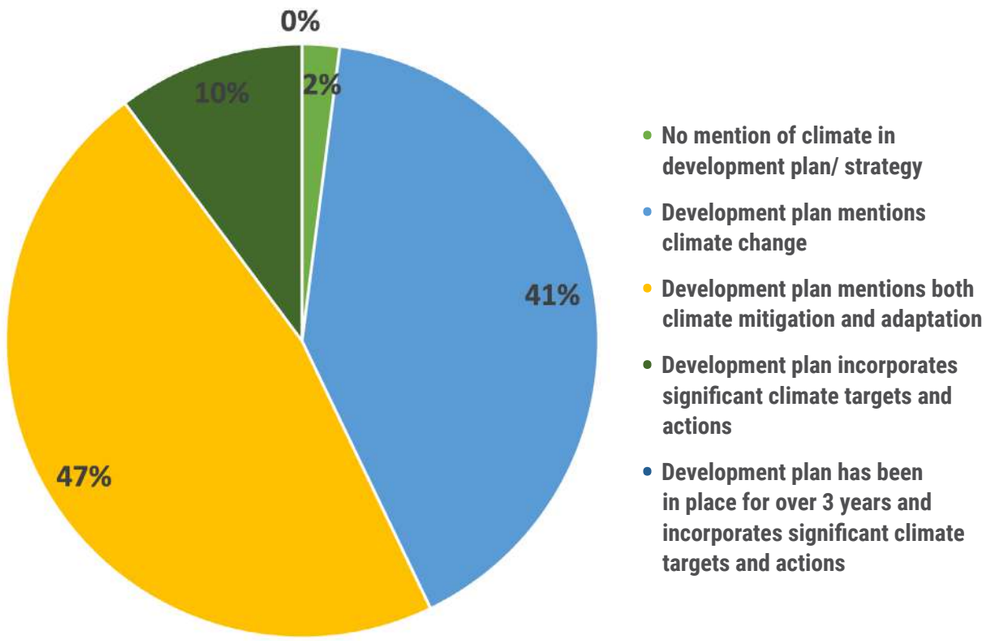
Figures 8 | Green growth strategies



Source: ESCAP, based on carbon neutrality pledges and national enabling frameworks.

[6] The 10 countries are: Brunei Darussalam, Cambodia, China, Fiji, Nauru, New Zealand, Pakistan, Palau, Papua New Guinea and Singapore.
[7] The 5 countries are: Bangladesh, China, Malaysia, Nepal, Singapore.

Figure 9 | Low carbon strategies

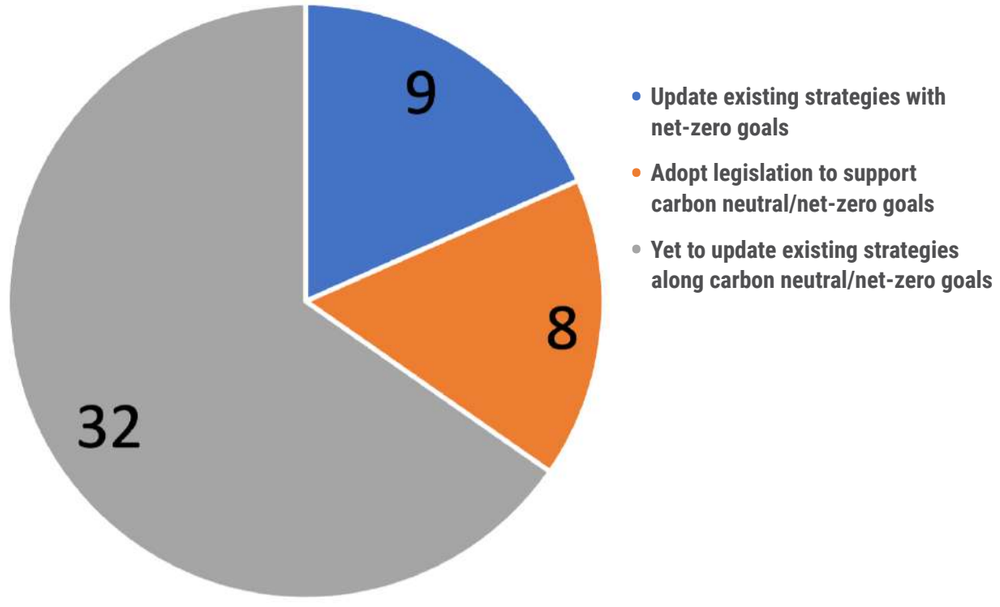


Source: ESCAP, based on carbon neutrality pledges and national enabling frameworks.

When this analysis is combined with the current carbon neutrality ambitions, it is possible to identify up to 17 countries, from all subregions, that have the ambition and highest potential to meet carbon neutral/net-zero goals. Among these countries there are the largest emitters in the region, as well as a mix of islands, countries with large populations, and those at various income levels.

The 17 countries fall into two groups as described in Annex I to this report. First, there are countries that can use this opportunity to immediately update their existing green growth strategies and low-carbon development plans with their (new) net-zero/carbon neutrality goals. Second, there are countries that can issue legislation to support implementation of net-zero/carbon neutrality targets in convergence with their strong development strategies and plans to cement their ambitions. Figure 10 shows the level of enabling frameworks supporting carbon neutrality and net-zero goals.

Figure 10 | Asia-Pacific counties with various levels of enabling frameworks to support carbon neutrality/ net-zero goals, August 2022



Source: ESCAP, based on data of carbon neutrality pledges.

Of course, this analysis does not suggest that other countries in the region are unable or unwilling to take more robust climate action. However, based on the analysis of the plans and targets, it is these 17 countries that can be described as most 'ready' or 'primed' to lead the way towards decarbonization of the economies in the Asia-Pacific region. Indeed, the fact that these countries at various levels of development and income suggests that their leadership would be significant inspiration for other countries across the region with the same level of development to initiate steps towards the 'race to the net-zero'. The fact that the largest emitters in the region fall within the 17 – albeit in different groups – also suggests that such a 'race' would be meaningful for the rest of the region and the world, more broadly, in terms of reducing the worst risks of dangerous climate change.

Scaling up decarbonization technologies to support carbon neutrality

Climate technology and innovation are an important tool to achieve deeper decarbonization in alignment with net-zero targets and commitments. The UNFCCC defines climate technology as all "technologies that we use to address climate change", including renewable energies such as wind energy, solar power and hydropower, as well as 'soft' climate technologies such as equipment training and energy-efficient practices (Larasati and others, 2021).

The Asia-Pacific member States demonstrated high commitment to contributing to global mitigation efforts, including making carbon neutrality pledges and contributing to the success of achieving tangible outcomes at the Glasgow COP26 and the adoption of the Glasgow Climate Pact (UNFCC, 2021a). A significant number of Asia-Pacific member States supported and are participating in several new initiatives that emerged at COP 26, including:

- Phasing down of unabated coal power and phasing out of inefficient fossil fuel subsidies pledge,[8] which is an unprecedented and historic pledge to speed up the end of fossil fuel subsidies and reduce the use of coal;
- The Global Methane Pledge[9] focuses on taking voluntary actions to contribute to a collective effort to reduce global methane emissions by at least 30 per cent from 2020 levels by 2030, which could eliminate over 0.2˚C warming by 2050;
- COP26 'Declaration on Forest and Land Use' is an important commitment of 145 countries to work collectively to halt and reverse forest loss and land degradation by 2030, while delivering sustainable development and promoting an inclusive rural transformation (United Nations Climate Change Conference UK, 2021a)[10];
- 'COP26 declaration on accelerating the transition to 100% zero emission cars and vans' highlights the commitment of signatories to work towards all sales of new cars and vans being zero emissions globally, by 2040, and by no later than 2035 in leading markets, and through a global, equitable and just transition so that no country or community is left behind (Gov.UK (2022)[11];
- Adaptation Research Alliance (ARA) is a bold new coalition of global adaptation actors that aim to catalyse and scale investment in action-oriented research and innovation for adaptation that strengthens resilience in communities most vulnerable to climate change (United Nations Climate Change Conference, 2021b)[12];
- Glasgow-Sharm el-Sheikh work programme on the global goal on adaptation (UNFCCC, 2021b), which is a comprehensive two-year work programme on the global goal on adaptation (2022-2023) to be carried out jointly by the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI) (See Decision 7/CMA.3, United Nations Climate Change, 2022d).

[8] Asia-Pacific signatories, include Azerbaijan, Brunei Darussalam, Indonesia, Kazakhstan, Korea, Maldives, Nepal, New Zealand, Philippines, Singapore, Sri Lanka, Viet Nam.

[9] 24 Asia-Pacific member States, four of which are among the global top methane emitters joined this initiative: https://www.globalmethanepledge.org/#about

[10] There are 30 Asia-Pacific Signatories, including Armenia, Australia, Azerbaijan, Bangladesh, Bhutan, Brunei Darussalam, China, Fiji, Georgia, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Russia, Samoa, Singapore, Tonga, Türkiye, Turkmenistan, Uzbekistan, Vanuatu, Viet Nam.

[11] Asia-Pacific Signatories: Azerbaijan, New Zealand, Armenia, India, Türkiye.

[12] Asia-Pacific organizations include: Asian Development Bank (ADB), All India Disaster Mitigation Institute (ARIN), Australian Centre for International Agricultural Research, Climate Action Network South Asia (CANSA), Indian Institute for Human Settlements (IIHS), Indian School of Business (ISB), Kota Kita Royal University of Bhutan, Regional Resource Centre for Asia and the Pacific (RRC.AP). RV University.

Annex II shows an overview of the Glasgow COP26 initiatives that have both mitigation and adaptation importance. A summary of all initiatives with the membership from Asia-Pacific member States is provided in Annex III.

The important decarbonization initiatives that Asia-Pacific member States have joined have created a powerful world-wide drive towards increasing the development and deployment of decarbonization technologies. The current energy markets turmoil creates additional stimulus for the global community to consider accelerating the transition to decarbonization of the key sectors contributing most of the greenhouse gas emissions, including energy, transport, growing cities, waste management, industrial processes, forest and land use, that will improve the resilience of the economies of the developing countries. Furthermore, governments in the Asia-Pacific region need to create the enabling environment to support penetration of decarbonization technologies, including incentives and tax reductions, and other market instruments to encourage private sector investments to support implementation of more ambitious NDC commitments aligned with 1.5°C targets. Making progress to 2030 with decisive decarbonization measures, which will set up a solid basis for achieving net-zero by 2050 is an urgent task and responsibility of the society as a whole, including policymakers, innovators, energy producers, producers of goods and services, buyers of goods and services, and financial institutions. At the national level three important steps need to be undertaken:

- Speed up deployment of proven zero-carbon solutions;
- Create the right policy and investment environment for the diffusion of decarbonization technologies; and
- Enable the emergence of the next wave of zero-carbon technology and innovation.

Figure 11 | Key Innovation areas to fully decarbonize the economy

SOURCE: SYSTEMIQ for the Energy Transitions Commission (2020)

Source: Energy Transitions Commission (ETC), "Making Mission Possible: Delivering a Net-Zero Economy", 2020, p. 26. Available at https://www.energy-transitions.org/wp-content/uploads/2020/09/Making-Mission-Possible-Executive-Summary-English.

Chapter 3
Investing in Nature-based solutions for climate action

CHAPTER 3

Investing in nature-based solutions for climate action

1. The benefits and impacts of NbS investments

This chapter identifies opportunities to mitigate climate change via nature-based solutions (NbS) in the Asia-Pacific region. It offers insights on how NbS are reflected in the NDCs and provides recommendations regarding the potential for scaling up investments in NbS in the region.

Implementing natural climate solutions globally could prevent over 20 billion tons CO_2 (Andrew J. Watson and others, 2020; WEF, 2021) annually by 2030 (The Nature Conservancy, n.d.). Investments in NbS have been estimated to offer a high return with multiple co-benefits that extend beyond the environment into the social and economic domains. One study estimates a return of $7.1 trillion in net benefits contributing to growth and prosperity, from an investment of $1.8 trillion in climate adaption that is mainly focused on NbS (The Nature Conservancy, n.d.).

NbS are crucial in reducing the increasingly complex and systemic risks arising from unsustainable development practices and environmental changes, such as environmental degradation, biodiversity loss and climate change, that create and perpetuate patterns of vulnerability, exposure and risk (UNDRR, 2020a).

Box 2 | Nature-based solutions definition

"Nature-based solutions for supporting sustainable development" are defined as "actions to protect, conserve, restore, sustainably use and manage natural or modified terrestrial, freshwater, coastal and marine ecosystems, which address social, economic and environmental challenges effectively and adaptively, while simultaneously providing human well-being, ecosystem services and resilience and biodiversity benefits" (UNEP/EA.5/Res.5).

Where 'NbS' refers to both natural and modified ecosystems (such as green roofs, or algae farms), this chapter focuses on the NbS that are 'natural climate solutions' that harness ecosystem-based approaches with direct benefits for climate change mitigation, adaptation and risk reduction, and social, economic and environmental benefits for multiple stakeholders thereby contributing to advancing climate action as described in Box 3.

Box 3 | Natural climate solutions (NCS)

Natural climate solutions are conservation, restoration and improved land management actions that increase carbon storage or avoid greenhouse gas emissions in landscapes and wetlands across the globe. Combined with innovations in clean energy and other efforts to decarbonize the world's economies, natural climate solutions offer some of our best options in the response to climate change.

Broadly, NCS fall into four categories:

- **Forestry practices** include planting new forests, allowing forests to regrow naturally where they have been cut down, and improved forest management;
- **Wetland-related practices** focus on conserving and restoring peatlands and coastal wetlands, such as mangroves;
- **Restorative agriculture** ranges from practices that build soil carbon, such as no-till agriculture and cover crop rotation, to agroforestry and improved livestock management;
- **Ocean-based practices** include restoring seagrass meadows or growing kelp or shellfish to restore or expand marine ecosystems.

Source: The Nature Conservancy, "Natural Climate Solutions", 2022. Available at https://www.nature.org/en-us/what-we-do/our-insights/perspectives/natural-climate-solutions/#:~:text=Natural%20climate%20solutions%20are%20conservation,and%20wetlands%20across%20the%20globe; and American University, "What are Nature-based Solutions? Carbon Removal Law and Policy Fact Sheet", 2020. Available at https://www.american.edu/sis/centers/carbon-removal/fact-sheet-nature-based-solutions-to-climate-change.cfm

Ecosystem-based adaptation (EbA) can reduce social vulnerability and enhance the resilience of people relying on ecosystems by sustaining their livelihoods and providing essential natural resources, such as food, water and building materials (Renaud and others, 2013; Renaud and others, 2016; UNEP 2022). Other socioeconomic benefits that ecosystem-based approaches bring are poverty reduction, biodiversity conservation, and carbon storage and sequestration. Ecosystem-based approaches are considered by many organizations to provide effective, cost-efficient, flexible, and 'no-regret', 'low regret or 'win-win' solutions for reducing climate and disaster risk and building resilience (IPCC, 2012; Sudmeier-Rieux and others, 2019).

2. NbS for carbon dioxide removal

All mitigation pathways assessed by the IPCC that limit global warming to 1.5°C (with no or limited overshoot) project the use of carbon dioxide removal (CDR) to remove and store very large volumes (up to 1,000 billion tonnes) of accumulated atmospheric CO_2 this century (See SPM.C.3, from IPCC, 2018b).

CDR methods[13] vary in terms of their maturity, removal process, timescale of carbon storage, storage medium, mitigation potential, cost, co-benefits, impacts, risks, and related governance requirements (See SPM C.11.2, IPCC, 2022c), and while some governance processes exist, many governance gaps and challenges remain (M. J. Mace and others, 2021). Whether and how these gaps and challenges are addressed could have significant consequences for sustainable development (M. Honegger, A. Michaelowa, and J. Roy, 2020).

In the context of rapidly increasing climate risks, catalysing regional dialogues for learning and collaboration could help to build understanding around the governance of CDR, and to help create policy incentives that drive research investment and enable deployment, while ensuring that potential synergies and trade-offs are effectively addressed.

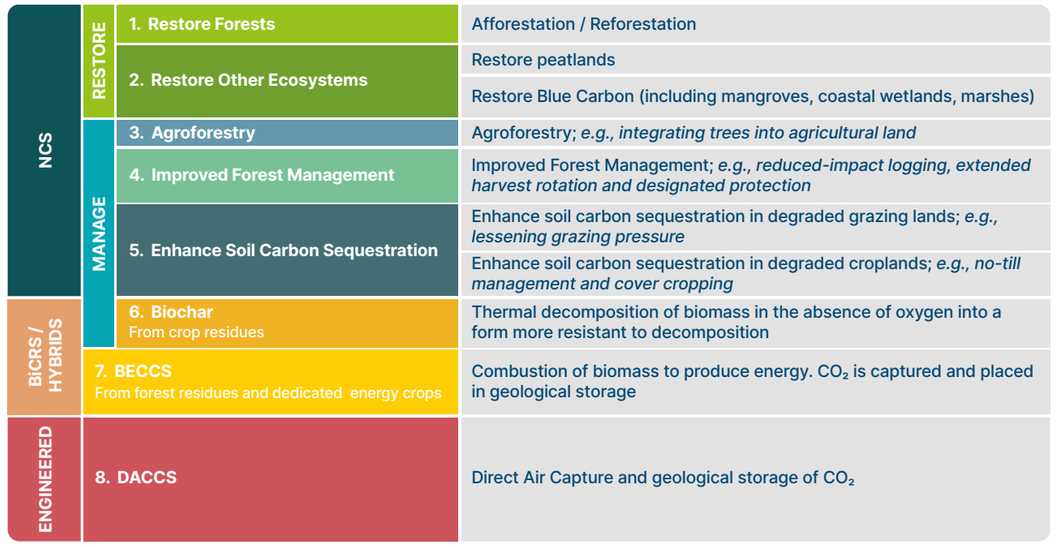
Natural climate solutions provide viable options for carbon dioxide removal that are already applied and ready for upscaling, while some of the engineered removal solutions are in their early application stages. However, if a portfolio of those options to tackle excessive greenhouse gas emissions is rapidly deployed, about 165 $GtCO_2e$ greenhouse gas emissions are estimated to be removed by 2050 (Energy Transitions Commission, 2022).

As described in Figure 12, natural climate solutions are the first of three broad groups of approaches to carbon dioxide removal:

- Natural Climate Solutions apply natural photosynthesis processes to capture CO_2 from the air, and store CO_2 in the biosphere either above or below ground, and below ocean surface. In addition, ocean fertilization, including development of deep ocean storage and alkalinity enhancements are advancing;
- Engineered solutions, and in particular, Direct Air Capture with Carbon Storage (DACCS), remove CO_2 from the atmosphere, and then store the CO_2 in geological formations;
- Hybrid solutions bridge natural and engineered approaches, such as Biomass with Carbon Removal and Storage (BiCRS), use photosynthesis to sequester carbon dioxide but technological intervention to store it, for example in mineral or geological forms.

[13] For overview of CDR methods see: IPCC, "Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change," 2022. Available at www.ipcc.ch/report/ar6/wg3/ (Chapter 12 Cross-Chapter Box 8). See also UN ESCAP SDG Helpdesk Resources. Available at https://sdghelpdesk.unescap.org/e-learning/carbon-dioxide-removal.

Figure 12 | Overview of CDR technologies considered for deployment at scale



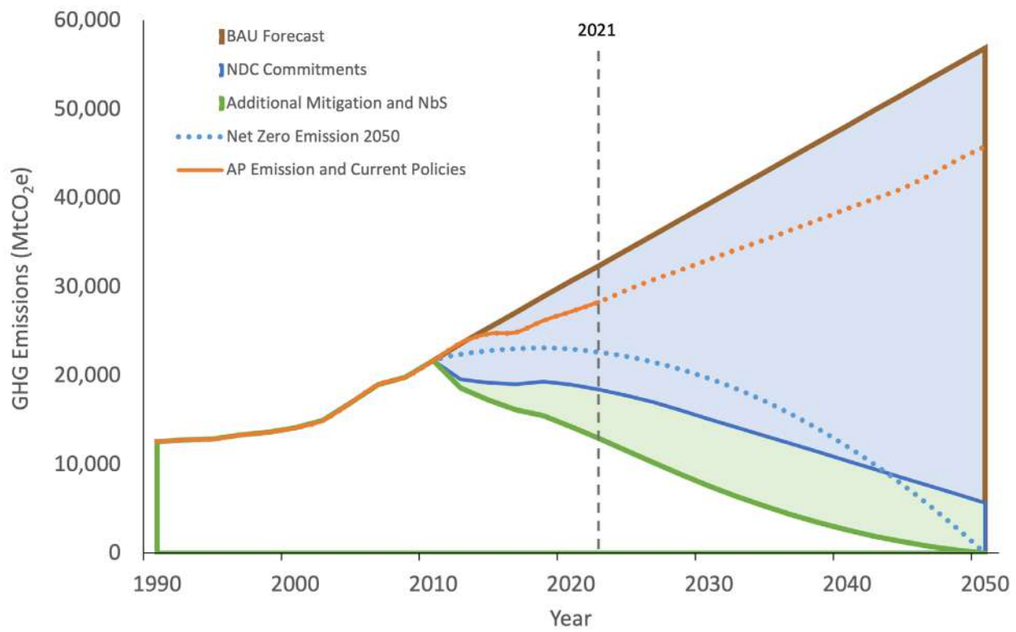
Source: Energy Transitions Commission (ETC), "Mind the Gap: How Carbon Dioxide Removals Must Complement Deep Decarbonisation to Keep 1.5°C Alive", Infographic, 2022, p. 33.

Note: The list does not include removal and storage options with uncertain environmental impacts

The idea that natural climate solutions can be harnessed in climate action reducing carbon emissions and yielding other social and economic benefits, including those useful for adapting to climate change, is not new. Article 2 of the Kyoto Protocol states that Parties shall implement and/or further elaborate policies and measures such as the "promotion of sustainable forest management practices, afforestation and reforestation" (United Nations Framework Convention of Climate Change, 1997). The Bali Road Map, adopted in 2007, aimed to enhance action on climate change mitigation by considering policy approaches and positive incentives for reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (United Nations Framework Convention of Climate Change, 2008).

The natural climate solutions shown in Figure 12 are already being applied and, in some countries, have good potential for quick upscaling to strengthen efforts for reducing greenhouse gas emissions. Based on an estimate of the current levels of carbon sequestration by Asia-Pacific forests, the potential contribution of carbon sequestration by the region's forests to achieving carbon neutrality by 2050 is significant, as shown in Figure 13. Expanding the region's attention to forest cover, and strengthening investments in other land use and freshwater, coastal and marine ecosystems, that provide natural climate solutions, can bring the region much closer to the goal of net-zero carbon dioxide emissions by 2050.

Figure 13 | Projected contribution of NbS mitigation to reducing the gap to net-zero in the Asia-Pacific region



Source: ESCAP, based on data from Our World in Data, 2022, CAIT, World Bank

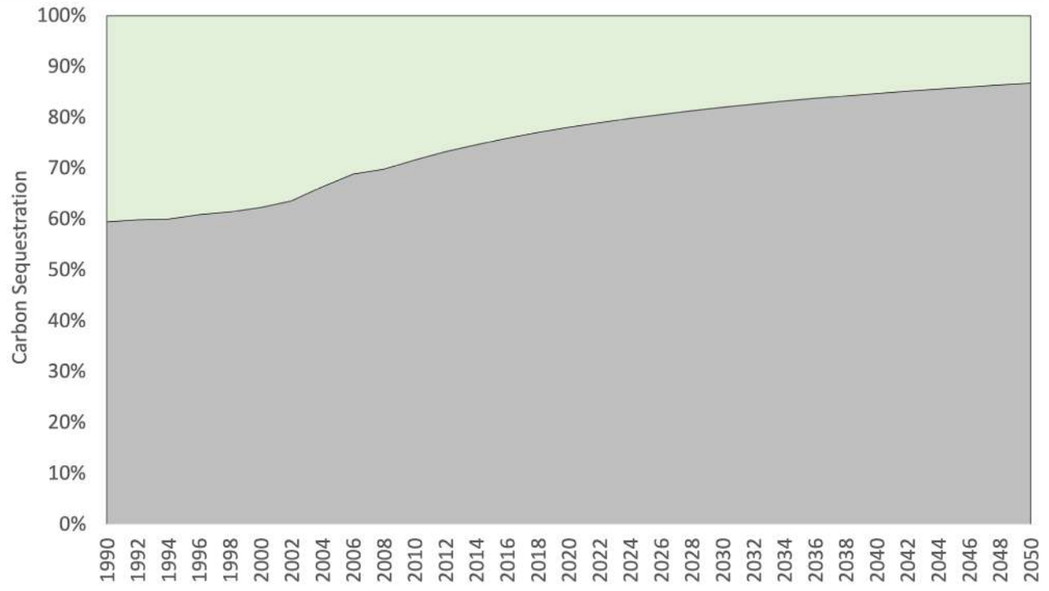
However, there some important aspects related to CDR deployment that need to be considered here. The scale and timing of CDR deployment will depend on the trajectories of emission reductions in different sectors and the upscaling of deployment will depend on developing effective approaches to address feasibility and sustainability constraints (See SPM C.11, IPCC, 2022c). Deployment could offer significant co-benefits including new economic development and job creation opportunities. For example, reforestation, improved forest management, soil carbon sequestration, peatland restoration and blue carbon management can enhance biodiversity and ecosystem functions, employment and local livelihoods (See SPM C.11.2, IPCC, 2022c). Conversely, afforestation or production of biomass crops for Bioenergy Carbon Capture and Storage (BECCS), soil carbon sequestration, and biochar, if poorly implemented, could have various adverse socioeconomic and environmental impacts (See SPM C.11.2, IPCC, 2022c).

3. Delivery on NDC commitments: forests and marine nature-based solutions

Carbon sequestration by forest ecosystems in the Asia-Pacific region

Nature-based solutions are estimated to provide up to 60 per cent of global anthropogenic emissions reductions needed by 2030 to keep global temperature increases under 2°C (IPBES, 2018). NbS related to forest measures are the most frequently referenced NbS for climate action (Escobedo and others, 2019). The forests of the Asia-Pacific region are diverse due to the region's geographical extent, encompassing boreal, temperate, subtropical, and tropical forests. Based on the historic rates of gains and losses in forest area since 2010 (a common reference point for NDC baselines), and standard per-hectare estimates of CO_2 sequestration and losses for each forest type, provided by the IPCC (2019), rough projections of net carbon sequestration by the region's forests can be made. Such projections serve to help countries identify the potential for strengthening target setting by including meaningful NbS targets in their NDCs, i.e., targets that are quantified and go significantly beyond the projected business-as-usual (BAU) net sequestration levels. Even if there is no change in forest area from 2010 levels (a reference year for many NDCs), almost 6.5 Gt CO_2 6,500 $MtCO_2$ are projected to be sequestered annually by the region's forests. This includes both gains in carbon sequestered by expanded forests, and emissions from forest degradation and loss, not taking into account possible forest losses or gains from climate impacts. In 1990, the carbon sequestered by the region's forests made up approximately 40 per cent of regional carbon emissions. However, the projected rapid increase in emissions means that by the year 2050, forests may sequester only approximately 16 per cent of BAU carbon emissions (Figure 14).

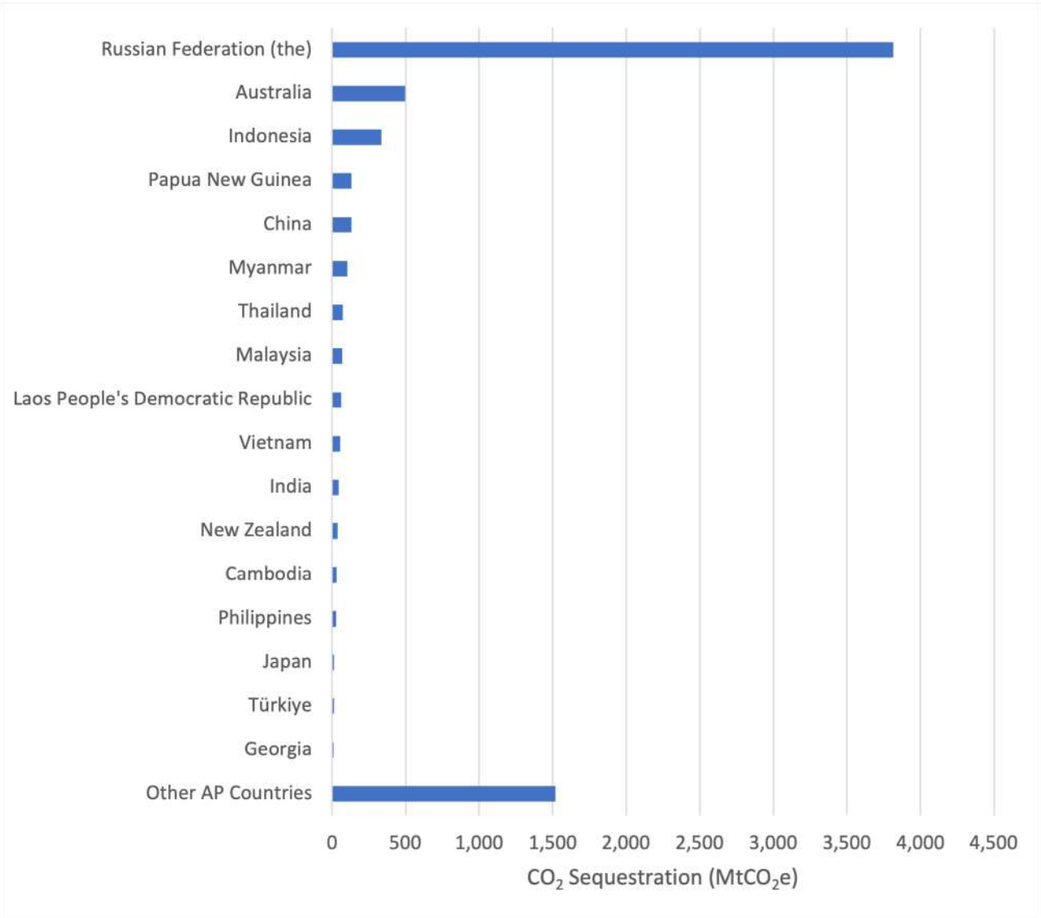
Figure 14 | Proportion of business-as-usual net emissions sequestered by forests 1990 to 2050 (mangroves are not included)



Source: ESCAP, based on World Bank data.

The net contribution of the forest cover of selected countries in the Asia-Pacific region to the overall carbon sequestration in 2021 is presented in Figure 15.

Figure 15 | Estimated net carbon sequestered by forests, 2021



Source: ESCAP, based on World Bank data.

Among the countries that stand to contribute significantly to carbon sequestration, going forward, is the Russian Federation. The boreal forests in the Russian Federation sequester the highest amount of CO_2 and cover the largest forest area in the world (IPCC, 2019). Australia and Indonesia also play an important role in carbon sequestration. Bhutan has already been declared as a net-zero carbon emitter in light of its extensive forests.

The critical role of coastal and marine NbS

The focus on increasing investments in NbS holds great potential for addressing the considerable risks posed by climate change, land degradation, unsustainable agricultural practices, pollution, and the loss of terrestrial, coastal, and marine ecosystems. However, current investments in NbS have focused mostly on terrestrial ecosystems. The huge potential for investments in coastal and marine ecosystems remains largely untapped.

Being a key regulator of climate and weather, the ocean plays a fundamentally important role in the Earth's climate system and therefore must be addressed in the global response to climate change. Climate change mitigation strategies relevant to coastal and marine ecosystems include blue carbon storage, ecosystem protection and restoration, and the role of deep-sea and mesopelagic ecosystems in carbon sequestration and climate services.

Ocean-based solutions to climate change can vastly contribute to the reduction of carbon dioxide emissions. Coastal habitats have the capacity to sequester two to four times the amount of carbon per area than terrestrial forests. According to the UNFCCC (2021d), the ocean has absorbed approximately 90 per cent of the excess heat generated by rising greenhouse gas emissions trapped in the Earth's system, and taken in 30 per cent of the carbon emissions. A report by the High-level Panel for a Sustainable Ocean Economy estimated ocean-based activities comprising a mix of natural climate solutions and engineered solutions,[14] could provide one-fifth of the carbon mitigation needed to meet the goals of the Paris Agreement by 2050, reducing global greenhouse gas emissions by up to 4 billion tonnes of carbon dioxide equivalent in 2030, and up to 11 billion tonnes in 2050.

Noting that under 10 per cent of these reductions are delivered by nature-based solutions, such as blue carbon with mangroves, salt marshes, seagrass beds and seaweeds, harnessing these solutions is therefore crucial in meeting the 1.5°C global warming target of the Paris Agreement.

The benefits beyond sequestration provided by ocean-based and nature-based solutions strengthen the arguments for investment. However, they can support climate change adaptation and resilience-building measures for coastal communities and coastal ecosystems in the face of rising sea levels and other climate-related hazards. NbS that enhance the resilience of coastal and marine ecosystems to climate change include preserving and restoring blue carbon ecosystems, establishing and maintaining 'climate-smart' Marine Protected Areas (MPAs), supporting 'climate-smart' fisheries and small-scale fisheries, ecosystem-based adaptation, sustainable natural resource management, and protecting and restoring coastal ecosystems.

But, despite the recent advances in ocean science and an increased understanding of the ocean-climate nexus, ocean-based solutions to address climate change remain largely unexplored, undervalued, and under-utilized by policymakers and decision makers (ESCAP, forthcoming). At the same time, the largely untapped and powerful benefits that oceans provide are increasingly undermined by human activities, which hampers the ability of the ocean to help us mitigate and adapt to climate change, and to build more resilient and sustainable communities.

[14] Including ocean-based renewable energy; low carbon shipping; blue carbon with mangroves, salt marshes, seagrass beds and seaweeds; low carbon ocean-based protein and nutrition; and carbon storage in the seabed.

In the ESCAP policy brief, "Ocean and Climate Synergies: Ocean Warming and Sea-level Rise Recommendations" it is noted that those countries, in the Asia-Pacific region, with significant coastal wetlands can recognize the values provided by these ecosystems as a potentially significant contribution to both the mitigation and adaptation goals of their NDCs (ESCAP, 2022b).

Box 4 | The Blue Carbon Initiative

The International Blue Carbon Initiative is a coordinated, global program focused on mitigating climate change through the conservation and restoration of coastal and marine ecosystems. Coastal ecosystems are some of the most productive on Earth. They provide people with essential ecosystem services, such as coastal protection from storms and nursery grounds for fish. They provide another integral service: sequestering and storing "blue" carbon from the atmosphere and oceans and are therefore an essential ingredient in the mitigation of global climate change.

For more information see The Blue Carbon Initiative, "Mitigating Climate Change Through Coastal Ecosystem Management", 2019. Available at https://www.thebluecarboninitiative.org

In 2008, Kiribati established the first mega Marine Protected Area (MPA) on Earth. The Phoenix Island Protected Area (PIPA) is a 408,250 km_2 expanse of marine and terrestrial habitats in the Southern Pacific Ocean (Conservation International, 2008). The property encompasses the Phoenix Island Group, one of three island groups in Kiribati, and is the largest designated MPA in the world. Kiribati set a standard for other countries in the Pacific and elsewhere in the world and some Pacific Islands have followed suit and established their own mega-MPAs.

In 2015, the Seychelles became the first nation to close an agreement for a debt for nature swap, with a focus on its extensive marine resources (Pouponneau, 2021, and The Commonwealth, 2020). Under this agreement, the sustainable development of the Blue Economy of the Seychelles was financed by converting US$ 21.6 million of national debt via the world's first Blue Economy debt for nature swap, and through launching the world's first sovereign blue bond. With the support of The Nature Conservancy, the debt conversion enabled the Government of Seychelles to make a policy commitment to safeguard 30 per cent of its Exclusive Economic Zone (EEZ) through MPAs.

4. The status of integration of NbS in Asia-Pacific NDCs

This section looks at the way in which NbS are featured in the NDCs of the countries in the Asia-Pacific region.

In 2017, only 38 of 160 NDCs that were globally assessed specified land-sector mitigation contributions (Griscom and others, 2017). By 2019, the majority of updated NDCs included actions that could be interpreted as NbS, but these largely lacked quantifiable targets and were more common in developing than developed countries (Seddon and others, 2019). Further, it has been noted that relevant targets and actions lack structure and detail with few clear plans and pathways to implementation (Unger and others, 2020), and require robust targets.

It is noted that most countries that have addressed adaptation planning in their NDCs, have referenced ecosystems management, including ecosystem-based adaptation measures. However, this review of Asia-Pacific NDCs focuses attention on way in which NbS feature in mitigation-related actions in the NDCs.

Several aspects of how NbS are described in the NDCs of 49 Asia-Pacific member States, were reviewed:

- Whether there is commitment to NbS-related mitigation;
- Whether NbS-related emissions baselines have been quantified;
- Whether the NbS-related reduction targets have been quantified;
- Whether there is mention of marine, coastal or terrestrial ecosystems beyond forests as contributing to mitigation action;
- Whether social safeguards and/or inclusion measures have been included in relation to mitigation actions: i.e., whether NDC's mentioned social "safeguards", consultation and participation of resource-dependent, local communities, indigenous peoples and/or other specific stakeholder groups deemed to be vulnerable or marginalized.

Each of these aspects yields insights into the "quality" of commitment of countries, in the Asia-Pacific region, to deploy NbS as part of their national contribution to climate action.

The detailed results of the review of 49 NDCs are provided in Annex IV. In summary, the review shows that:

- 43 of the 49 countries in the region have mitigation commitments referencing NbS, and most also reference NbS investment as means of climate adaptation;
- 21 countries quantified NbS-related baseline emissions, but only 14 countries went further to also quantify targets for emissions reduced via NbS;
- While the 31 countries include statements with regards to involvement of civil society, local communities, women and/or the youth in planning processes, there is almost no reference to involvement of indigenous peoples in NbS planning and delivery and/or as targets of other social safeguard measures in NDC implementation. A sizeable number do not mention inclusion in planning or implementation processes;
- 16 countries in the region have mentioned ecosystems other than forests in their NDCs in the context of mitigation, although diverse ecosystems are widely references in the context of adaptation measures. References to mitigation via coastal and/or marine ecosystems are extremely limited.

In many cases, it is clear that the lack of updated greenhouse gas inventories, and/or the lack of monitoring, reporting and verification systems have hampered the ability to be specific about the contributions of NbS to mitigation action. Some NDCs of the Pacific small island developing States clearly state that the total emissions are small, land-based emissions, are negligible and/or that the extent of coasts and marine area ensures that the country is effectively already carbon neutral. NDC mitigation commitments are limited to energy, transport or shipping in some of these cases. Bhutan and Vanuatu note their current carbon neutral status.

Further, this review is limited to the NDCs published or updated within early September 2022. While several countries are exploring to invest in blue carbon sequestration, or to support individual projects and targets for afforestation, among other measures, these commitments are yet to be reflected in their NDCs.

Comparing the potential for delivery on NbS against "quality" of NbS provisions in NDCs

The review above shows that the governments of the region largely recognize the potential of NbS, but there is potential for raising the ambition of NDC targets by further strengthening the promotion of NbS, and by quantifying baselines and emissions reduction targets.

However, efforts to strengthen targets for NbS must be informed by an understanding of how realistic delivery on those targets might be.

Further analysis is needed to determine first, whether countries with meaningful NbS commitments in NDCs are likely to deliver on these commitments, and second, whether there are countries in the region which have high or reasonable capacity to deliver but for which NbS play only a limited role in the NDCs.

The score assigned to the coverage of NDC, as described above provides an indication of the quality of coverage of NbS in each NDC. The score for each country is provided at Annex V. While carbon sequestration goes beyond forests, forests are the most often cited ecosystem type in NDCs, given the assumption that a country that has managed to maintain or increase its forest cover is more likely to have a strong enabling environment for delivering on targets related to ecosystem management. Forest cover change can be adopted as a proxy for assessing the capacity to deliver on NbS commitments.

Plotting the score assigned to the "quality" of NbS commitment against a normalized score of change in forest cover (see Box 5) provides an indication of the relative levels of commitment and ability to deliver on those commitments to NbS in the NDCs, as shown in Figure 16.

Box 5 | Comparing NbS-related commitments in NDCs and the capacity to deliver

(a) Each element above was allocated equal weight in a total score maximum of 1 to assess the extent of commitment to NbS:

NbS-related mitigation	0.2
NbS-related emissions baselines	0.2
NbS-related reduction targets	0.2
NbS that go beyond forestry ecosystems	0.2
Social safeguards and/or inclusion mentioned	0.2

(b) Percentage forest area loss or gain (FLG) between 2010 and 2020 is normalized against regional FLG as below:

$$Normalized\ FLG = \frac{Forest\ area\ of\ country\ X - Lowest\ FLG\ of\ AP}{Highest\ FLG\ of\ AP - Lowest\ FLG\ of\ AP}$$

Countries where no FLG was reported or, i.e., there is no change in FLG, will have a normalized FLG of zero.

The score for NbS-related NDC commitment is then plotted against the normalized change in forest cover. If the forest areas of a country increased after 2010, the country will be located in the right region of the graph, but if its forest cover is reduced after 2010, it will be situated in the left region of the graph.

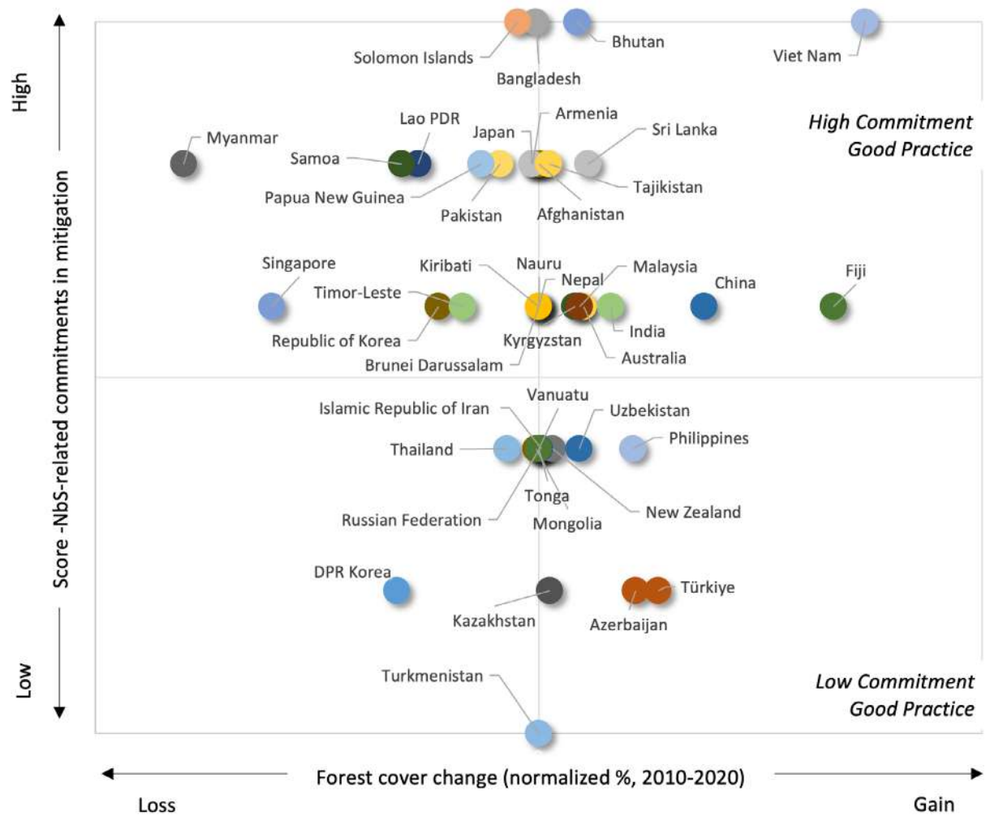
A country's position along the y-axis depends on its commitments to NbS in its NDC, with countries with the higher score are placed in the upper region of the graph, and countries with weaker or no recorded commitment are in the lower region of the graph.

This comparison helps to provide an indication of the ease NbS- related commitments are likely to be delivered, and whether there is potential to increase NbS-related commitments in the NDC, based on existing capacity regarding forest management, as a proxy for its capacity for ecosystem management, more broadly.

Interpretation:

- If a country has a good track record of forest management and a high degree of commitment to harnessing NbS, then it will be located in the top right quadrant of the graph. These countries are likely to deliver on their NDC commitments.
- Countries with a record of forest losses and a relatively low commitment to NbS will be located in the lower right quadrant are likely to face challenges on delivering NDC commitments, even if NbS share is increased. In this scenario, investments for strengthening the enabling environment are needed.
- Countries with a track record of forest loss and high commitment to NbS will be located in the top left quadrant of the graph. Their capacity to deliver on their NDC commitments may be questioned.
- Countries with a track record of forest gains, combined with lower NDC commitment may be missing a valuable opportunity to increase their NDC ambition and impact.

Figure 16 | Comparison of score of NbS commitment and change in forest cover (normalized percentage 2010-2020) in Asia-Pacific countries



Source: ESCAP, based on NDCs for ESCAP members and World Bank data.

Countries that have good potential for increasing the ambition of their NDCs via investments in NbS will be in the lower right-hand quadrant. These countries have a relatively strong record of forest management but have not established strong reference to NbS in their NDCs.

The figure also shows where there is reasonable or strong NbS coverage, but lower capacity for sustainable forest management (upper left quadrant). Countries lying in this quadrant will require significant investment in the sustainable management of ecosystems to be able to realistically deliver on their ambitions.

The analysis highlights the need for further attention and support to establishing well-founded targets for NbS, and for stepping up the institutional, policy and legislative support for sustainable management of critical ecosystems, in order to be able to deliver on the targets. More concrete, evidence-based targets for NbS are urgently needed (Seddon and others, 2019).

It should be noted, however, that the analysis above reflects the commitments in the latest NDC updates, rather than the wider policy context. Also, several Pacific small island developing States are excluded from the analysis because of special constraints they face regarding establishing quantified baselines and targets and the de-facto carbon neutrality conferred by large marine areas.

5. NbS investment in the Asia-Pacific region: opportunities and challenges

National governments in the Asia-Pacific region have been among the early leaders in promoting NbS. Papua New Guinea was an early leader of the global Coalition for Rainforest Nations which lobbied for the recognition of forest carbon in the UNFCCC (Coalition for Rainforest Nations, n.d.).

In 2021, Viet Nam became the first country in Asia and the Pacific, and one of five countries in the world, to sign an agreement under the World Bank Forest Carbon Partnership Facility (FCPF) (Forest Carbon Partnership Facility, n.d.). The agreement follows many policy and programme initiatives that have helped to show the international community that Viet Nam can deliver emission reductions 'at scale'. Under this agreement, some US$ 51 million will be granted for sustainable management actions in provinces selected for high biodiversity values. The investment is expected to deliver 10.3 million tons of carbon reductions from 16 per cent of the land area of the country, which is home to 10.5 million people with nearly a third of the population living under the poverty line (The World Bank, 2020). As of 2022, the FCPF had worked with 47 developing countries globally, and donors had made contributions and commitments worth US$ 1.3 billion. While Viet Nam's contributions to global climate change mitigation efforts are financed via international investments that include investment in building readiness, the country has developed a strong foundation via its domestic payment for ecosystem services (PES) scheme as described in Box 6.

Other countries have taken important steps towards investment in NbS, including Pakistan with its Ten Billion Trees campaign, and more recently Mongolia which has announced its intention to plant one billion trees by 2030 (Montsame, 2021). Supported with World Bank funding, China is combating desertification in the Ningxia Hui Autonomous Region by restoring vegetation and implementing ecological protection measures (The World Bank, 2021).

Local communities have also taken significant action, and reaped livelihood and social capital-benefits. In the Piplantri village, in the Indian state of Rajasthan, local communities have established an impactful initiative that aims to protect the ecosystem, build social capital, and shift harmful gender bias (Messenger, 2021). Every time a baby girl is born, the village celebrates by planting 111 trees and depositing money into an account for her.

Box 6 | Viet Nam's payment for ecosystem services scheme

Viet Nam has been one of the first South-East Asian countries to implement a national policy on PES through its Decree No. 99/2010/ND-CP (Vietnam Law and Legal Forum, 2010), which entered into force on 1 January 2011 (Guignier and Rieu-Clarke, 2012). The context behind Decree 99/2010/ND-CP can be found in the pilot projects on Payment for Forest Environmental Services (PFES) - the first of their kind in South-East Asia, that were established by Decision 380/QD-TTg of 10 April 2008 (Socialist Republic of Viet Nam, 2008).

Two pilot projects for PES were established in January 2009; one in Lam Dong province in the south, and the other in Son La province in the north. Pursuant to Decision 380/QD-TTg, three types of forest environmental services were piloted, namely water regulation, soil conservation and landscape aesthetics. Service buyers were electric and water utilities, and tour operators. Local farmers, households and communities were the service providers and the main beneficiaries of the scheme.

It is estimated that the scheme generated a total payment of VND 87,067,200,000 (US$ 4.46 million), between 2006-2010 paid to 22 forest management boards, forest businesses and 9,879 households. The Ministry of Agricultural and Rural Development led the implementation of these pilot projects, with support from Winrock International and the German Agency for International Cooperation (GIZ). Despite only two years of implementation experience, the two pilot projects were deemed so successful that a nation-wide decree on PFES (Decree 99/2010/ND-CP) was adopted in 2010 (Winrock International, 2011).

Underlying capacity for environmental management

The analysis of the previous section underlines that even if the targets for deploying natural climate solutions in NDCs are clearly specified, the ability to deliver on these targets can be questioned. The underlying drivers of land degradation, forest cover loss, coastal mangroves loss and degradation of marine environments remain, regardless of the provisions made in the NDCs. In some countries, significant enhancement in environmental governance capacity is required to facilitate the much-needed acceleration in NbS investment – whether locally or internationally generated.

This is reflected in the support provided by the international community to "readiness" for REDD+ investment. Lessons from the UNREDD+ programme, in Asia and the Pacific, underline that the conditions (including capacities, institutions, policies and legislation) that support readiness for international financing of carbon sequestration by forests, are similar to the conditions required for effective sustainable forest management (UNDP and UNEP, n.d).

Permanence is an important consideration for NbS investment; the idea that carbon sequestered, should be permanently kept out of the atmosphere. While NbS provide a large potential for climate change mitigation, they are also very vulnerable. The recent forest fires in many countries around the world show how quickly NbS can be destroyed and the stored carbon in these ecosystems can be lost. These risks need to be properly assessed and considered in parallel with other carbon mitigation and decarbonization efforts.

Financing of NbS:

NbS have been financed via compliance and voluntary carbon market (VCM) mechanisms for decades,[15] not only in the forestry sector, but also related to other land uses, including coastal systems, wetlands, grasslands, and agricultural lands. Many government and community initiatives have applied NbS principles to strengthen local livelihoods by reversing land degradation, to conserve biodiversity and valuable watersheds by protecting high-value conservation forests and protecting against sea-level rise through the rehabilitation and expansion of coastal ecosystems such as mangroves, salt marshes and wetlands.

Significant work has been done to build the credibility of quantification methodologies, monitoring, reporting and verification (MRV) systems, governance arrangements, and to build recognized quality standards for NbS projects.[16] Quality standards help to align certified NbS-originating emissions reductions with the requirements of processes and mechanisms, such as the Greenhouse Gas Protocol (Greenhouse Gas Protocol, n.d.), Science Based Targets (Science Based Target, n.d.), and the Paris Agreement.

The United Nations system, the World Bank, governments, and large companies have been facilitating, and making direct investments in NbS and readiness measures aimed at scaling up NbS potential since the 2007 UNFCCC agreement on reducing emissions from deforestation and forest degradation (REDD+), and the launch of the UN-REDD programme of assistance for developing countries in 2008. Some 12 Asia-Pacific countries have been supported by the UN-REDD programme of assistance, generating important lessons learned (UNDP and UNEP, n.d).

While there is strong experience of self-motivated and self-financed NbS investment, most governments in the Asia-Pacific region have indicated that the delivery on NbS in their NDCs is contingent on external financing. However, international financing for NbS is contested and very small. According to Swann and others (2021), between 0.6 and 1.4 per cent of total climate finance flows were allocated to NbS, in 2018. Currently carbon sequestered via voluntary and non-UNFCCC regulated carbon markets, cannot be captured as a direct contribution to implementation of the conditional NDC commitments (see also Box 7).

[15] "Compliance markets are created and regulated by mandatory national, regional, or international carbon reduction regimes. Voluntary markets function outside of compliance markets and enable companies and individuals to purchase carbon offsets on a voluntary basis with no intended use for compliance purposes. Compliance offset market credits may in some instances be purchased by voluntary, non-regulated entities, but voluntary offset market credits, unless explicitly accepted into the compliance regime, are not allowed to fulfill compliance market demand."
(See https://www.offsetguide.org/understanding-carbon-offsets/carbon-offset-programs/mandatory-voluntary-offset-markets/)
As a compliance mechanism, the Clean Development Mechanism of the Kyoto Protocol "allows a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO_2" (https://cdm.unfccc.int/index.html)

[16] For example, see Gold Standard, "A higher standard for a climate secure and sustainable world".
Available at https://www.goldstandard.org/

Box 7 | Overview of carbon markets

Compliance markets are created and regulated by mandatory national, regional, or international carbon reduction regimes. Voluntary markets function outside of compliance markets and enable companies and individuals to purchase carbon offsets on a voluntary basis with no intended use for compliance purposes. Compliance offset market credits may in some instances be purchased by voluntary, non-regulated entities, but voluntary offset market credits, unless explicitly accepted into the compliance regime, are not allowed to fulfil compliance market demand."[a]

As a compliance mechanism, the Clean Development Mechanism of the Kyoto Protocol, which is running out "allowed a country with an emission-reduction or emission-limitation commitment under the Kyoto Protocol (Annex B Party) to implement an emission-reduction project in developing countries. Such projects can earn saleable certified emission reduction (CER) credits, each equivalent to one tonne of CO2".[b]

The Article 6.4 of the Paris Agreement is the new centralized international market mechanism, which is currently being operationalized and is expected to be functional soon, and the Article 6.2 as a possible means for countries to cooperate, transfer mitigation outcomes (ITMOs) and thereby use this mechanism to finance nature-based/natural climate solution projects.[c]

[a] See Carbon Offset Guide, "Mandatory & Voluntary Offset Markets". Available at https://www.offsetguide.org/understanding-carbon-offsets/carbon-offset-programs/mandatory-voluntary-offset-markets/
[b] See Clean Development Mechanism. Available at https://cdm.unfccc.int/index.html
[c] United Nations Framework Convention on Climate Change (UNFCCC), The Paris Agreement, 2016. Available at https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf

While the benefits to national governments of investing in NbS are clear, there are significant hurdles in aligning local interests and capacities with international investor requirements. REDD+ project development has been hampered by a range of governance issues including corruption, community opposition, and poor knowledge and communication (Graham and others, 2016). It has also been argued that REDD projects can facilitate rather than prevent the continued use of fossil fuels; exacerbate tensions over land and resource rights; have significant negative impacts on forest-dependent indigenous peoples and local communities; threaten food security; endanger forests; and in some cases have faced significant financial difficulties, wasting considerable amounts of public funding (Friends of the Earth International, 2014).

For Pacific Island countries, with mega-MPAs, it can be difficult to raise the financing needed to properly manage such vast areas. Financing NbS might also require investing in areas outside the EEZ, which is outside the scope of the NDCs. Also capturing the range of ecosystem functions provided by the same landscape needs be reflected in integrated, landscape-based financing strategies. From the investor's perspective, NbS agreements need to deliver lasting emissions reductions, financing needs to be stable, and contracts need to be enforceable over time. There also risks to project persistence which are borne not only by the investors, but by governments and local communities; the latter risks are not often well-recognized. For example, Aceh, Indonesia, announced that it had made a lucrative agreement for protecting its high-value conservation forests with a prominent investment bank, a deal which folded as the 2007 banking crisis resulted in the closure of many banks associated with high-risk investments. This came at considerable political and environmental cost. The ongoing COVID-19 pandemic, the war in Ukraine, inflation, food security and energy crisis pose new challenges and are diverting attention and funds away from environmental issues (APRCEM, 2021).

Social equity and justice

As outlined above, there are important challenges to maintaining sustainable and equitable outcomes in projects focused on natural climate solutions. Within the Asia-Pacific region, inequality in access to land, and insecure land tenure are important challenges to an equitable approach to investing in NbS. In Asia, two-thirds of the farmland belongs to only 6 per cent of landowners with this trend set to worsen (GRAIN, 2015). While there is a high concentration of land ownership, there is an increasing demand for land for environmental purposes arising from foreign investment. Of the 502 transnational land deals that were recorded in the region, one quarter were for producing biofuel feedstock, renewables or projects that enable payments to secure forest carbon (Land Matrix database, 2021).

Asian governments have adopted the UN Declaration on the Rights of Indigenous People (UNDRIP) (UN DESA, 2007). However, according to the Global Report on the Situation of Lands, Territories and Resources of Indigenous Peoples (Carino, 2019) several countries, namely India, Indonesia, Malaysia, Cambodia, Japan and Nepal have granted official recognition to indigenous peoples, while the Philippines is the only country with a law recognizing indigenous peoples' rights to ancestral land, territories and resources . With limited legal recognition, highly resource-dependent indigenous people are particularly vulnerable to further entrenchment of patterns of inequity and marginalization as the demand for land, including for NbS, increases.

Great care needs to be taken to ensure that investments in NbS projects are in the best interests of the communities in which they are implemented. Unintended negative consequences include the displacement of people to make space for 'green' infrastructure or limited access to green spaces resulting from the commodification of ecosystem services (Barquet and others, 2021; Boyland and others, 2022). Criticism has been levelled at the justification of land grabs to implement NbS, which has caused the displacement of people in rural communities (Bando and Alviar, 2022).

Studies have, to date, primarily focused on the environmental benefits of NbS, and less attention has been paid to understand their social and economic sustainability (Hanson, Wickenberg, and Olsson, 2020). It will hence be important to scrutinize the equity and justice dimensions of externally generated NbS projects across scales, and determine how their costs and benefits are distributed (Cousins, 2021; Hanson, Wickenberg, and Olsson, 2020). The role that ecosystems play in supporting human well-being has been reflected in local communities and indigenous peoples (LCIP) traditional knowledge systems for generations (Cohen-Shacham and others, 2016). WWF (2021) show that LCIP manage their lands in ways that promote biodiversity conservation through naturally occurring processes and have innovative ways to design conservation reserves, environmental policy instruments, wildlife monitoring and management programs (S. T. Garnett and others, 2018). WRI (2021) also found that forestlands with secure tenures have low deforestation rates, significant forest coverage and sustainable forestry practices. Local and indigenous communities play a vital role in sustainably managing forests and other ecosystems, securing the flow of climate-regulation and other critical eco-system services.

6. Conclusions and recommendations

The review of 49 regional NDCs shows that the large majority of countries reference NbS-related mitigation targets and/or actions, and most also reference NbS investment as a means of climate adaptation. Of these, just under half quantify NbS-related baseline emissions, but only two-thirds (16 countries) also quantify targets for emissions reduced via NbS. References to mitigation via coastal and/or marine ecosystems are extremely limited.

Noting the increasing interest in NbS, it becomes increasingly urgent to strengthen the quality of provisions for inclusion in planning and implementation, in particular regarding local communities and indigenous peoples.

The analysis in this chapter underlines that commitment to action, via NbS, should recognize the ability of each country to deliver. The "baseline conditions" of shortcomings in environmental governance exist in many conditions, and clear commitments to NbS in NDCs will not change this – without specific action. Some countries that have established clear provisions regarding mitigation action involving NbS also have a strong track record relative to the region with respect to ecosystem management (using forest cover is used a proxy). These countries can be expected to deliver on their commitments. Other countries can, based on their strong track record increase the clarity and ambition regarding the role of NbS in their NDCs.

Untapped opportunities for strengthening climate ambition in the region are identified in six areas:

- **Strengthening commitments to national nature-based solutions-related measures** in the updated NDCs in 2025 including specific commitments and implementation plans.
- **Increasing climate ambition via NbS in countries with a reasonable or strong track record in ecosystem management.** These countries have good potential to deliver on NDC commitments via NbS deployment. Some countries make relatively weak mention of NbS in their NDCs, despite the reasonable or strong track record in ecosystem management. These countries could be prioritized for targeted support for identifying baselines and targets for NbS action.
- **Expanding NbS measures beyond terrestrial ecosystems.** NbS tend to focus on measures predominantly related to some terrestrial ecosystems (such as, forests). There is considerable room to better recognize coastal and marine ecosystems as blue carbon sinks in many countries.
- **Cooperation across borders which is anchored in joint action to deliver on NbS related to transboundary ecosystems.** The next round of updates of NDCs of Asia-Pacific countries can harness multi-country, multi-stakeholder partnerships at the regional and subregional levels to fully consider important transboundary watersheds, such as the Indus and Mekong rivers, coastal areas and marine ecosystems, such as the Coral Triangle.

- **Targeted investments in building robust enabling conditions for managing ecosystems and delivery on NbS commitment.** This will translate into enhanced NbS planning, implementation, and financing to bring about change on the ground, and to identify, monitor and evaluate baselines and specific, measurable and evidence-based targets. Such actions should include legislative support, such as recognition of ecosystem services in national legislation and strategic orientation of NbS investments to align with national development objectives. Domestically generated natural capital investments (for example, via domestic payments for ecosystem services) can strengthen local action and governance capacity, recognizing also the multiple co-benefits created by NbS.
- **Strengthening social safeguard measures, including participation in planning and implementation, and engaging indigenous peoples and local communities as co-investors and custodians of NbS.** Applying social safeguards to protect the rights of women, children, youth and indigenous peoples in a changing climate is critical to the success and sustainability of NbS measures. Key instruments and good practices for empowering local communities in NbS initiatives should be included in the NDCs. Harnessing local and traditional knowledge and knowledge systems will play an important role in effective partnerships. In addition, land tenure reform to redress inequality in access to resources and strengthen stewardship is urgently required.

Building on the increasingly global recognition of the importance of ecosystems for climate change mitigation and adaptation, their importance to national and local economies and livelihoods, and for sustainable development and biodiversity conservation, investments in NbS present an opportunity to aid post-COVID-19 recovery and to green the GDP of countries in the region.

Special Feature on engagement of children and youth in raising national climate ambition

Special Feature on engagement of children and youth in raising national climate ambition

The climate crisis is a child rights crisis

The changing climate, as we already see and feel today, has deep and far-reaching implications for everyone. We are all affected by it, however, the most vulnerable are children and youth and the impacts of climate change on them are more severe.

Climate change arguably poses the single greatest challenge undermining the fundamental rights of every child and youth in countless ways through the rapid decline in biodiversity, air pollution, lack of access to safe and sufficient water, and lack of access to sustainable infrastructures. The latest IPCC report provides evidence that the children and youth of today will experience extreme weather events that will spiral out of control in their future, impacting their quality of life, as well as their health, well-being and security. Children aged 10 or younger in the year 2020 are projected to experience a nearly four-fold increase in extreme events under 1.5°C of global warming by 2100, and a five-fold increase under 3°C warming (IPCC, 2022a). The survival of children and youth is at imminent threat from climate impacts.

Children have contributed least to the causes of climate change and environment degradation but are most affected by it as they behave differently than adults. This is due to their distinct biological and social characteristics, where they are physiologically different from adults, and have weaker adaptive capacities, thereby increasing their potential exposure to environmental hazards. They are more affected by water and vector-borne diseases and are more likely than adults to face the consequences, such as injuries or death due to climate change.

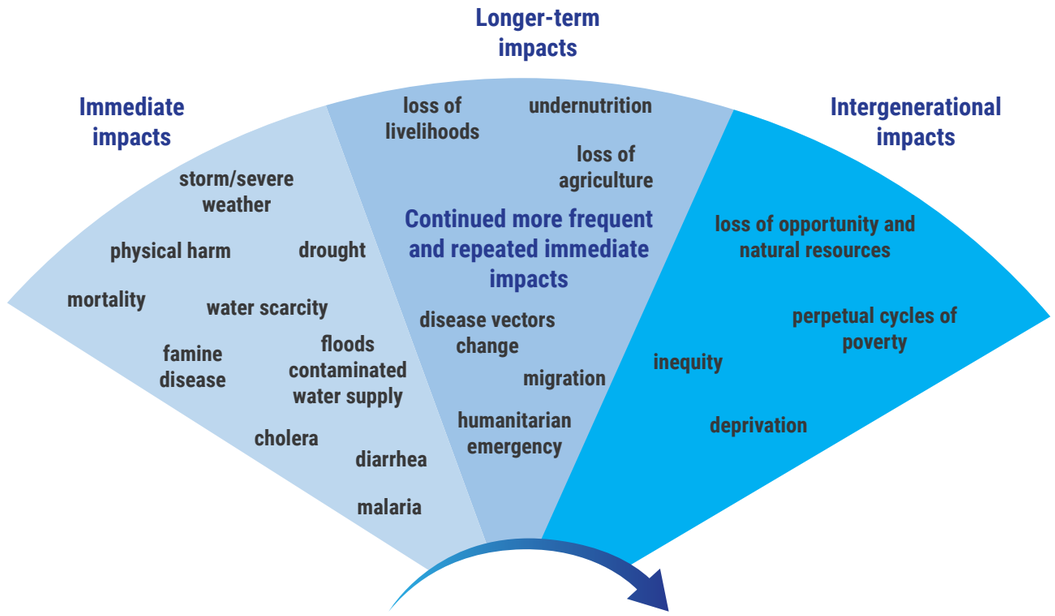
No group is more vulnerable to the harms of climate change than children. UNICEF has found that almost every child on Earth is exposed to at least one major climate and environmental hazard, shock, or stress, with almost 1 billion children globally living in extremely high-risk countries. This is especially true for the most vulnerable children who, overwhelmingly, live in areas that are more susceptible to climate shocks and exposure to natural hazards.

In addition, because resilience to climate change is shaped by broader socioeconomic factors, such as gender inequality and poverty, the situation is particularly fraught for marginalized girls and other highly vulnerable groups of children, compounding the multiple hardships that they face. For example, during disasters, children are at a higher risk of encountering violence, abuse, neglect and exploitation.

From flooding to heatwaves to pollution, the climate challenges have undermined the spectrum of children's right to food, clean air, education, good health and survival. The challenges undermine the effective enjoyment of the rights enshrined in the Convention on the Rights of the Child, signed by 196 eligible states. Because of the inter-connected and inter-related nature of rights, the realization of one right often depends, wholly or in part, upon the realization of others. The violation of one right often reinforces or leads to the violation of another. As a result, all children's rights may be affected by the climate crisis, potentially impacting the effective implementation of the Convention on the Rights of the Child as a whole.

Hence, the climate crisis is a child rights crisis that is undermining the recent advancement towards global and developmental goals. Implementing solutions to reverse and adapt to climate impacts requires all of society, including the world's youngest citizens, to be engaged and work towards building resilience (UNICEF, 2020b).

Figure 17 | Children are the most vulnerable to climate impacts



Source: UNICEF 2019, 'An Environment Fit for Children'

Impacts of climate change on the youth in the Asia-Pacific region

According to the UNICEF Children's Climate Risk Index (CCRI), which ranks countries based on children's exposure to climate and environmental shocks, many of the countries in the region are the most vulnerable to global climate impacts. The CCRI model is a composite index that helps to explain and measure the likelihood of climate and environmental shocks or stresses and identifies the countries that are at risk of deepening children's deprivations and humanitarian situations affecting them as a result of their exposure to climate and environmental shocks (UNICEF, 2021a).

Table 3 | Climate Risk Index for children (Asia-Pacific countries)

Country	CCRI	Climate & environmental shocks	Child vulnerability
Afghanistan	7.6	7.3	7.9
Australia	3.6	5.4	1.2
Bangladesh	7.6	9.1	5.1
Bhutan	3.8	4.3	3.3
Brunei Darussalam	2.4	2.9	1.8
Cambodia	6.5	7.2	5.6
China	6.7	9.0	2.0
India	7.4	9.0	4.6
Indonesia	6.5	8.1	4.2
Japan	4.5	6.3	2.1
Nepal	6.1	7.5	4.2
Democratic People's Republic of Korea	5.2	7.3	1.8
Lao People's Democratic Republic (the)	6.7	7.5	5.8
Kiribati	-	-	-
Malaysia	5.4	7.2	2.8
Mongolia	4.2	5.2	3.1
Myanmar	7.1	8.3	5.4
Papua New Guinea	7.0	5.1	8.3
Pakistan	7.7	8.7	6.4
Philippines	7.1	8.9	4.0
Thailand	6.2	8.4	2.3
Samoa	-	-	-
Sri Lanka	5.4	7	3.3
Timor-Leste	-	-	-
Tuvalu	-	-	-
Vanuatu	-	-	-
Viet Nam	6.8	8.8	3.0

7.1 – 10.0 **Extremely high**
5.5 – 7.0 **High**
3.8 – 5.4 **Medium**
2.1 – 3.7 **Low**
0.0 – 2.0 **Very low**

Source: UNICEF (2021a).

Children and youth engagement in climate actions in Asia and the Pacific

Not only are children affected by the current and future climate change impacts, they are also the most critical clients for the climate actions and policies being devised. And yet, opportunities, resources, skills and safe spaces for them to proactively engage and influence policy processes, so they can address current and future climate challenges, are limited.

The United Nations recognizes the key role that children and youth play in tackling climate change and works closely with youth-led and youth-focused organizations. In 2020, the UN Secretary-General released a "Call to Action for Human Rights", which is the Secretary-General's transformative vision for human rights (United Nations, 2020). The Call to Action recognizes human rights as central to the UN's most pressing issues including the rights of future generations and, especially, climate justice (United Nations, n.d.). The heads of UN entities also released a joint commitment to promote the right of children, youth and future generations to a healthy environment and their meaningful participation in decision-making at all levels, in relation to climate action and climate justice (United Nations, 2021). In addition, the Committee on the Rights of the Child announced, in June 2021, its upcoming general comment on children's rights and the environment with a special focus on climate change (General Comment No. 26) to provide authoritative guidance on what governments must do to uphold children's rights under the Convention on the Rights of the Child in the face of climate change and other environmental challenges.

Children and the youth play an important role in the climate justice movement. Climate litigation, by children, has the potential to safeguard the interests of future generations, and a legal basis for such litigation already exists in many countries. Children and their representatives have already engaged in environmental litigation in a wide range of countries around the world. However, many youth climate activists and young environmental human rights defenders are also facing challenges and threats against their work in fighting for bold climate action and stronger environmental protection.

It is essential that they are provided with the skills, confidence and knowledge to catalyse actions in their homes, schools and communities and are given the necessary seat at the table to integrate intergenerational thinking into climate change policies and actions. In recent years, children and youth are already driving change around the world, voicing their expectations that governments must accelerate ambitious action to ensure a safe, clean, healthy, and sustainable environment for their future. Young activists are demanding that policymakers and planners consider their unique realities, rights and needs in decisions and involve them in decisions that will define their future. We are witnessing increased interest, engagement and activism amongst youth through climate strikes, conferences, coalitions, etc.

Analysis of the level of integration of child-sensitive issues in existing climate policies in Asia and the Pacific

Against the backdrop above, it is essential that national climate policies that set the priorities for climate response and shape children and youth futures are child sensitive. Table 6 indicates that the majority of NDCs re-submitted in 2021 still do not prioritize child-sensitive climate action adequately. Although there exist meaningful references to children and youth, the NDCs lack substantive references to rights-based action or have a child-specific section.

In the limited countries that identify and reference children and youth, they are often referred to as drivers of change, but are not included in the NDC participatory processes. It is also apparent that the social sectors that concern children are overlooked in the NDCs as there is a significant lack of child-sensitive sectoral commitments, most particularly in education and food security. Prioritizing resilience of social sectors like water, health, education is imperative as this often is the best way to reduce climate risks.

Viet Nam's 2020 NDC is an example of how young people can be offered an opportunity to meaningfully engage in the process. With a dedicated section on children's climate change vulnerabilities across sectors, Viet Nam's NDC also supports a strong equity angle, recognizing children with disabilities, children in poor families, migrant children, girls and those living in the Mekong Delta, while also highlighting the need for disaster risk reduction within climate adaptation, community-based models and awareness generation.

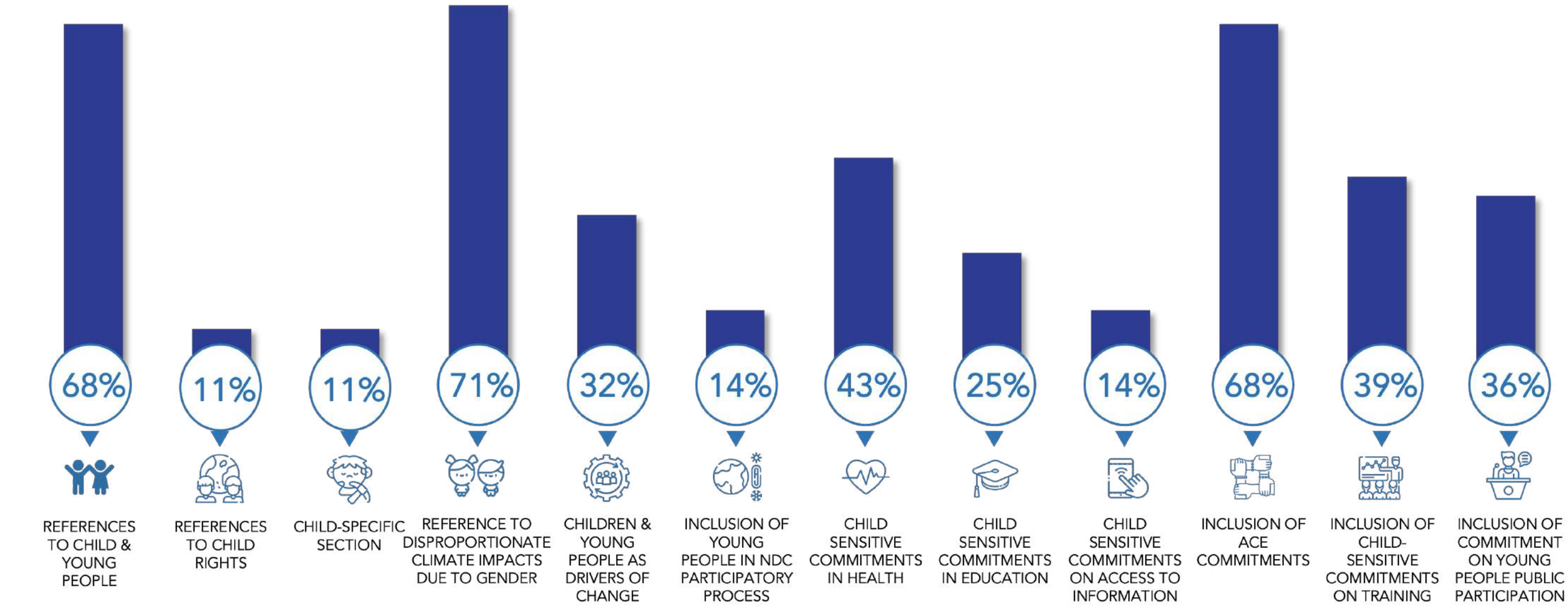
Some countries have highlighted the importance of engagement and participation of children and the youth in climate policy and action. For instance, Cambodia emphasized the critical role of children and the youth in the development, implementation and enforcement of climate actions and emergency response across sectors. Cambodia's NDC places a crucial focus on young people through adaptation and mitigation measures in energy, industry, infrastructure, health, conservation, tourism and transport sectors. Likewise, the Philippines refers, in their NDC, to the importance of meaningful participation of children and youth as part of a "whole-of-government approach" to implement the climate actions (Republic of the Philippines, 2021). Similarly, in Myanmar, the empowerment of children and youth is recognized as a high-priority approach in the context of both mitigation and adaptation, recognizing them as both beneficiaries and agents of change. Myanmar's NDC notes that the Government is incorporating disaster risk reduction and climate change in school curricula and learning materials to achieve long-term positive impacts.

Few countries in the region make clear references to children and youth as right-holders. This is the case of Fiji's National Adaptation Plan (NAP), which explicitly recognizes the rights of children and future generations to a clean and healthy environment and the principle of intergenerational equity. The NAP sets out specific child-sensitive measures with respect to needs assessments and action plans, and health and protection measures in the context of extreme weather events and climate-sensitive diseases. The adaptation plan also refers to empowerment and awareness-raising for youth, building the resilience of school infrastructure, and places "great emphasis" on the need to update formal and non-formal educational curriculums, including the review and updating of primary, secondary, tertiary and vocational education curricula "that allow and encourage students to participate in research and risk reduction activities in their local area" (UNICEF, 2020a). Likewise, Papua Guinea commits to ensure that the youth have opportunities to develop sustainable low-carbon livelihoods (Papua New Guinea, 2020).

Despite some progress, climate policies of East Asia-Pacific countries still fall far short of what is required in terms of the extent to which they directly address children. Further progress is required to recognize the status of children as stakeholders that need addressal in climate policies, as rights-holders and for the critical role that they can play as powerful agents of change.

Children and youth are a critical part of climate solutions; they will be part of the future generations inheriting the negative impacts of the climate crisis and hence, need to be incorporated within the NDC processes today. This includes prioritization of capacity-building, technology transfer and finance allocations towards local community-based and child and youth-led solutions towards the climate crisis (UNICEF, 2021b).

Figure 18 | Percentage of countries addressing child-sensitive priorities in NDCs in the Asia-Pacific region



NOTE:
COUNTRIES EVALUATED AS OF DECEMBER 2021
Bangladesh, Bhutan, Cambodia, Fiji, Indonesia, Kiribati, Lao People's Democratic Republic, Maldives, Malaysia, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Nepal, Palau, Pakistan, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Timor Leste, Thailand, Tonga, Tuvalu, Vanuatu, Viet Nam

Making a case for children and youth as agents of change

Children and young people will inherit the impacts of climate change, which threaten the life-support systems that make the world habitable. Recent opinion polls conducted by UNICEF from countries in the region and globally, show that climate change is a growing cause of anxiety for young people. Although empirical linkages may not exist at present, some discussions on mental health and well-being of young people often point towards climate-related anxieties.

Guardians of the planet: Asia-Pacific children and youth voices on the climate crisis and disaster risk reduction (World Vision and others, 2020)

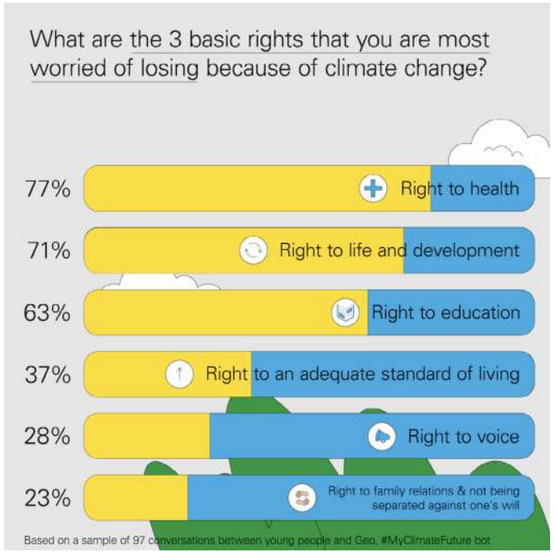
A consultation with nearly 10,000 children and youth on the climate crisis and disaster risk reduction (DRR) was conducted from August 2019 to January 2020, in the Asia-Pacific region, and organized by the Asia Pacific Coalition for Safe Schools, UNICEF, the UN Major Group for Children and Youth, the UN Office for Disaster Risk Reduction, World Vision International, Plan International, and Save the Children.

During the consultation, children and youth shared their views on climate-related disasters. They recognized the need to strengthen policies and plans to mitigate disaster risks and promote resilience.

Some of the key findings include:

- 77 per cent of children and youth have noticed more climate-related disasters locally in the last two years.
- 23 per cent of children reported experiencing extreme temperatures, while 30 per cent experienced floods or more severe rainfall. A decrease in economic opportunities is also reported as a visible impact of climate change.
- Children recognize themselves as being most vulnerable during disasters followed by the elderly, people with disabilities and pregnant women.
- 45 per cent of children and youth expressed that people with disabilities are not given enough support to prepare for disasters.
- Formal education is the top channel through which children and youth acquire knowledge about the climate crisis and DRR, followed by news and social media.

#MyClimateFuture campaign



An interactive campaign, #MyClimateFuture was launched using a Chatbot named Geo, framing the climate crisis as a child rights crisis and allowing participants to learn about the impacts of the climate crisis on their fundamental rights, connect to youth networks and organizations, and discover how they can act on it. Based on a sample of 97 conversations between young people and Geo, the results revealed that young people are increasingly calling for climate action; 80 per cent of youth engaged in the campaign saw tackling the climate crisis as very urgent; more than 50 per cent of youth felt anxious about climate change, and only 40 per cent felt hopeful. Moreover, 71 per cent of youth were concerned about climate change and its impacts on their lives, and 37 per cent were struggling with lack of information on climate change or were struggling to understand the information. They were also concerned about how adults perceive them as being unrealistic, careless and uninformed. But, more than 65 per cent of youth felt that they can change anything, and needed the power to do so. Additionally, the right to health, right to life and development, and right to education were perceived as the most important rights for children and they were afraid of losing these rights.

Rising to the challenge: Youth's perspectives on climate change and education in South Asia

The UNICEF Regional Office of South Asia conducted a study to examine the youth experiences and perceptions of the impacts of climate change on education, climate-change learning and their need to become effective and confident agents of change (UNICEF, 2020c). The study found that:

- The majority of respondents reported that they were not able to explain climate change or global warming, even though 65 per cent noted that it was taught in school.
- Of the respondents, 69 per cent reported being at least a little worried about the impact of climate change on the future.
- Over 60 per cent of respondents believed that the governments should be taking the most action to address climate change.
- Of the respondents, 78 per cent stated that their education or studies was affected by climate change.
- Of the respondents, 85 per cent were keen to act to address climate change if they were given necessary support.

On a positive note, in recent years children and young people have united in a call for action. They have been more connected, more creative and informed than any previous generation and are responding to the challenges today through fresh ideas. They have also been supported with necessary platforms through initiatives and coalitions.

Conclusions: Aligning children and youth engagement with action for climate empowerment

Engaging adolescents and youth in the design, development and implementation of policies and programmes requires that adults shift their mindset and values, and approach adolescents as equals, as a constituency which can offer valuable perspectives and insights, take forward their own initiatives, and work alongside parents, caregivers, practitioners, researchers and policymakers. Reframing adolescents as partners and ensuring equitable access to information and participation will help harness their unique body of knowledge, experiences and views for more effective, relevant and sustainable services, policies and practices (UNICEF, 2020b).

Governments have a duty to young people and future generations as they are likely to be the most vulnerable to the impacts of climate change, and yet are least represented in decisions on climate actions. Furthermore, governments need to create an enabling environment for intergenerational approaches to solving the climate crisis.

The urgency of the crisis and its impact on children and youth cannot be underestimated; without a low carbon future, millions will struggle to survive, grow, develop, learn, play, participate and contribute.

ACE prepares individuals, youth, decision makers, government entities and the society at large for the challenges that climate change brings and empowers them to act accordingly.

As such, the implementation of these six elements is crucial for everyone, including children and youth to understand and participate in solving complex challenges presented by climate change. Integrating, developing and implementing the six ACE areas into NDCs, NAPs, mitigation activities, long-term low emission strategies and climate policies can:

- Foster a better understanding of, and ability to address climate change and its effects.
- Promote community engagement and knowledge in finding climate change solutions.
- Engage all stakeholders in debate and partnership to respond collectively to climate change.

The Action for Climate Empowerment (ACE) is a term adopted by the United Nations Framework Convention on Climate Change (UNFCCC). It refers to Article 6 of the Convention's original text (1992) and Article 12 of the Paris Agreement, focusing on six elements: **climate education; public awareness; training (e.g. of scientific, technical and managerial personnel); public participation; access to information; and international cooperation** on these issues. Parties recognized when adopting the Convention and Paris Agreement that the tools that ACE provides are pivotal for everyone to understand and participate in solving the complex challenges presented by climate change. The overarching goal of ACE is to empower all members of society to understand the causes of climate change and engage in climate action.

Adapted from Integrating Action for Climate Empowerment into NDCs, UNESCO

At COP 26, Parties adopted the 10-year Glasgow work programme to further strengthen the implementation of ACE. The Glasgow work programme provides a flexible framework for countries and all other stakeholders to enhance their ACE implementation efforts, including by implementing the elements of ACE in a balanced manner. Activities under the Glasgow work programme are focused on four priority areas: **policy coherence; coordinated action; tools and support; and monitoring, evaluation and reporting**, that address gaps and challenges in implementing the six elements of ACE and create opportunities to accelerate implementation.

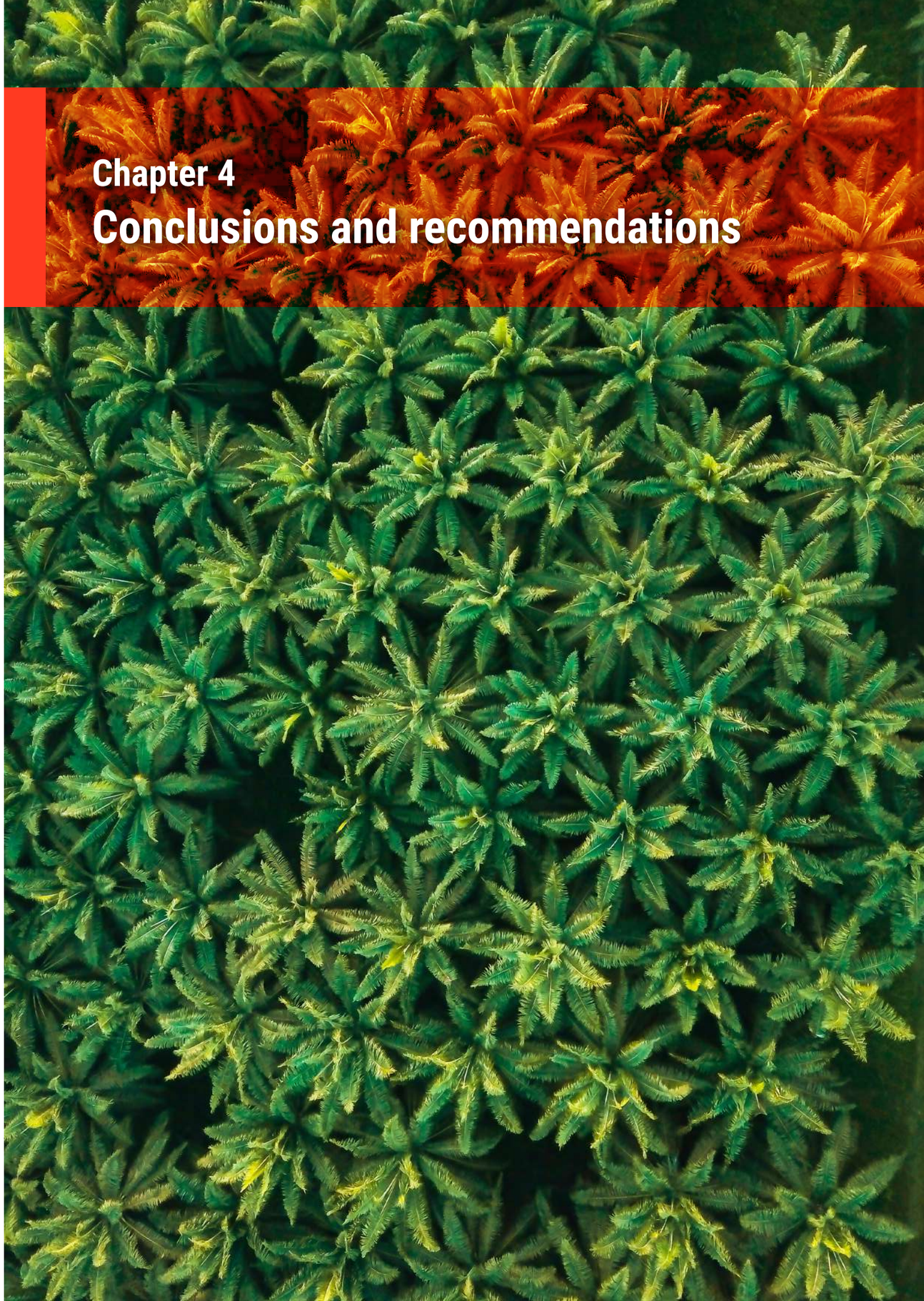
The Glasgow Work Programme on ACE encourages capacity-building of youth and other stakeholders to help them embark on and lead ACE implementation, and promote youth participation in relevant climate processes at national and international levelsincluded among the key activities:

- Support to the intergovernmental process and negotiations on ACE.
- Organizing showcasing events, such as ACE Dialogues, and other ACE events to exchange good practices and lessons learned.
- Building new and strengthening the existing skills and capacities of ACE national focal points.
- Empowering children and youth to take climate action and promote their participation in the intergovernmental process on climate change.
- Collaborating and coordinating efforts with Parties and other stakeholders, including UN entities, NGOs, universities, businesses, industry and others to scale-up ACE implementation.
- Supporting the integration of ACE across the UNFCCC workstreams.

During the SBI 56 (United Nations Climate Change, 2022e), at the Bonn Climate Change Conference, held in June 2022, Parties, representatives of relevant constituted bodies, and relevant experts, practitioners and stakeholders held the first in-session Action for Climate Empowerment Dialogue under the Glasgow work programme, which focused on the engagement of children and youth in implementation of the four priority areas of the Glasgow work programme (United Nations Climate Change, 2022a).

Parties agreed on draft conclusions (United Nations Climate Change, 2022b), and agreed to continue discussions of this matter at SBI 57 (November 2022) taking into account the informal note prepared by the co-facilitators at this session (United Nations Climate Change, 2022c).

A summary of the required measures to be undertaken by governments in the engagement of youth in raising national and international climate ambition is provided in Annex VI of this publication.



Chapter 4
Conclusions and recommendations

CHAPTER 4

Conclusions and recommendations

As of August 2022, 39 out of the 49 Asia-Pacific member States have made carbon neutrality and net-zero pledges and have developed enabling frameworks to support implementation of their commitments. However, very few of those pledges are supported by relevant NDC commitments and their implementation plans. Once there is alignment between these pledges and NDC commitments, only then will the Asia-Pacific region be able to drive ambitious climate action.

Since COP26, 13 countries have updated their approaches to fight climate change. Progress is being made across different subregions, and by countries at different income levels. There is some progress in developing synergies between green growth, development strategies and long-term low-emissions strategies, however, more can be achieved during the process of updating NDCs, which will start from 2023 to 2025. Those Asia-Pacific countries that have included innovation and roll out of decarbonization technologies will have an advantage during their implementation.

The majority of the Asia-Pacific countries recognize in their NDCs the benefits of NbS for climate change mitigation and adaptation. However, there is good potential for increasing the level of recognition and the share of NbS in particular in the mitigation plans in the regional NDCs.

The review of 49 regional NDCs shows that the large majority of countries reference NbS-related mitigation targets and/or actions, and most also reference NbS investment as a means of climate adaptation. Of these, just under half quantify NbS-related baseline emissions, but only two thirds (16 countries) also quantify targets for emissions reduced via NbS. References to mitigation via coastal and/or marine ecosystems are extremely limited. Only 16 countries in the region have mentioned ecosystems other than forests in their NDCs in the context of mitigation, although diverse ecosystems are widely referenced in the context of adaptation measures. Further attention is required.

While social safeguards with respect to NbS implementation for mitigation are extremely important, another important gap in the NbS reviewed was lack of references to quality of inclusion, and in particular that of indigenous peoples. A sizeable number of NDCs do not mention inclusion in planning or implementation processes, and a sizeable number of countries do not mention inclusion or significant participation in the NDC planning and implementation.

Once the detailed implementation framework for the Article 6.4 is well established and developing countries continue to enhance their NDC commitments, absolute emissions reductions are expected to become a significant contributor to achieving the 1.5°C pathway.

Given the current volume of greenhouse gas emissions in the Asia-Pacific region, there is also a current lack of synergies between of NDC commitments and regional carbon neutrality pledges and plans. In this regard, the following recommendations have been formulated, as a result of this study, that address the imperative need for the Asia-Pacific member States to re-focus their efforts in the next 8-10 years. These are:

- **Conduct a critical review of current NDC commitments and strengthen mitigation targets to ensure implementation of carbon neutrality pledges and long term low-emissions development strategies that will enhance Asia-Pacific contribution to the reduction of global greenhouse gas emissions aligned with the 1.5°C goal.**
- **Strengthen the provisions for national nature-based solutions-related measures in the updated NDCs in 2025 including specific commitments and implementation plans, aligned with international initiatives for terrestrial and marine NbS, and make more ambitious commitments.**
- **Provide enabling conditions and enhanced financial flows for scaling up investments in NbS actions that address climate change adaptation and mitigation, as well as support sustainable development and biodiversity conservation.**
- **Develop key instruments and good practices for empowering indigenous peoples in NbS initiatives and facilitate engagement in decision-making related to climate action.**
- **Roll out innovative decarbonization technologies across the critical sectors in the updated NDCs and in long-term development strategies.**
- **Remove barriers to decarbonization within economies, cities, industries and energy production, supply chains, transport and commuting sectors, and in buildings and other infrastructure.**
- **Develop timelines for phase down and phase out of coal, reduce dependence on other fossil fuels, and accelerate penetration of renewable energy resources.**
- **Develop national policies to support capacities and human resources for innovation, governance, and roll out of innovative decarbonization technologies that have a positive impact on the climate and for economic recovery.**
- **Set targets for investments in R&D and deploy innovative decarbonization technologies to develop local manufacturing and accelerate national climate actions.**
- **Create a favourable environment by providing incentives and tax reductions and ensure that market instruments are in place to encourage private sector investment in decarbonization technologies and industries for both short-term and long-term climate action.**
- **Identify opportunities to protect the rights of children and youth through NbS within the context of a climate action.**
- **Develop a national enabling environment to engage the youth in climate action and NDC implementation policies.**
- **Strengthen regional cooperation including through:**
  - Building a regional platform to facilitate the exchange of best practices and lessons learned from policies and projects supporting NDC implementation and updates, and increase technical cooperation for developing, deploying and replicating decarbonization technologies
  - Engaging multiple stakeholders and increasing public awareness activities to support NDC updates and implementation,
  - Building a regional programme to unlock the potential, energy and knowledge to drive climate action.
  - Building regional dialogue around new technologies, including those on carbon dioxide removal to determine effectiveness, scientific soundness, and deployment of such technologies.
  - Increasing transboundary ecosystem adaptations and finding NbS for building the region's resilience, moving towards net-CO_2-zero and achieving climate resilient development for all.

Annex I: Taxonomy of Asia-Pacific countries with the highest ambition and potential to meet announced climate pledges

Group 1: Update existing strategies with net-zero goals	Group 2: Adopt legislation to support carbon neutral (CN)/net-zero goals
• **Brunei Darussalam –** can go beyond a CN declaration/pledge and extend economy-wide green growth plan. • **Bhutan –** can further strengthen its development plan based on achieved CN. • **Fiji –** can use CN law to strengthen development planning in line with climate change. • **Japan –** can use CN law to strengthen economy-wide green growth strategy. • **The Republic of Korea –** can use CN law to strengthen economy-wide green growth strategy. • **The Maldives –** can use CN law to strengthen economy-wide green growth strategy. • **New Zealand –** can use net-GHG-zero (except methane) law by 2050 to strengthen its low-carbon development plan. • **Pakistan –** can go beyond a CN declaration/pledge based on strong green growth strategy. • **Papua New Guinea –** can go beyond a CN declaration/pledge based on strong green growth strategy.	• **Australia –** can adopt legislation for CN goal and make economy-wide green growth strategies. • **Cambodia –** can adopt legislation for CN goal based on strong green growth strategy. • **China –** can adopt legislation for CN goal based on strong green growth strategy and development plan. • **Indonesia –** can adopt legislation for CN goal and make economy-wide green growth strategy. • **Malaysia –** can adopt legislation for CN goal and make green growth strategy economy-wide • **Nauru –** can adopt legislation for CN goal based on strong green growth strategy. • **Singapore –** can adopt legislation for CN goal based on strong green growth strategy and development plan. • **Sri Lanka –** can adopt legislation for CN goal and make green growth strategy economy-wide/incorporate more climate actions into development plan.

Annex II: Key COP26 Mitigation Initiatives and involvement of Asia-Pacific countries

COP26 Mitigation Initiatives	Asia-Pacific involvement in outcomes	Proportion of Asia-Pacific participation in outcomes
Global Coal to Clean Power Transition Statement	12 Asia-Pacific Signatories: Azerbaijan, Brunei Darussalam, Indonesia, Kazakhstan, Republic of Korea, Maldives, Nepal, New Zealand, Philippines, Singapore, Sri Lanka, Viet Nam.	26% of signatories were from the Asia-Pacific (12 out of 46 signatories)
Declaration on Forest and Land Use	30 Asia-Pacific Signatories: Armenia, Australia, Azerbaijan, Bangladesh, Bhutan, Brunei Darussalam, China, Fiji, Georgia, Indonesia, Japan, Kazakhstan, Korea, Kyrgyzstan, Malaysia, Mongolia, Nepal, New Zealand, Pakistan, Papua New Guinea, Philippines, Russia, Samoa, Singapore, Tonga, Türkiye, Turkmenistan, Uzbekistan, Vanuatu, Viet Nam.	21% of signatories were from the Asia-Pacific (30 out of 141 signatories)
Global Methane Pledge	24 Asia-Pacific Signatories: Armenia, Fiji, Georgia, Indonesia, Japan, Kyrgyzstan, Malaysia, Marshall Islands, Micronesia, Nauru, Nepal, New Zealand, Pakistan, Palau, Papua New Guinea, Philippines, Samoa, Singapore, Korea, Timor-Leste, Tonga, Uzbekistan, Vanuatu, Viet Nam.	20% of signatories were from the Asia-Pacific (24 out of 119 signatories)
COP26 Declaration on Accelerating the Transition to 100% Zero Emission Cars and Vans	5 Asia-Pacific Signatories: Azerbaijan, New Zealand, Armenia, India, Türkiye.	13% of signatories were from the Asia-Pacific (5 out of 39 signatories)
Beyond Oil & Gas Alliance	New Zealand is an associate member of the alliance.	BOGA has 8 Core members, 3 associate members & 3 Friends of BOGA

Annex III: Glasgow COP26 decisions with converging mitigation and adaptation benefits

COP26 decisions	Mitigation	Adaptation
Formal negotiations and decisions		
Glasgow Climate Pact	✓	✓
Agreement on Paris Rulebook	✓	✓
Glasgow-Sharm el-Sheikh work programme on the global goal on adaptation		✓
Glasgow Dialogue on Loss and Damage	✓	✓
Operationalization of the Santiago Network on Loss and Damage	✓	✓
Operationalization of the Enhanced Transparency Framework	✓	✓
Encouragement of Parties to submit NDCs every five years	✓	✓
Agreement on five-yearly "Global Stock take"	✓	✓
Decision text on 'Gender and Climate Change' was adopted	✓	✓
Glasgow Work Programme on Action for Climate Empowerment (ACE)	✓	✓
Recognition of the oceans under the Glasgow Climate Pact	✓	✓
Side-line negotiations and decisions		
Fossil fuels		
Global Coal to Clean Power Transition Statement	✓	
28 new members joined the Powering Past Coal Alliance (PPCA)	✓	
Global Methane Pledge	✓	
Beyond Oil & Gas Alliance	✓	
COP26 declaration on accelerating the transition to 100 per cent zero emission cars and vans	✓	
Clydebank Declaration for Green Shipping Corridors	✓	
Statement on International Public Support for the Clean Energy Transition	✓	
Just Energy Transition Partnership (JETP) with South Africa	✓	
Forestry and other land use		
Declaration on Forest and Land Use	✓	
Congo Basin Pledge ($1.5 billion)	✓	
Global Action Agenda on Innovation in Agriculture		✓
Forests Agriculture & Commodity Trade (FACT) Dialogue	✓	✓
Finance		
Glasgow Financial Alliance for Net Zero committed $130 trillion towards the net-zero transition	✓	
International Development Finance Club mobilization of up to $1.3 trillion by 2025	✓	✓
The International Financial Reporting Standards (IFRS) created the International Sustainability Standards Board (ISSB)	✓	✓
Bilateral cooperation		
US-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s	✓	✓
Energy transition and research		
The Breakthrough Agenda (Deployment of clean technologies and sustainable solutions)	✓	✓
Global Energy Alliance for People and the Planet (GEAPP)	✓	
Adaptation Research Alliance (ARA)		✓
Indigenous communities		
Pledge to support Indigenous Peoples and Local Communities (IPLCs) 2021-2025 ($1.7 billion pledge) 2021-2025	✓	✓

Annex IV: Key COP26 adaptation and climate finance initiatives

Adaptation and climate finance initiatives	Involvement of Asia and the Pacific in outcomes
Adaptation Research Alliance (The ARA includes over 60 organizations worldwide)	Asia-Pacific organizations include: • Asian Development Bank (ADB) • All India Disaster Mitigation Institute (ARIN) • Australian Centre for International Agricultural Research • Climate Action Network South Asia (CANSA) • Indian Institute for Human Settlements (IIHS) • Indian School of Business (ISB) • Kota Kita • Royal University of Bhutan • Regional Resource Centre for Asia and the Pacific (RRC.AP) • RV University
International Development Finance Club (The IDFC includes 27 bilateral and regional development finance institutions)	Asia-Pacific members include: • China Development Bank (CDB) • Small Industries Development Bank of India (SIDBI) • Japan International Cooperation Agency (JICA) • The Korea Development Bank (KDB) • PT Sarana Multi Infrastructure (PT SMI)

Annex V: NbS-related coverage in NDCs of countries in the Asia-Pacific region, with a focus on mitigation

#	Country	NbS-related mitigation	Quantified NbS-related baseline(s)	Reduction targets quantified	NbS mitigation beyond AFOLU/ LULUCF/ Forests	Safeguards & inclusion – NDC planning and/or implementation	Score – NbS-related commitments in mitigation
1	Afghanistan	Yes	Yes	Yes	No	Yes	0.8
2	Armenia	Yes	Yes	No	Yes	Yes	0.8
5	Bangladesh	Yes	Yes	Yes	Yes	Yes	1
6	Bhutan	Yes	Yes	Yes	Yes	Yes	1
7	Brunei Darussalam	Yes	No	Yes	No	Yes	0.6
8	Cambodia	Yes	Yes	No	Yes	Yes	0.8
9	China	Yes	No	No	Yes	Yes	0.6
11	Fiji	Yes	No	No	Yes	Yes	0.6
12	Georgia	Yes	Yes	Yes	No	Yes	0.8
13	India	Yes	No	Yes	No	Yes	0.6
14	Indonesia	Yes	Yes	Yes	Yes	Yes	1
16	Japan	Yes	Yes	Yes	No	Yes	0.8
18	Kiribati	Yes	No	No	Yes	Yes	0.6
20	Lao People's Democratic Republic (the)	Yes	Yes	Yes	No	Yes	0.8
26	Myanmar	Yes	Yes	Yes	No	Yes	0.8
27	Nauru	Yes	No	No	Yes	Yes	0.6
28	Nepal	Yes	No	No	Yes	Yes	0.6
29	New Zealand	Yes	No	No	No	Yes	0.4
30	Pakistan	Yes	No	Yes	Yes	Yes	0.8
32	Papua New Guinea	Yes	Yes	Yes	No	Yes	0.8
33	Philippines	Yes	No	No	No	Yes	0.4
34	Republic of Korea (the)	Yes	No	No	Yes	Yes	0.6
36	Samoa	Yes	Yes	Yes	No	Yes	0.8
37	Singapore	Yes	No	No	Yes	Yes	0.6
38	Solomon Islands	Yes	Yes	Yes	Yes	Yes	1
39	Sri Lanka	Yes	Yes	Yes	No	Yes	0.8
40	Tajikistan	Yes	Yes	No	Yes	Yes	0.8
41	Thailand	Yes	No	No	No	Yes	0.4
43	Tonga	Yes	No	No	No	Yes	0.4
48	Vanuatu	Yes	No	No	No	Yes	0.4
49	Viet Nam	Yes	Yes	Yes	Yes	Yes	1

Annex VI: Glasgow Work Programme on ACE recommendations for youth engagement

ACE ELEMENT	RECOMMENDATIONS FOR YOUTH ENGAGEMENT[1, 2]
CLIMATE EDUCATION	• Integrate climate change learning into the curricula of schools and other institutions that provide formal education, and support non-formal & informal education on climate change; • Strengthen education, training and skills development in institutions to deliver action on climate change learning; • Strengthen children's and young people's knowledge, advocacy and innovation on both adaptation and mitigation to improve climate resilience, including for children and young people of different ages, genders, ethnicities and socioeconomic status, those with disabilities, or are on the move and/or experiencing marginalization; • Offer climate change peer education, experiential learning, risk and resource mapping, participatory research and mentorship opportunities towards a low-carbon future for children and young people so they come up with innovative ideas and solutions to address the climate crisis; • Strengthen education partnerships to integrate child-sensitive climate action, including on reducing disaster risk, into policies at schools and learning centres for out-of-school children and young people. • Support implementation of child-sensitive climate actions by building knowledge on the linkages between climate policy and child rights, child sensitivity and the value of including children and young people of differing ages, genders, disabilities, ethnicities and migration and socioeconomic status for more effective climate policies.
TRAINING	• Develop tools and methodologies for supporting climate change training and skills development through collaboration and provide training programmes for groups with key role in climate communication and education for youth and children; • Enhance capacities of teachers and academia to integrate climate into education curricula; • Strengthen social sectors institutional capacities in climate action and cross-sectoral coordination through capacity-building, technology transfer to ensure effective implementation of climate actions for well-being of children and young people.
PUBLIC AWARENESS	• Inform youth on the causes of climate change and sources of GHGs and the actions that can be taken at their levels to address climate change; • Promote positive social norms and attitudes that value the uniqueness and diversity of children's and young people's contributions, priorities and perspectives, as their views are not homogeneous (i.e., through intergenerational dialogues to increase mutual understanding; providing resources for including policy-shaping processes); • Create communities of practice, knowledge and learning that are available and accessible for children and youth.
PUBLIC ACCESS TO INFORMATION	• Increase availability of copy-right free and translated materials on climate change in accordance with laws and standards; • Seek opportunities to widely disseminate information on climate change in all languages; • Include accurate information on climate science on relevant websites and platforms; • Improve public access to information on climate change at the national and local levels using range of methods and tools and tailor the language to suit the needs of vulnerable population like youth and children; • Guarantee public, transparent access to information on the processes and results of government climate action for children and young people, including in age-appropriate language and as an accountability and empowerment mechanism; • Support age-disaggregated, gender-disaggregated and localized data on both exposure and vulnerability of poorest and climate-risk prone population, as well as, data on actions to reduce emissions through energy efficiency, clean energy and social protection and ensure that such data is accessible and relevant for stakeholders to inform and shape climate actions and policies for children and young people.
PUBLIC PARTICIPATION	• Seek public participation and input, including from youth and children in formulating and implementing efforts to address climate change in relation to preparing national communications and encourage involvement and participation of youth and children in climate negotiation processes; • Hold frequent dialogues and consultations with youth and children with specific outcomes such as feedback surveys to enable youth and children to express how they feel; • Support platforms for participation, network-building, and civic engagement that raise children's and young people's awareness, foster relationships and secure their right to participate in decisions that affect them, as appropriate for their age, culture and context. For example, ensure that they are engaged in shaping the key goals and targets relating to global mitigation and adaptation goals through considering their inputs in the review of such goals and targets ; • Engage and encourage youth to provide ideas on ways through which the non-state actors can meaningfully contribute to the Global Stocktake in implementing the Paris Agreement, scaling up actions to address loss and damages with actors like the High-level Climate Champions; • Promote institutionalized participation mechanisms that guarantee a safe space for children and young people in global climate negotiations and in showcasing youth-led climate-resilient solutions; • Take a whole-of-society approach in supporting civil society, children, young people and the private sector to provide constructive input to climate policy processes by facilitating and ensuring adequate enabling environment; • Convene child, young people, community and stakeholder policy reviews with a child-sensitivity lens; • Develop guidelines for enhancing public participation in climate decision-making and inclusion of children and youth.

ACE ELEMENT	RECOMMENDATIONS FOR YOUTH ENGAGEMENT[1, 2]
INTERNATIONAL COOPERATION	• Formulate a high-level ACE coordination platform and mechanism with ACE Expert Group and/or ACE Action Plan to provide a pathway for implementing ACE and building capacity for regional cooperation; • Nominate and appoint national ACE focal points and ensure that one of the focal point represents and includes children and youth; • Provide support, including technical and financial resources and/or strengthening the existing skills and capacities of the ACE focal points; • Promote cross-country and cross-stakeholder collaborations to implement ACE; • Seek to enhance cooperation and coordination in developing and implementing ACE activities at international and regional level through identifying partners and facilitating exchange of information materials; • Promote and encourage regional youth programmes and projects to support the implementation of ACE and promote the sharing of experiences through dissemination of best practices and lessons learned.

[1] See “Glasgow Work Programme on Action for Climate Empowerment”, Decision -/CP.26.
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[2] UNICEF, “Making Climate and Environment Policies for and with Children and Young People”, Climate and Environment Discussion Paper, November 2021b.
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