Needs-based Climate Finance Project

TECHNICAL ASSESSMENT OF CLIMATE FINANCE IN SOUTH-EAST ASIA

United Nations
Climate Change

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Abbreviations and acronyms

ACMF	ASEAN Capital Markets Forum
ADB	Asian Development Bank
AF	Adaptation Fund
AFD	French Development Agency (Agence Française de Développement)
AMS	ASEAN member State(s)
ASEAN	Association of Southeast Asian Nations
AWGCC	ASEAN Working Group on Climate Change
BEIS	Department for Business, Energy and Industrial Strategy of the United Kingdom of Great Britain and Northern Ireland
BMU	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of Germany
BUR	biennial update report
CBIT	Capacity-building Initiative for Transparency
CI-ACA	Collaborative Instruments for Ambitious Climate Action
CIF	Climate Investment Funds
CO2 eq	carbon dioxide equivalent
COP	Conference of the Parties
DAC	Development Assistance Committee of the Organisation for Economic Co-operation and Development
EbA	ecosystem-based adaptation
FAO	Food and Agriculture Organization of the United Nations
GCF	Green Climate Fund
GDP	gross domestic product
GEF	Global Environment Facility
GHG	greenhouse gas
GIZ	German Agency for International Cooperation
IE	included elsewhere
IMF	International Monetary Fund
KT	kiloton
LDC	least developed country
LDCF	Least Developed Countries Fund
LUCF	land-use change and forestry
LULUCF	land use, land-use change and forestry
MDB	multilateral development bank
NAMA	nationally appropriate mitigation action
NAP	national adaptation plan
NAPA	national adaptation programme of action
NBF	Needs-based Climate Finance
NC	national communication
NDAs	national designated authorities
NDC	nationally determined contributions
NE	not estimated
NGFS	Network of Central Banks and Supervisors for Greening the Financial System
NO	not occurring
OECD	Organisation for Economic Co-operation and Development
PHP	Philippine peso
RCC	regional collaboration center
REDD+	reducing emissions from deforestation; reducing emissions from forest degradation; conservation of forest carbon stocks; sustainable management of forests; and enhancement of forest carbon stocks (decision 1/CP.16, para. 70)
SCCF	Special Climate Change Fund
SDG	Sustainable Development Goal
SEADRIF	Southeast Asia Disaster Risk Insurance Facility

SGD	Singapore dollar
SMEs	small and medium-sized enterprises
TAP	technology action plan
THB	Thailand baht
TNA	technology needs assessment
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UN-Habitat	United Nations Human Settlements Programme
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development

Executive summary

The Needs-based Climate Finance project is in response to a request of the COP at its twenty-third session that the secretariat "assist developing country Parties in assessing their needs and priorities in a country-driven manner, including technological and capacity-building needs, and in translating the climate finance needs into action."[1]

The operating entities have approved USD 222 million in commitments to projects in the ASEAN region since 2010.

Through this project, the secretariat, in collaboration with the secretariat of the ASEAN, supports the implementation of the AWGCC Action Plan under the programme area 4 (Climate Finance) and fulfils the mandate of the 10th meeting of the AWGCC. The Working Group has appointed Brunei Darussalam and the Philippines to co-lead the project.

The AMS are already facing adverse effects of climate change (floods, prolonged droughts, strong winds, coastal erosion, etc.) hence they have made strong commitments to adaptation in the following priority sectors: water supply and sanitation; public health; biodiversity, forestry and watershed management; food security (agriculture, livestock and fisheries); and coastal zone protection and marine resources.

South-east Asia is one of the world's most at risk regions with respect to the impacts of climate change, and has seen sea level rise, increasing frequency of heatwaves and heavy precipitation, and increasing intensity of floods, tropical cyclones and droughts. All AMS have put in place policies and directives related to climate change and in some cases to climate finance, and have established institutions, working groups or other entities to coordinate climate change action. Despite domestic resources, the region is dependent on international finance and support for sustainable economic development.

The key climate funds are the operating entities of the Financial Mechanism under the Convention, namely, the GCF and the GEF, as well as the AF. The operating entities have approved USD 222 million in commitments to projects in the ASEAN region since 2010. Other climate funds include the CIF. Approximately USD 3.2 billion a year between 2013 and 2017 of climate-related development finance also flows from bilateral aid agencies, development finance institutions and multilateral development banks.

More than half of the region's climate finance was directed to climate change mitigation via concessional debt, with more grants allocated to adaptation projects. In terms of sector distribution, energy and transport projects capture the most flows in climate change mitigation, while disaster risk reduction and water and sanitation are the most significant adaptation sectors. The agriculture, forestry and land-use sectors have a balance of mitigation and adaptation projects.

Most private climate investments are co-financed with public (domestic or international) finance. Data are limited to renewable energy project finance, which averages USD 5 billion a year in the region, with a significant increase (78%) to USD 7.6 billion seen in 2018 owing to solar photovoltaic investments in Viet Nam.

Nearly all AMS identified climate finance needs to support their national priorities for climate change and highlighted the need for targeted and systematic support to (1) cope with climate change risks, (2) establish climate-resilient development schemes, (3) implement climate action plans that are responsive to particular needs and priorities and (4) catalyze and achieve mitigation and NDC targets.

Approximately USD 3.2 billion a year between 2013 and 2017 of climate-related development finance also flows from bilateral aid agencies, development finance institutions and multilateral development banks.

[1] Decision 6/CP.23, para, 10.

The volume of climate finance needed for the region, as determined from NDCs, is USD 422.16 billion up to 2030, mostly for mitigation (USD 293.01 billion) and the balance for adaptation (USD 129.15 billion).

Most AMS have indicated that improving ways to access finance, especially through capacity-building, institutional arrangements and technical assistance such as project preparation, technology transfer, research- and knowledge-sharing, and enhancing institutional capacity, governance and coordination.

Many financial and monetary instruments are available and in use for sourcing and delivering climate finance, but because of the dominance of bank financing in the region, their wide use is limited. Instruments can be broadly subdivided into climate risk-focused tools and climate finance promoting policies. Examples of financial and monetary instruments in the region are foremost loans and grants, followed by blended and sustainable finance, and green and climate bonds.

Given the importance of sustainably managed land in the ASEAN region, nearly all countries have embarked on REDD+ policy design and implementation. Several other initiatives of relevance have emerged, including the Climate and Land Use Alliance.

Most SMEs face poor access to finance in the region`s bank-dominant system. This implies that further policy support for bank loans for financing SMEs is needed, especially to promote market literacy for SMEs and investors

Standards, soft policies and taxes are all potential short-term domestic revenue sources as well as policy tools for shifting markets towards higher climate ambition. The UNESCAP recommends a differentiated, pragmatic and prudent approach for progressive tax reforms in the Asia-Pacific region.

Carbon markets put a price on greenhouse gas emissions and are typically defined as credits for emission reductions that can be sold for cash, cancelled or traded within a region. They include international cap-and-trade systems and compliance programmes. Almost all AMS are already engaged in setting up carbon markets and carbon pricing. Results-based finance is a viable option for deriving new and additional sources of climate finance.

The volume of climate finance needed for the region, as determined from NDCs, is USD 422.16 billion up to 2030.

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I. Introduction

A. Framing of the mandate

1. The NBF project was launched in response to a request of the COP at its twenty-third session that the secretariat "assist developing country Parties in assessing their needs and priorities in a country-driven manner, including technological and capacity-building needs, and in translating the climate finance needs into action".[1] In addition, the Conference of Parties serving as the meeting of the Parties to the Kyoto Protocol requested the secretariat to support the financing of climate projects.[2]

Collectively, these mandates form a secretariat-wide initiative to facilitate strategies that catalyze climate finance and investment in response to the needs identified by developing countries for implementing priority projects and programmes. These actions are to be undertaken in accordance with the goals outlined in countries' NDCs, NAPs, and other relevant national policies and strategies. Regional entities, including the ASEAN, play a crucial role in enhancing cooperation in relation to averting, minimizing and addressing displacement related to the adverse impacts of climate change, including supporting risk and vulnerability assessments, disaster preparedness and early warning systems, and channelling support for global partnerships in finance, technology and capacity-building.

2. Through the NBF project, the secretariat, in collaboration with the ASEAN secretariat, supports the implementation of the AWGCC Action Plan under its programme area 4 (Climate Finance) and fulfils the mandate of the 10th meeting of the AWGCC. The project was officially endorsed by the AWGCC on 28 August 2019 and the ASEAN Senior Officials on the Environment on 9 September 2019, and Brunei Darussalam and the Philippines were appointed as its co leads.

B. Aim and purpose

3. The aim of the NBF project is to provide an evidence-based framework for enabling AMS to mobilize climate finance at scale and in a country-driven manner. As such, the outputs will be a comprehensive technical assessment of climate finance in South-east Asia, as provided in this document, and the ASEAN Climate Finance Mobilization and Access Strategy, which will be concise and actionable, and agreed upon by the AMS. The strategy is to be implemented through a pipeline of projects prioritized to meet the needs of AMS.

4. The objective of this technical assessment of climate finance in South-east Asia is to facilitate the development of an ASEAN Climate Finance Mobilization and Access Strategy in order to enhance access and mobilization of climate finance and to catalyze climate finance and investment for implementing priority mitigation and adaptation actions. The strategy will be based on the climate finance needs identified by AMS, in accordance with the goals outlined in their NDCs, NAPs, road maps for implementing the 2030 Agenda for Sustainable Development, and other relevant policies and strategies, or equivalent national plans and climate change frameworks, and will be in line with the principles of common but differentiated responsibilities and respective capabilities under the Convention and the Paris Agreement. The strategy and its guidelines for implementation, to be endorsed by the ASEAN Senior Officials on the Environment, shall focus on delivering the climate finance needs of the 10 AMS (Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia,

[1] Decision 6/CP.23, para. 10.

[2] Decisions 3/CMP.1, annex, para. 4(d); 3/CMP.1, annex, para. 5(i); 6/CMP.11, para. 8; 3/CMP.12, para 4 and 3/CMP.13, para 2.

Myanmar, Philippines, Singapore, Thailand and Viet Nam) in their pursuit of sustainable development in accordance with the goals outlined in their policies and plans, thereby providing clarity to providers of climate finance.

C. Rationale

5. It is envisaged that the ASEAN Climate Finance Mobilization and Access Strategy will bring cohesiveness to the mobilization and accessing of scaled-up and predictable climate finance across government ministries, central banks, financial players and regulators, and elevate climate change into macroeconomic policy, fiscal planning and budgeting, public investment management, and procurement. As such, the strategy can:

(a) Provide guidance on the mobilization of climate finance, and serve as a tool for enabling closer collaboration among AMS;

(b) Provide comprehensive information on climate finance instruments available for the ASEAN region through assessment of the supply side of sustainable climate finance in the market and exploration of best practices regarding the match between a country's needs and available climate finance instruments;

(c) Mobilize private sources of climate finance, and ensure that adaptation and mitigation impacts are measured and reported and that environmental, social and governance standards are part of financial risk assessments and disclosure;

(d) Provide clarity on climate finance needs for contributors and financiers, help align policies and practices with the Paris Agreement,

(e) Enable the sharing of experience and expertise on policies and best practices among countries to promote mutual encouragement and collective understanding;

(f) Strengthen country- and region-specific methods and approaches for articulating climate finance needs, and establish a series of actions to be undertaken in addressing country-specific gaps in accessing and mobilizing financial support, including support for the development of sub regional climate finance strategies in South-east Asia;

(g) Strengthen the development and integration of relevant national climate change strategies and policy frameworks such as NAMAs, NAPs, NAPAs, NDCs, low-emission development strategies and integrated finance frameworks.

D. Methodology

6. The NBF project approach focuses on delivering on the climate finance needs and priorities of AMS in their pursuit of sustainable development in accordance with the goals outlined in their NAPs, NDCs and other relevant policies and strategies by:

(a) Assessing the country and sub regional climate finance flows and analysing the priority climate finance and investment needs of South-east Asia, considering structural differences and opportunities;

(b) Developing, the ASEAN Climate Finance Mobilization and Access Strategy, which includes a project pipeline, a finance road map, an investment plan and capital-raising plans;

(c) Ensuring ownership by countries, with the support of appropriate regional intergovernmental organizations;

(d) Obtaining endorsement of the ASEAN Climate Finance Mobilization and Access Strategy by the ASEAN experts;

(e) Facilitating the identification of climate finance instruments and bankable project pipelines for implementation, financial closure and delivery at the national and subregional level;

(f) Catalyzing access to climate finance via both the public and the private sector portfolios, with a focus on international and domestic resource mobilization.

7. The methodology of this technical assessment rests predominantly on the analysis of aggregated quantitative and qualitative data derived from the AMS' own assessments of needs and priorities. As such, it is primarily a desk-based assessment complemented by engagement with relevant stakeholders from the region, including national, regional and international experts. Stakeholder engagement takes the form of workshops and regular communications. The process is guided by the secretariat.

8. Sources of data and information are (1) reports submitted under the UNFCCC, including BURs, NAPs, NAPAs, NCs, NDCs and TNAs, (2) MDB country strategies and programmes and (3) regional, sub regional and national strategies by theme and/or by sector.

E. Structure of the document

9. Following this introduction (section I), the document is structured as follows:

(a) Section II contains regional context, including socioeconomic context, and information on regional climate and environment, emission profiles, financial, policy and institutional landscapes;

(b) Section III presents an overview of international, domestic and private finance flows;

(c) Section IV discusses climate finance needs and priorities in mitigation and adaptation, including methodological approaches and enabling environments;

(d) Section V presents climate finance sources, including specialized funds and multilateral and bilateral sources;

(e) Section VI explores financial and monetary instruments and mechanisms.

II. Regional context

A. Socioeconomic context

10. ASEAN was established on 8 August 1967 in Bangkok with the signing of the ASEAN Declaration (Bangkok Declaration). The AMS are Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam. The combined GDP of the AMS is about USD 2.6 trillion, making them, collectively, the third largest economy in Asia and the seventh largest in the world. The AMS' real GDP growth is 5.3% year-on-year. Total merchandise trade stood at USD 2.57 trillion in 2017, an increase of 15.0% year-on-year, while foreign direct investment inflows to AMS reached USD 135.6 billion in 2017, an increase of 10.7% year-on-year.[3]

The combined GDP of the AMS is about USD 2.6 trillion, making them, collectively, the third largest economy in Asia and the seventh largest in the world.

11. After China and India, South-east Asia has the world's third largest labour force, and with over 600 million people, its potential market is larger than the European Union or North America.

12. By opening sectors to competition and breaking down trade barriers, the new economic community potentially could increase ASEAN's economic output by 7% by 2025 and generate around 14 million new jobs. Already 98.6% of intra-AMS tariffs have been lifted, and AMS continues to work towards the enhancement of trade facilitation to support integration.

13. On energy cooperation, the first multilateral electricity trade agreement in the region was established place in 2017 among the Lao People's Democratic Republic, Malaysia and Thailand. ASEAN is currently working towards reducing energy intensity across AMS by 20% in 2020 and 30% by 2025 and increasing the share of renewable energy – the target is 23% increase above 2005 levels of renewables in the ASEAN energy mix by 2025.

14. The ASEAN economic ministers endorsed the ASEAN SME Policy Index 2018 in August 2018. This index is a reference tool for helping monitor and evaluate ASEAN's efforts in advancing micro, small and medium-sized enterprise development policies in the region.

15. It is crucial to acknowledge the impacts of coronavirus disease 2019 on both the operationalization of the ASEAN Climate Finance Mobilization and Access Strategy and the access and mobilization of climate finance – globally and in the South-east Asian region more specifically. According to the World Economic Outlook published in October 2020,[4] the global economy is slowly, but uncertainly, recovering from the impacts of the pandemic of the first half of 2020. It is expected that this health crisis will worsen living standards compared with pre-crisis projections. This impact will of course be felt differently by different countries, but the adverse effects are expected to be particularly acute for people with low incomes.

[3] Available at https://asean.org/storage/2019/01/33.-November-2018-Fact-Sheet-on-AEC.pdf and https://www.adb.org/features/asean-12-things-know.

[4] Available at https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020.

16. The Global Financial Stability Report published in October 2020[5] shows that the financial system has been impacted dramatically and may be impacted even more with an intensification of the crisis. Corporate debt and defaults have risen as a result of market disconnect and increasing insolvencies, in turn affecting global financial stability. Nonetheless, it appears that, for now, banks are still well capitalized. The fiscal actions that countries have taken to save lives and the economy have amounted to over USD 11.7 trillion, and those of the central banks have amounted to over USD 7.5 trillion.

17. The ASEAN secretariat has been responding promptly to the spread of the pandemic. It has established an information centre (accessible online) to update the public on efforts in virus prevention, detection and response[6] in collaboration with the World Health Organization as well as with the assistance of non-health sectors.

18. Many institutions have put in place measures to mitigate the effects of the virus such as efforts of the IMF, considers that supporting emerging markets and developing countries is a priority given that they are already more vulnerable than advanced countries and are therefore more adversely affected by the pandemic.[7] Accordingly, the IMF has supported countries (e.g. Myanmar has so far received financial assistance from the IMF of USD 356.5 million.[8]) including – in addition to policy advice and capacity development – emergency funding, grants for debt relief, short-term liquidity lines and adjustment in lending arrangements.

B. Climate and disaster risk

19. South-east Asia is one of the world's most at risk regions with respect to the impacts of climate change. Forecasted rankings show 6 of the 20 countries most vulnerable to climate change worldwide are AMS; namely, Indonesia, Malaysia, Myanmar, the Philippines Thailand and Viet Nam.[9] Specific multi-hazard hotspots (particularly hydro-meteorological hazards) include many of the populated Indonesian islands; the Chao Phraya Delta in Thailand; the Ayeyarwady (Irrawaddy) Delta in Myanmar; the Mekong Delta in Cambodia and Viet Nam; the eastern coastline of Viet Nam up to the Red River Delta; and Manila and other areas in the Philippines. The Global Climate Risk Index 2020 analyses warns us that countries and territories affected most in 2018 were Japan, the Philippines as well as Germany while Puerto Rico, Myanmar and Haiti were ranked as the highest index due to impacts of weather-related loss events (storms, floods, heat waves etc.) for the period from 1999 to 2018[10] (see figure 1).

20. Climate change is also impacting the frequency, intensity, timing and spatial coverage of climatological and hydro-meteorological hazard-based disasters. Climate change is resulting in sea level rise, increasing frequency of heatwaves and heavy precipitation, and increasing intensity of floods, tropical cyclones and droughts.

21. Figure 2 depicts the breakdown of disasters in AMS (July 2012 to January 2019).[11] Indonesia is most at risk to all types of disasters, except storms, to which to the Philippines is the most at-risk country.

5 Available at https://www.imf.org/en/Publications/GFSR/Issues/2020/10/13/global-financial-stability-report-october-2020.
6 Available at https://asean.org/?static_post=updates-asean-health-sector-efforts-combat-novel-coronavirus-covid-19.
7 Available at https://www.imf.org/en/About/FAQ/imf-response-to-covid-19#Q1.
8 Available at https://www.imf.org/en/Topics/imf-and-covid19/COVID-Lending-Tracker#APD.
9 Available at https://environment.asean.org/awgcc/.
10 Available at Global Climate Risk Index 2020 | Germanwatch e.V.
11 Available at https://ahacentre.org/wp-content/uploads/2019/05/FINAL-ARMOR-2019-AHA-CENTRE.pdf.

Figure 1
Climate Risk Index 2020, world map 1999–2018

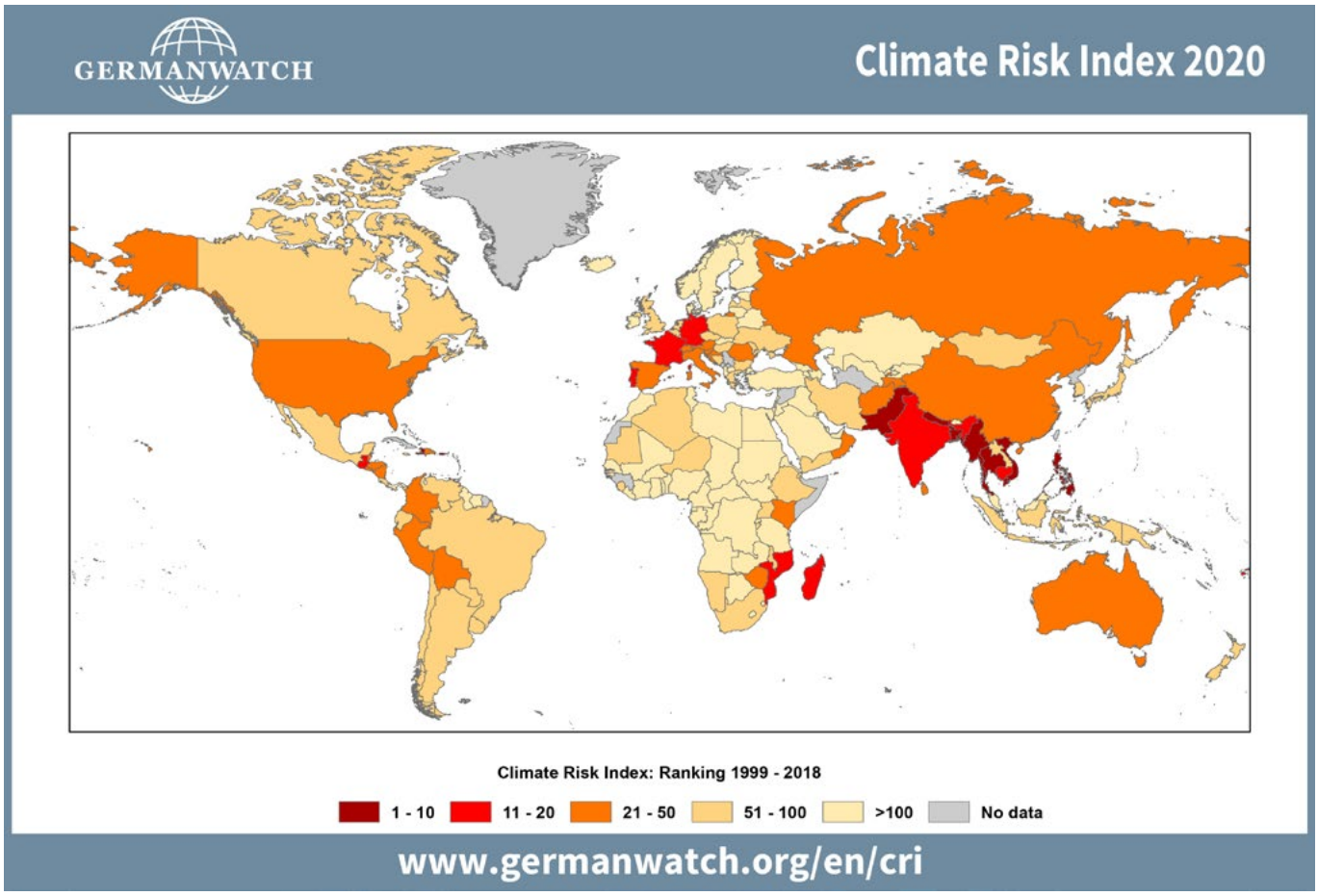
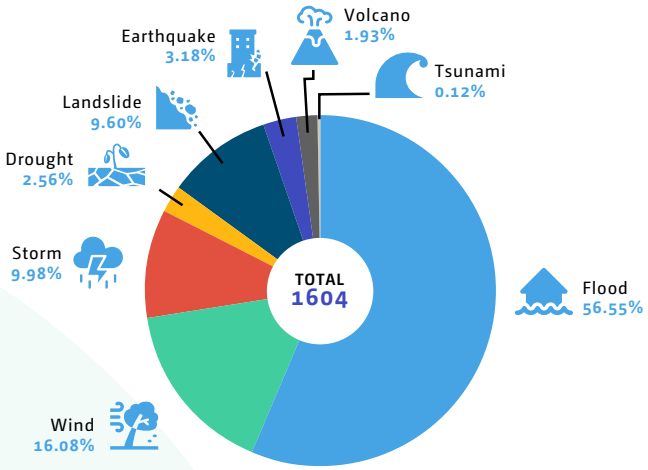


Figure 2
Disasters in South-east Asia, 2012–2019



Source: ARMOR. 2019.

22. The increasing global temperature combined with increasing food demand poses a great risk to food security globally. Projections are that in the mid twenty-first century and beyond, global marine species redistribution and marine biodiversity reduction in sensitive regions will challenge the sustained productivity of fisheries and other ecosystem services. In tropical and temperate regions, climate change is projected to negatively impact wheat, rice and maize production for local consumption. Climate change also intensifies the competition for water due to the reduction of renewable surface water and groundwater resources in most dry subtropical regions.

23. In urban areas, climate change is projected to increase risks for people, assets, economies and ecosystems, including risks from heat stress, storms and extreme precipitation, inland and coastal flooding, landslides, air pollution, drought, water scarcity, sea level rise and storm surges. The findings of Singapore's Second National Climate Change Study project sea level rise, higher temperatures and more extreme rainfall for Singapore and the surrounding region.[12]

[12] Available at http://ccrs.weather.gov.sg/wp-content/uploads/2015/04/Publications-Second-National-Climate-Change-Study-Report-for-Stakeholders.pdf.

Climate change may also increase displacement. Populations that lack the resources for planned migration, particularly those in developing countries with low incomes, are more highly exposed to extreme weather events.

24. Climate change impacts are projected to slow down economic growth, make poverty reduction more difficult, and prolong existing and create new poverty traps. South-east Asia is highly vulnerable to climate change because a large proportion of the population and of economic activity is concentrated along coastlines; the region is heavily reliant on agriculture for livelihoods; there is a high dependence on natural resources and forestry; and the level of extreme poverty remains high.

25. A study carried out by the ADB revealed that South-east Asia is one of the regions that are projected to experience the strongest increase in normalized temperature.[13] Further, South-east Asia is projected to be the region most affected by heat extremes. Unprecedented high summer temperatures are expected to return every year if warming continues to rise. Coastal areas of the Asia-Pacific region are among those most vulnerable to climate change related sea level rise. Flood exposure is apparently increasing in coastal cities owing to growing populations and assets, sea level rise and subsidence.

26. Consequently, the region is expected to experience more economic loss than other parts of the world as a result of climate change, likely reaching 11% of GDP come 2100. Regarding biodiversity, AMS are home to one third of the world's coral reefs, mangroves and seagrass areas and 173,000 kilometres of shoreline. About 645 million people in the region rely on marine resources for food and income. Together, Indonesia, Malaysia and the Philippines own 75% of the world's reef-building corals, of which 88% "are at risk due to destructive fishing practices and coral bleaching".[14]

Climate change impacts are projected to slow down economic growth, make poverty reduction more difficult, and prolong existing and create new poverty traps.

27. The loss of forestry is attributable to, among other reasons, population growth, increasing timber demand, illegal logging, and slash and burn practices. Forest areas in the region have declined from 2.33 million km^2 in 2000 to 2.02 million km^2 in 2015.

Box 1
Climate impacts and vulnerability in the South-east Asian region

- Mean temperature increased by 0.1–0.3 °C per decade between 1951 and 2000
- Sea levels have risen 1–3 mm per year
- The recorded number of tropical cyclones was higher during 1990–2003
- Recorded floods and storms have risen dramatically in number, particularly in the Philippines where they have increased from just under 20 during 1960–1969 to nearly 120 in 2000–2008
- Annual precipitation for the Mekong Basin will increase by 13.5% from the historical average of 1,509 mm to 1,712 mm by 2030
- Annual mean temperature is projected to rise 4.8°C on average by 2100 from 1990
- Mean sea level is projected to rise by 70 cm by 2100 from 1990, following the global trend

Source(s): Available at https://asean.org/storage/2019/01/33.-November-2018-Fact-Sheet-on-AEC.pdf and https://www.adb.org/features/asean-12-things-know.

28. Table 1 depicts the main vulnerabilities of the ASEAN region, as determined from an analysis of each AMS' most relevant communication to the UNFCCC. From the data, it is evident that the most common vulnerabilities are:

(a) Flooding and landslides;

(b) Droughts;

(c) Loss of property;

(d) Food security;

(e) Public health.

[13] Asian Development Bank (2017), A Region at Risk: The Human Dimensions of Climate Change in Asia and the Pacific, 2017.

[14] ASEAN Biodiversity Outlook, 2010.

Table 1
Climate change vulnerabilities of ASEAN member States

	National reports	Flooding and landslides	Droughts	Storms	Saltwater intrusion	Heat stress	Loss of property and biodiversity	Food security	Public health
Brunei Darussalam	NC2, 2017; NDC, 2020	✓				✓	✓	✓	✓
Cambodia	NC2, 2016; NDC, 2020	✓	✓			✓	✓	✓	✓
Indonesia	NDC, 2016	✓	✓				✓		
Lao People's Democratic Republic	NDC, 2015	✓	✓						
Malaysia	NDC, 2016; NC3, 2018	✓	✓				✓	✓	✓
Myanmar	NAPA, 2012; NDC, 2015, NDC update, 2021, TNA, 2020	✓	✓	✓					
Philippines	NDC, 2016	✓		✓		✓		✓	
Singapore	NC3, 2014; NC4, 2018; NDC, 2020; Long-term Low-Emission Development Strategy, 2020	✓	✓					✓	
Thailand	NDC, 2020	✓	✓				✓	✓	✓
Viet Nam	NC3, 2019; NDC, 2020	✓	✓	✓	✓				

C. Emission profile

29. According to the most recent national reports submitted under the UNFCCC, (see table 2), a disaggregation of GHG emissions by AMS, total GHG emissions in the South-east Asia region, including those from LUCF, amounted to 2,256,136.3 Gg CO_2 eq. The largest growth in emissions is from energy-using activities and bunker fuels, which are sectors associated with the region's structural transition away from agriculture.

Table 2
Greenhouse gas emissions of ASEAN member States

	GHG emissions without LULUCF/LUCF (Gg CO_2 eq)	GHG emissions with LULUCF/LUCF (Gg CO_2 eq)	GHG inventory year	Source
Brunei Darussalam	11 192.11	8 352.31.00	2014	NC2, 2017
Cambodia	32 581.11	163 592.35.00	2016	BUR1, 2020
Indonesia	822 326.00	1 457 774.00	2016	BUR2, 2018
Lao People's Democratic Republic	5 306.57	24 099.98	2014	BUR1, 2020
Malaysia	317 626.83	50 479.06	2014	NC3/BUR2, 2018
Myanmar	56 840.07	–67 820.10	2000	NC1, 2012
Philippines	126 878.78	21 767.00	2000	NC2, 2014
Singapore	50 685.59	50 702.71	2016	BUR4, 2020
Thailand	354 357.61	263 223.46	2016	BUR3, 2020
Viet Nam	321 505.71	283 965.53	2014	NC3, 2019

Note: The GHG emission/removal data were generated using the *2006 IPCC Guidelines for National Greenhouse Gas Inventories*.

30. A breakdown of GHG emissions by sector, as a percentage of total national emissions from GHG inventories calculated using the *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*, provides an overview of the major emitting sectors and subsectors in the ASEAN region (see table 3).

Table 3
Greenhouse gas emissions of ASEAN member States, by sector

	Brunei Darussalam 2010	Cambodia 2000	Indonesia 2000	Lao People's Democratic Republic 2000	Malaysia 2011	Myanmar 2005	Philippines 2000	Singapore 2012	Thailand 2013	Viet Nam 2013
1.Energy	8 858.20	2 765.90	280 936.20	1 039.60	218 913.60	8 212.00	69 667.20	47 125.70	236 936.40	147 703.30
1.A.1 Energy industries	4 176.30	384.00	84 249.50	16.60	113 886.00	3 050.20	21 219.50	20 448.60	98 538.90	43 669.90
1.A.2 Manufacturing industries and construction	449.80	318.90	63 528.70	457.70	23 094.80	713.60	9 142.20	18 633.80	46 537.70	40 754.90
1.A.3 Transport	1 171.40	710.20	56 820.80	446.60	44 310.00	2 481.00	25 935.80	7 189.60	61 175.30	29 680.70
1.A.4 Other sectors	105.50	1 164.00	38 064.00	117.80	7 791.90	1 355.60	9 839.90	628.10	20 560.60	14 865.70
1.A.5 Other	–	188.80	11 003.50	–	284.40	454.30	–	–	–	775.30
1.B Fugitive emissions from fuels	2 955.20	–	27 269.80	–	29 582.50	157.30	3 529.90	225.50	10 123.90	17 956.80
2. Industrial processes	106.70	–	42 669.00	48.40	18 166.30	506.70	8 609.80	1 058.10	18 976.70	31 767.40
2.A Mineral products	–	–	28 923.80	47.60	13 057.60	–	7 911.70	–	18 591.20	28 780.90
2.B Chemical industry	19.00	–	10 272.60	–	1 557.50	–	59.00	–	367.60	IE, NE, NO
2.C Metal production	–	–	3 145.90	0.80	2 855.70	–	639.00	–	17.90	1 018.90
2.D Other production	–	–	326.70	–	NE	–	–	–	–	–
2.E Production of halocarbons and SF6	–	–	–	–	–	–	–	–	–	NE
2.F Consumption of halocarbons and SF6	87.70	–	–	–	695.60	214.70	–	–	–	1 967.60
2.G Other	–	–	–	–	–, NE	–	–	–	–	NE
3. Solvents	–	–	NE	–	NO	6.30	–	–	–	–
4. Agriculture	27.10	21 113.90	73 400.00	7 675.90	15 775.30	26527.00	37 002.70	–	50 917.50	81,166.00
4.A Enteric fermentation	6.40	3 440.20	12 765.70	2 108.80	985.60	10 903.80	6 604.50	–	6 004.70	8 675.50
4.B Manure management	7.80	813.90	1 832.50	273.00	1 933.50	77.50	4 312.90	–	3 537.40	7 804.70
4.C Rice cultivation	1.60	14 365.10	34 860.60	2 889.60	1 877.40	12 386.00	16 436.90	–	27 862.80	37 583.10
4.D Agricultural soils	11.30	2 362.20	21 377.60	2 393.20	10 943.80	3 158.90	8 931.10	–	11 687.00	25 013.90

Table 3 (continued)
Greenhouse gas emissions of ASEAN member States, by sector

	Brunei Darussalam 2010	Cambodia 2000	Indonesia 2000	Lao People's Democratic Republic 2000	Malaysia 2011	Myanmar 2005	Philippines 2000	Singapore 2012	Thailand 2013	Viet Nam 2013
4.E Prescribed burning of savannahs	–	55.30	1 187.10	10.50	NO	–	18.40	–	NO	0.80
4.F Field burning of agricultural residues	–	64.90	1 376.50	0.80	35.10	0.80	698.80	–	1 825.60	2 088.00
4.G Other	–	12.40	IE, NE, NO	–	–, NE	–	–	–	–	NO
5bis. LUCF	-2 876.10	-24 565.70	821 254.50	41 919.80	-260 456.70	-95 774.70	-105 111.40	-239.20	-86 101.80	-34 256.10
5bis.A Changes in forest and other woody biomass stocks	-3 036.30	-27 208.30	-215 154.50	7 673.80	–	–	-7 526.70	–	-83 385.20	–
5bis.B Forest and grassland conversion	160.20	23 600.20	729 655.20	36 292.70	–	–	-27 584.70	–	13 735.10	–
5bis.C Abandonment of managed lands	–	-20 957.60	-81 639.90	-2 046.70	–	–	–	–	-16 451.7	–
5bis.D CO_2 Emissions and removals from soil	–	–	216 312.50	–	–	–	–	–	NE	–
5bis.E Other	–	–	172 081.10	–	–	–	–	–	–	–
6. Waste	496.90	229.30	157 328.30	134.30	34 885.00	3 122.80	11 599.00	150.20	11 830.40	17 805.10
6.A Solid waste disposal on land	413.90	203.50	18 113.60	23.10	31 127.80	3 093.70	–	–	5 346.00	6 246.00
6.B Wastewater handling	83.00	25.80	2 055.30	111.20	3 757.20	29.10	–	150.20	6 377.10	11 304.10
6.C Waste incineration	–	–	3 418.00	–	–	–	–	–	107.40	254.90
6.D Other	–	–	133 741.40	–	NE	–	–	–	–	NE
7. Other	–	–	–	–	–	–	–	–	–	IE, NE
Subtotal										
CO_2 emissions without LULUCF / LUCF	5 882.60	2 052.60	289 527.20	1 052.20	205 768.00	8 264.60	82 702.80	46 777.40	242 022.60	156 969.30
CO_2 net emissions/ removals by LULUCF / LUCF	-2 876.10	-25 307.10	821 173.40	40 711.80	-260 456.70	-95 774.70	-105 111.40	-239.20	-86 506.70	-34 359.50

Table 3 (continued)
Greenhouse gas emissions of ASEAN member States, by sector

	Brunei Darussalam 2010	Cambodia 2000	Indonesia 2000	Lao People's Democratic Republic 2000	Malaysia 2011	Myanmar 2005	Philippines 2000	Singapore 2012	Thailand 2013	Viet Nam 2013
CO2 net emissions/ removals with LULUCF / LUCF	3 006.50	-23 254.60	1 110 700.50	41 764.00	-54 688.70	-87 510.10	-22 408.50	46 538.20	155 515.90	122 609.80
GHG emissions without LULUCF / LUCF	9 488.80	24 109.10	554 333.50	8 898.20	287 740.30	38 374.90	126 878.70	48 333.90	318 660.90	278 441.90
GHG net emissions/ removals by LULUCF / LUCF	-2 876.10	-24 565.70	821 254.50	41 919.80	-260 456.70	-95 774.70	-105 111.40	-239.20	-86 101.80	–34 256.10
GHG net emissions/ removals with LULUCF / LUCF	6 612.70	-456.60	1 375 587.90	50 818.00	27 238.60	-57 399.80	21 767.30	48 094.70	232 559.10	244 185.80

Source: GHG data interface. Available at https://di.unfccc.int/flex_non_annex1.
Note: GHG inventory data calculated using the *Revised 1996 IPCC Guidelines for Greenhouse Gas Inventories*, and submissions received as at 17 October 2020.

31. South-east Asia has a varied emission profile. Brunei Darussalam, Cambodia, the Lao People's Democratic Republic, Malaysia, Singapore, Thailand and Viet Nam are all net emitters, with all of them having energy as the highest emitting sector and energy industries as the highest emitting subsector. Myanmar is a net carbon sink because of the large contribution of the LULUCF sector to its inventory. The Philippines has a similar profile to Myanmar, but the LULUCF sector is not large enough for the country to be a net sink. Indonesia's profile is characterized by emissions from the LULUCF sector.

32. GHG emissions in the region have been increasing at about 5% per year. In addition, 35% of peatlands that had been transformed to agriculture before 2010 will contribute 51% of projected future peatland CO2 emissions in 2010–2130.[15] Despite that, the AMS have taken actions to address climate change through various environmental, economic and social activities over the years.

GHG emissions in the region have been increasing at about 5% per year.

D. Climate change objectives, policies and strategies

1. Emission reduction pledges

33. All AMS have ratified the Paris Agreement and submitted their first NDC to the secretariat. The targets in those NDCs are presented in table 4.

[15] Technical Workshop on Climate Finance in the Association of Southeast Asian Nations. 2019. Available at https://unfccc.int/sites/default/files/resource/Session%201%20Athena%20Ballesteros.pdf.

Table 4
Nationally determined contribution pledges of ASEAN member States

	Emission reduction (unconditional)	Emission reduction (conditional)	Reference year	Target year
Brunei Darussalam	–	20%	'Business as usual' (2015)	'Business as usual' (2030)
Cambodia	–	41.7%	'Business as usual' (2010-2016)	'Business as usual' (2030)
Indonesia	29%	41%	'Business as usual' (2010)	2030
Lao People's Democratic Republic	Activity-related targets: Energy: increase renewable energy to 30% of energy consumption Forests: increase forest cover to 70% of total land area		2005–2015	2015–2030
Malaysia[a]	35% (per unit of GDP)	45% (per unit of GDP)	2005	2030
Myanmar	244.52 million tCO2e unconditionally, and a total of 414.75 million tCO2e, conditionally by 2030 (2020 – 2030)			
Philippines	-2.71	72.29%	'Business as usual' (2020–)	2030
Singapore	Peak emissions at 65 million t CO2 eq		Around 2030	
Thailand	20%	25%	'Business as usual' (2005–)	2030
Viet Nam	8%	25%	'Business as usual' (2010)	2030

Source: ASEAN Cooperation on the Environment. 2019. Available at https://environment.asean.org/awgcc/.
[a] Malaysia intends to reduce the GHG emission intensity of its GDP by 45% by 2030 relative to the 2005 level. This reduction consists of 35% on an unconditional basis and 10% conditional upon receipt of climate finance, technology transfer and capacity-building support from developed countries.

34. Table 4 shows six countries provided pledges against 'business as usual' approaches. the Lao People's Democratic Republic provided activity-based targets, while Myanmar specified priority sectors for mitigation, without specific emission targets. Malaysia pledged a percentage reduction per unit of GDP while Singapore pledged an absolute emission peaking target. All countries except Singapore and Brunei Darussalam pledged a reduction in emissions conditional on international support. All target years are set as or around 2030.

35. Each AMS has put in place policies and directives related to climate change and in some cases on climate finance. AMS have also submitted official communications under the UNFCCC wherein they elaborate on the current and planned policies to support the implementation of mitigation and adaptation action in their countries. As acknowledged by the Paris Agreement, these communications should be supported by adequate capacity-building, transfer of technology and financial support for developing countries and aligned with national needs and priorities.

36. The ASEAN Economic Community Blueprint 2025, adopted by the ASEAN Leaders at the 27th ASEAN Summit in Kuala Lumpur, held in November 2015, provides broad directions through strategic measures to guide the next phase of ASEAN economic integration from 2016 to 2025. Under the new Blueprint, a stronger ASEAN Economic Community is envisaged by 2025, having the following characteristics:

(a) A highly integrated and cohesive economy;

(b) A competitive, innovative and dynamic ASEAN;

(c) Enhanced connectivity and sectoral cooperation;

(d) A resilient, inclusive and people-oriented, people-centred ASEAN;

(e) A global ASEAN.

37. The ASEAN Economic Community Blueprint 2025 sets out higher ambition through the deepening of existing integration areas, and incorporation of new focus areas such as global value chains, good regulatory practice, sustainable development, global megatrends and emerging trade-related issues.

38. Also, at the 27th ASEAN Summit, the Leaders adopted the ASEAN Socio-Cultural Community Blueprint 2025,[16] which outlines the commitment of ASEAN "to lift the quality of life of its peoples through cooperative activities that are people-oriented, people-centred, environmentally friendly and geared towards the promotion of sustainable development". The following are the strategic measures under the key result area of sustainable climate:

(a) Strengthen human and institutional capacity in implementing climate change adaptation and mitigation, especially for vulnerable and marginalized communities;

(b) Facilitate the development of comprehensive and coherent responses to climate change challenges, such as but not limited to multi-stakeholder and multisectoral approaches;

(c) Leverage the private sector and the community to gain access to new and innovative financing mechanisms to address climate change;

(d) Strengthen the capacity of sectoral institutions and local governments in conducting GHG inventories, vulnerability assessments and assessments of adaptation needs;

(e) Strengthen the efforts of governments, the private sector and the community in reducing GHG emissions from main activities of development;

(f) Mainstream climate change risk management and GHG emission reduction in sectoral planning;

(g) Strengthen global partnerships and support the implementation of relevant international agreements and frameworks (e.g. the UNFCCC).

39. The Paris Agreement pledges put forward by the AMS are aligned with, and are a means of contributing to, the SDGs for the region. It is clear that climate change mitigation and adaptation actions, while being the focus of SDG 13 on climate action, affect and are affected by most of the other SDGs. Progress on the major SDGs is presented in table 5.

40. In addition, it has been reported that even with a doubling of efforts on the current pathway, it will be impossible to meet the GHG emission reductions set out as part of the Paris Agreement,[17] hence there has been a call for even greater concerted efforts.

Table 5
Progress made by and needs of ASEAN member States in priority areas of the Sustainable Development Goals

Category	Status
Poverty eradication	Focused efforts on reducing undernourishment and ensuring a sustainable future for all people in the South-east Asian region
Infrastructure and connectivity	Major improvements are needed over the coming decades – the current trend points in the right direction, but even doubling efforts could leave a gap
Sustainable management of natural resources	Reduced natural resource use waste and emissions, supporting industrialization and urbanization, rising incomes and a growing material standard of living
Sustainable production and consumption	Finding opportunities for making resources productive and decoupling economic activity from causing environmental pressures is an overall policy objective
Resilience	Reduced gaps in the four key capacities (adaptive, anticipatory, absorptive and transformative) to improve the resilience of national economies and societies

Source: Technical workshop on climate finance in the ASEAN. 2019. Available at https://unfccc.int/sites/default/files/resource/Session%202%20Stefanos%20Fotiou.pdf.

41. Figure 3 illustrates the synergies between the ASEAN Vision 2025 and the 2030 Agenda. There has been progress in many areas, but a worrying regress in the interaction of climate action with infrastructure and connectivity, the sustainable management of natural resources, sustainable production and consumption, and resilience. This regression will make it increasingly challenging to achieve the purpose and goals of the Paris Agreement, the 2030 Agenda and the ASEAN Vision 2025.

[16] Available at https://asean.org/storage/2016/01/ASCC-Blueprint-2025.pdf.
[17] Technical workshop on climate finance in the ASEAN. 2019.

Figure 3
Synergies between the ASEAN Vision 2025 and the 2030 Agenda for Sustainable Development

Source: United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP). 2017. *Complementarities between the ASEAN Community Vision 2025 and the United Nations 2030 Agenda for Sustainable Development: A Framework for Action.* Thailand: United Nations. Available at https://www.unescap.org/publications/complementarities-between-asean-vision-2025-and-2030-agenda.

E. Climate change coordination and governance

42. Every ASEAN country has established institutions, working groups or other means of coordinating climate change action. Most such entities are juridical and cut across ministries and agencies, at times including non-government stakeholders. The relevant institution of each ASEAN country is listed in table 6.

43. ASEAN established the AWGCC to:[18]

(a) Enhance regional cooperation and action in addressing the adverse impacts of climate change on socioeconomic development in AMS, including through cooperation and information-sharing with other stakeholders such as the private sector, local communities, and regional and international partners;

(b) Formulate the region's interests, concerns and priorities in an ASEAN Joint Statement on Climate Change, to be communicated at the annual sessions of the COP;

Table 6
Institutions coordinating climate change action in ASEAN member States

	Institutions
Brunei Darussalam	National Council on Climate Change
Cambodia	National Council for Sustainable Development
Indonesia	Ministry of Environment and Forestry
Lao People's Democratic Republic	Water Resource and Environment Administration
Malaysia	National Steering Committee on Climate Change
Myanmar	National Environmental Conservation and Climate Change Central Committee - NECCCCC
Philippines	Climate Change Commission
Singapore	Inter-Ministerial Committee on Climate Change
Thailand	National Committee on Climate Change Policy
Viet Nam	National Committee on Climate Change

Source: Communications submitted as part of the UNFCCC process.

[18] Available at https://environment.asean.org/awgcc/.

(c) Serve as a consultative forum to promote coordination and collaboration among various ASEAN Sectoral Ministerial Bodies dealing with sectors impacted by climate change (e.g. energy, forestry, agriculture, transportation, science and technology, disaster management) in order to enhance the coordination and integration of efforts in addressing climate change.

44. The AWGCC Action Plan[19] calls for a focus on:

(a) Adaptation and resilience;

(b) Mitigation;

(c) Technology transfer;

(d) Climate finance;

(e) Cross-sectoral coordination.

45. Collectively, AMS have been responding to climate change by focusing on the implementation of relevant actions in the ASEAN Socio-Cultural Community Blueprint 2025. In order to realize the relevant strategic measures in the Blueprint, the AWGCC is guided by the AWGCC Action Plan, which comprises priority actions until 2025. This action plan will be incorporated into the ASEAN Strategic Plan on Environment, which is being finalized.

46. The following relevant regional organizations are engaged in climate and finance issues: ADB, ACMF,[20] Asia-Pacific Economic Cooperation, Asia-Pacific Partnership on Clean Development and Climate, RCC Bangkok, South Asian Association for Regional Cooperation, UNESCAP, and United Nations Resident Coordinator offices.

F. Finance and investment landscape

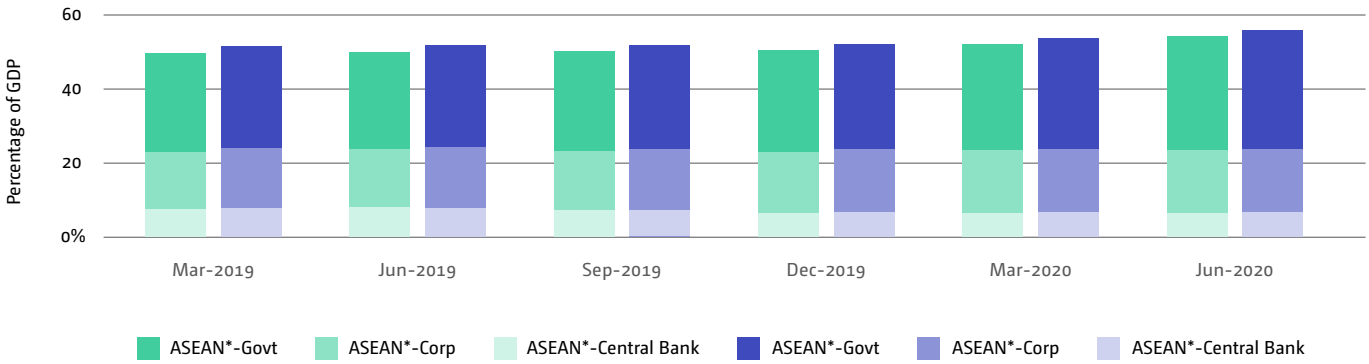
47. South-east Asia has diverse financial systems that vary not only in depth (size and liquidity of markets) but also in accessibility (ability of individuals and companies to access financial services) and efficiency (ability of financial institutions to provide financial services at low cost and with sustainable revenues, and at the level of activity of capital markets.

48. Bond markets help reduce excessive reliance on short-term funding provided by banks and they help mitigate currency and maturity mismatches, which some Asian economies suffered during the Asian financial crisis of 1997. Some countries in the region, including Singapore and Malaysia, have a developed local currency bond market. Significant progress has also been achieved in recent years in other markets such as in Thailand, and to a lesser extent, in the Philippines. The total value of local currency bonds outstanding in Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam, normalized by their corresponding annualized GDP, shows that in 2019–2020, 29% of debt was issued by government, 17% by corporations and 7% by central banks (see figure 4).

[19] The action plan is being updated and is expected to be endorsed in 2021.

[20] Available at https://www.theacmf.org/about.

Figure 4
Size of the local currency bond market of ASEAN member States as a percentage of gross domestic product



Source: AsianBondsOnline
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49. A key feature of financial sector development in the region is the main role played by banks. Loans represent over 80% of total debt funding for most Asian economies. Asian banks focus on commercial lending. Contractual long-term funding by banks in emerging markets in Asia amounts to only 4% of GDP, while it is about 10% in the United States of America and 27% in the euro area. However, credit growth has accelerated significantly since 2008, generally reflecting financial deepening. The Asian financial crisis clearly showed that heavy reliance on banking systems distorts structural resilience and system stability.

50. Government ownership of banks is common in Asia. Governments control about 23% of the aggregate assets of financial institutions, with 16% in commercial banks and 7% in policy banks. This situation leads to a close relationship between the banking system and the state that can influence both supervision and development of the financial sector.

G. Policy landscape

51. AMS have put in place national policies and directives related to climate change, and in some cases, to climate finance (see table 7 for a summary). They have also submitted communications under the UNFCCC (see section IV below) wherein they elaborate on the current and planned policies that support the implementation of mitigation and adaptation action in their countries.

Loans represent over 80% of total debt funding for most Asian economies.

Table 7
Climate change related polices, plans and reviews in ASEAN member States

	Overarching	Climate finance	Adaptation and disaster risk reduction		Energy (including transportation)	Agriculture and forestry	Water, coastal zones and marine systems	Health
Brunei Darussalam	National Climate Change Policy, 2020		Strategic National Plan for Disaster Risk Reduction 2012–2025		Energy White Paper, 2014			
Cambodia	Climate Change Strategic Plan 2014–2023	Climate Public Expenditure Review, 2017			Climate Change Action Plan for Transport Sector 2014–2018	Climate Change Action Plan for Agriculture, Forestry and Fisheries 2019–2023	Implementation of Climate Change Action Plan for Water Resources and Meteorology 2014–2018	Climate Change Action Plan for Public Health 2014–2018
Indonesia	Low-Carbon Development Strategy, 2019	Climate Public Expenditure Institutional Review, various years			National Energy Policy, 2014 Electric Power Supply Plan 2017–2026		Water Resource decree 7/2004	
Lao People's Democratic Republic	National Strategy on Climate Change, approved in 2010 Sectoral Climate Change Plan 2013–2020		National Adaptation Programme of Action, 2009	*Sectoral policies*	Renewable Energy Development Strategy, 2011	Forestry Strategy to the Year 2020, 2005 Investment and Financial Flows to address Climate Change in Energy, Agriculture and Water Sector, 2015		
Malaysia	Eleventh Malaysia Plan 2016–2020				Renewable Energy Policy and Action Plan, 2010		National Water Resources Policy, 2012	
Myanmar	Myanmar Climate Change Policy (2019), Myanmar Climate Change Strategy and Master Plan (2018-2030)		National Adaptation Programme of Action (2012), Technical Need Assessment (2020), Barrier Analysis and Enabling Framework Report for Mitigation (2021), Barrier Analysis and Enabling Framework Report for Adaptation (2021)		National Energy Policy, 2014	National Forestry Master Plan 2001–2030	Water Policy, 2014 National Watershed Management Policy, 2014	

Table 7 (continued)
Climate change related polices, plans and reviews in ASEAN member States

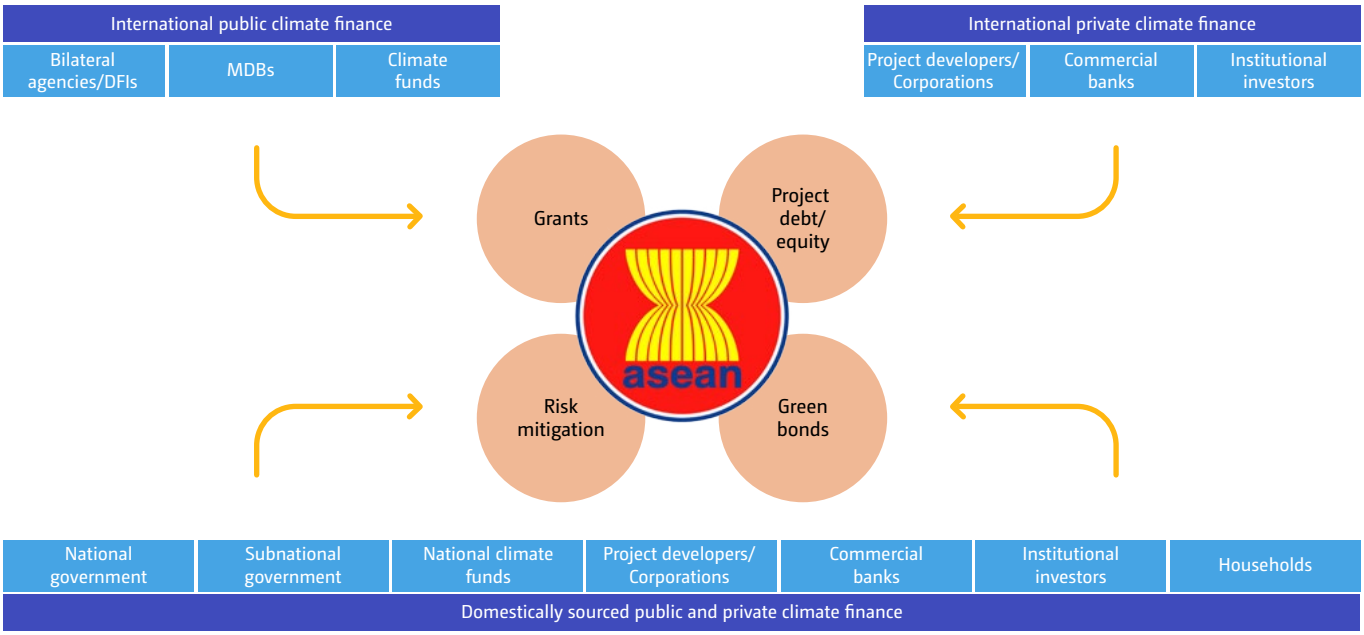
	Overarching	Climate finance	Adaptation and disaster risk reduction		Energy (including transportation)	Agriculture and forestry	Water, coastal zones and marine systems	Health
Philippines	National Framework Strategy on Climate Change, 2010 National Climate Change Action Plan 2011–2028	Investment Priority Plan, 2009	Disaster Risk Reduction and Management Act of 2010		Renewable Energy Act of 2008	Philippine Agriculture, 2020	Integrated Coastal Resource Management Plan, 2013	
Singapore	National Climate Strategy, 2012 Sustainable Singapore Blueprint, 2015 Climate Action Plan, 2016 Long-term Low-Emission Development Strategy, 2020 Singapore Green Plan 2030, 2021				Singapore's Energy Story, 2019 Land Transport Master Plan 2040, 2019 Third Green Building Master Plan, 2014	City in Nature, 2020		
Thailand	National Climate Change Master Plan 2017–2050			*Sectoral policies*	Power Development Plan 2015–2036 Energy Efficiency Plan 2015–2036 Environmentally Sustainable Transport System Plan 2013–2030 Alternative Energy Development Plan 2015–2036	Climate Change Strategy on Agriculture 2017–2021	National Water Master Plan 2018–2037 National Biodiversity Strategies and Action Plans 2015–2021	Climate Change Adaptation Plan on Health sector 2018–2030
Viet Nam	National Climate Change Strategy 2011–2015 and 2016–2050				Renewable Energy Development Plan Strategy up to 2030 with a vision to 2050 Action Plan for Responding to Climate Change and Green Growth of Ministry of Transport for 2016–2020	Action Plan to Respond to Climate Change of Agriculture and Rural Development Sector for the period of 2016–2020 with vision to 2050		

Source: Communications submitted as part of the UNFCCC process, and country policies.

III. Climate finance flows

52. It is important to understand existing sources and flows of finance targeting climate change solutions in the region to inform the development of a climate finance mobilization and access strategy to fill financial gaps. Figure 5 provides an overview of sources of climate finance in the ASEAN region.

Figure 5
Overview of sources and instruments of finance to support climate actions in the ASEAN region



Source: Technical Workshop on Climate Finance in the ASEAN. 2019. Available at: https://unfccc.int/sites/default/files/resource/Session%201%20Grant%20Kirkman.pdf.

53. The following sections are based on publicly available data for sources in the region, at both domestic and international levels.

A. International climate finance

54. The key sources of climate finance are the operating entities of the Financial Mechanism under the Convention, namely the GCF and the GEF, as well as the AF. Other dedicated climate funds include the CIF. Climate-related development finance also flows from bilateral aid agencies, development finance institutions and MDBs.

55. South-east Asia is the principal recipient region of international public climate finance flows. In the region, development finance projects in which climate solutions in mitigation or adaptation were the principal objective

averaged approximately USD 3.2 billion a year between 2013 and 2017 (see figure 6). When projects in which climate solutions comprised one of several objectives are included, flows averaged up to USD 6 billion a year.[21] This section focuses on projects wherein climate is a principal objective.

56. The operating entities of the Financial Mechanism have approved USD 223 million in commitments to projects in the ASEAN region since 2010 comprising USD 104 million from the GEF funds, USD 47 million from the LDCF (targeting only Cambodia, the Lao People's Democratic Republic and Myanmar), USD 30 million from the GCF, USD 25 million from the SCCF and USD 17 million from the AF (see figure 7). In 2018 and 2019, the GCF approved USD 263 million for projects in the region. A further USD 220 million is channelled through multi-country projects that include one of the AMS.

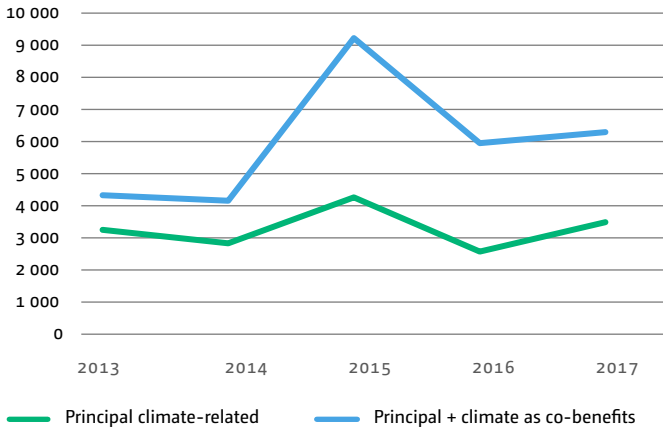
57. These climate funds, together with other multilateral climate funds active in the region such as the CIF, accounted for 6% of climate-related development finance in 2013–2017 (see figure 8).

Of these sources, 46% was channelled bilaterally through development agencies – with Japan a significant provider – and 48% through MDBs, the World Bank and the ADB.

58. Three countries – Indonesia, the Philippines and Viet Nam – received 82% of climate-related development finance in 2013–2017. A significant amount of flows from climate funds also targeted Cambodia.

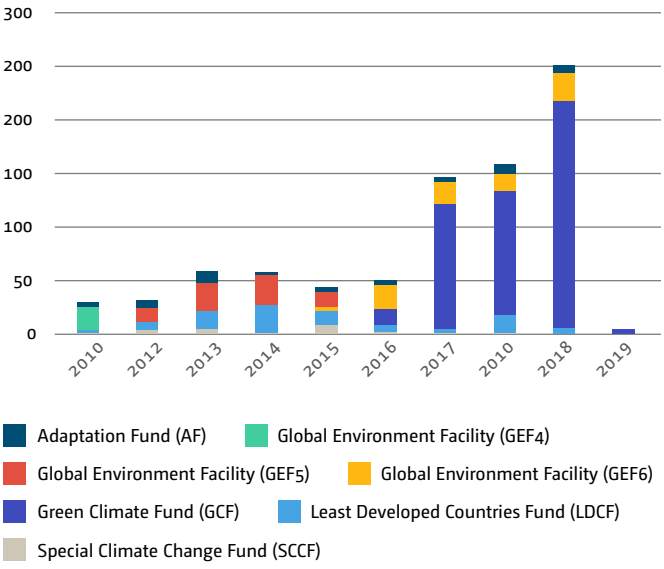
59. In terms of thematic allocation, in 2013–2017 overall, 60% of finance was directed to climate change mitigation projects (see figure 9). But 2016 and 2017 saw a more balanced allocation between mitigation and adaptation in the region, with 47% and 41% allocated to adaptation projects in 2016 and 2017, respectively, compared with 15–32% in previous years, allowing for the region to focus on adaptation and resilience, which is crucial given its extreme vulnerability.

Figure 6
Climate-related development finance in the ASEAN region by principal and significant objectives
(USD million)



Source: OECD DAC climate-related development finance database. Available at http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/climate-change.htm.

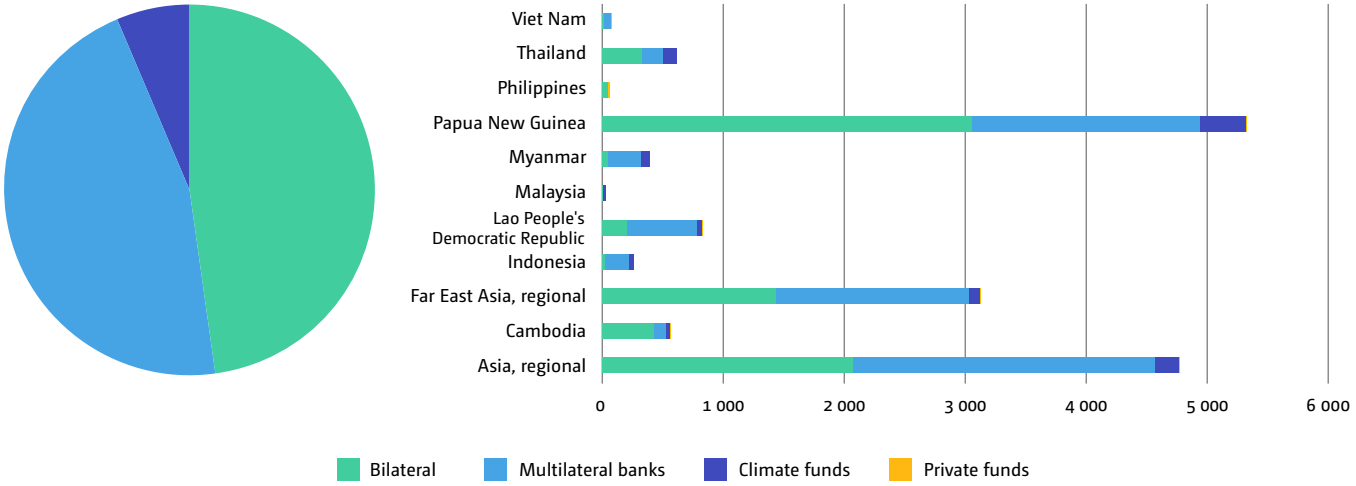
Figure 7
Climate finance from operational entities of the Financial Mechanism funds related to the UNFCCC, 2010–2019
(USD million)



Source: OECD DAC climate-related development finance database. Available at http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/climate-change.htm.

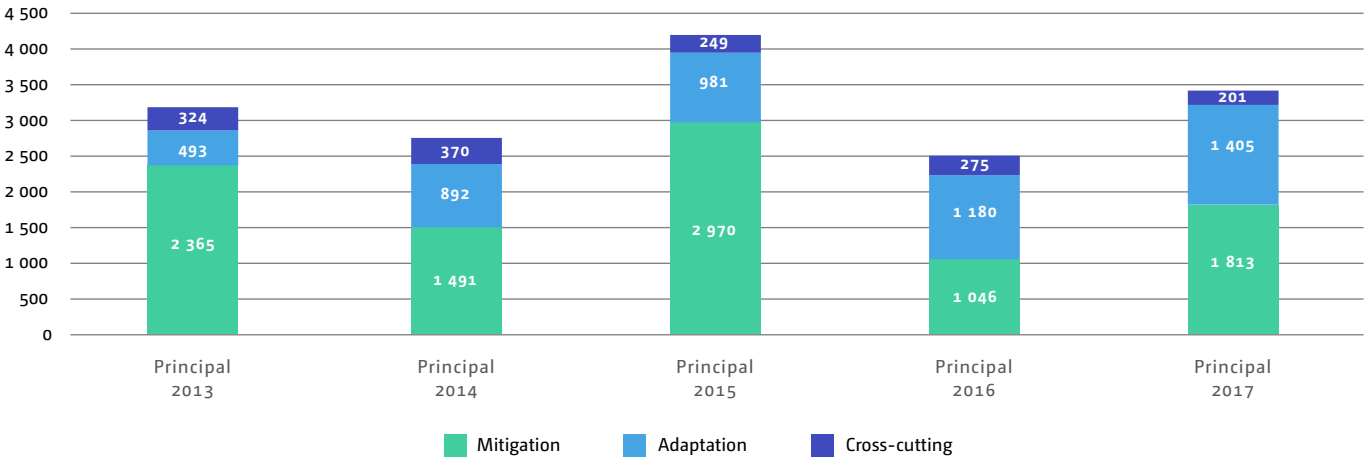
[21] According to the OECD DAC Rio markers methodology, development finance projects may be marked as principal if climate mitigation or adaptation is the main objective, and significant if climate mitigation or adaptation is one of the objectives.

Figure 8
Sources of international public climate finance, 2013–2017
(USD thousand)



Source: OECD DAC climate-related development finance database. Available at http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/climate-change.htm.

Figure 9
Climate-related development finance by theme, 2013–2017
(USD million)



Source: OECD DAC climate-related development finance database. Available at http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/climate-change.htm.

60. In terms of financial instruments, bilateral flows favour concessional loans, with proportionally more grants allocated to adaptation projects (see figure 10). This finding is in line with global trends: broadly speaking, adaptation projects struggle to attract private capital at scale owing to their high 'public good' element. The finding also relates to the presence of lower income and lower middle-income countries in the ASEAN region; these countries have been more reliant than higher income countries on concessional finance.

61. MDBs focus financing on non-concessional loans, particularly for mitigation projects such as those related to renewable energy where revenue streams can be stable and predictable. Climate funds are a significant source of grant funding and concessional debt.

62. In terms of sectoral distribution, energy and transport projects capture the most flows in climate change mitigation, while disaster risk reduction and water and sanitation projects are the most significant adaptation sectors (see figure 11). The agriculture, forestry and other land-use sector features a balance of mitigation and adaptation projects. Among energy projects, an equal amount (36%) of finance was allocated to expansion of the electricity grid and energy networks and to renewable energy projects, with geothermal energy featuring significantly. Another 23% is estimated to have gone towards capacity-building activities such as policy support and training. In transport, rail infrastructure and transit systems received 68% of flows and roads received 17%, particularly for adaptation purposes. A further 13% of flows was directed to capacity-building activities. Flood prevention infrastructure accounted for 52% of disaster risk reduction flows, with the remaining 48% targeting capacity-building. In the water and sanitation sector, 46% of finance was for infrastructure projects, 22% for water conservation, 12% for capacity-building and the remaining for river basin development and waste management. These observations align well with climate finance needs, where priority sectors for mitigation are energy, transport, forestry and land use, while for adaptation they are water supply and sanitation, public health, biodiversity, forestry and watershed management.

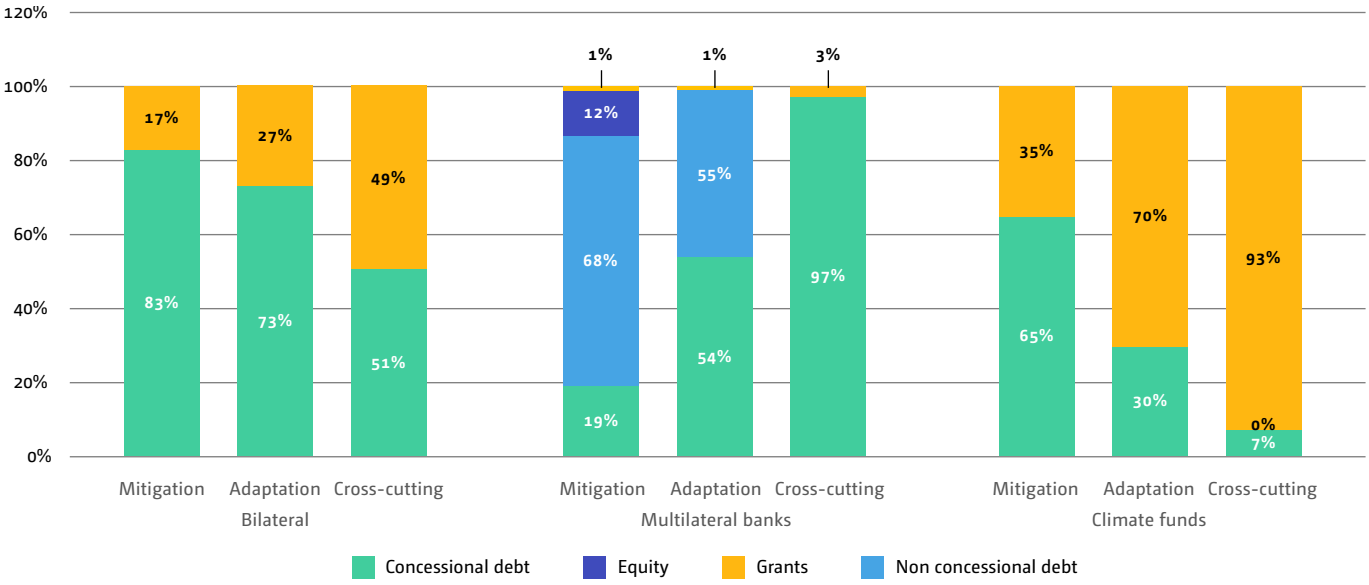
B. Domestic climate finance

63. Domestic public finance is a major source of support for climate action because public expenditure, procurement and subsidies incentivize the roll out of climate technologies and services. Such expenditure may occur at the national or subnational level or through national climate funds and public–private partnerships.

64. Although climate finance tracking of government expenditure at the domestic level is not widespread, five AMS – Cambodia, Indonesia, Philippines, Thailand and Viet Nam – have implemented the methodology of the UNDP for climate public expenditure and institutional review (see table 8). Given significant differences in the government budgets of the five countries, flows range from USD 188 million in Cambodia to USD 6 billion in Indonesia, but in terms of percentage of GDP, the range is from 3% to 6%.

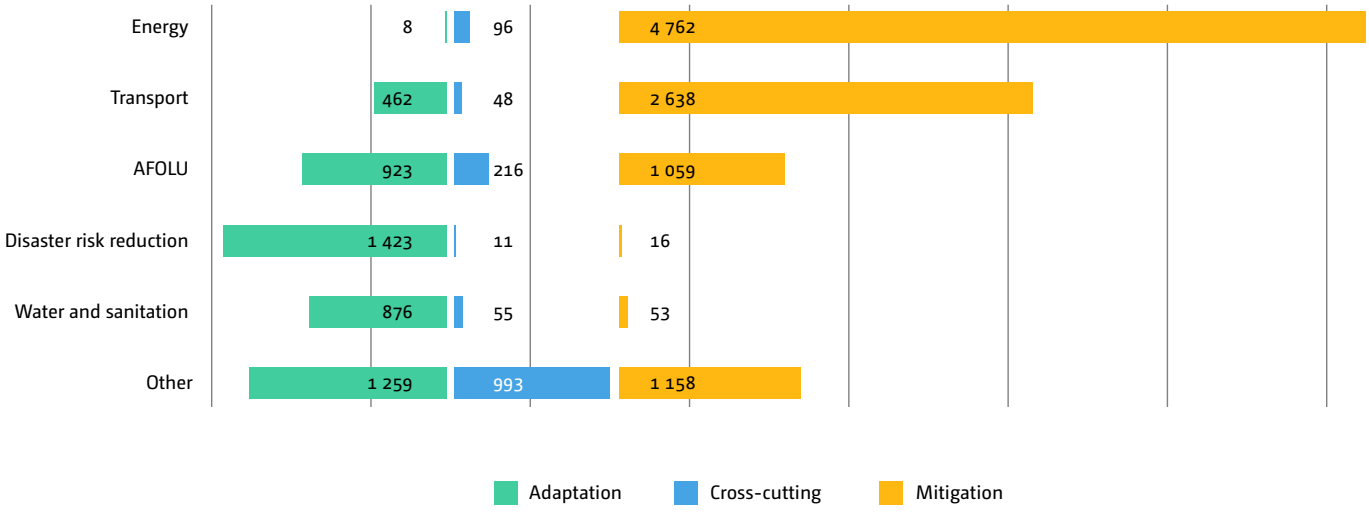
Energy and transport projects capture the most flows in climate change mitigation, while disaster risk reduction and water and sanitation projects are the most significant adaptation sectors.

Figure 10
Climate-related development finance by instrument and theme, 2013–2017



Source: OECD DAC climate-related development finance database. Available at http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/climate-change.htm.

Figure 11
Climate-related development finance by sector and theme, 2013–2017
(USD million)



Source: OECD DAC climate-related development finance database. Available at http://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/climate-change.htm.

Furthermore, how adaptation and mitigation actions are defined vary from country to country based on local circumstances and priorities. Indonesia and the Philippines implement automated budget tagging methodologies to regularly update and track their climate expenditure. Indonesia solely tracks mitigation finance while the Philippines' expenditure is predominantly on adaptation finance. Cambodia does not differentiate between the themes.

65. The Philippines has recently explored the role of domestic budgets in financing climate change adaptation.[22] Singapore will be setting up the Coastal and Flood Protection Fund within its National Water Agency to ensure a sustainable and reliable pool of funding to finance the large outlay required for the country's coastal and flood protection.

[22] See the paper available at https://cdn.gca.org/assets/2020-01/The_Role_of_Domestic_Budgets_in_Financing_Paper__Final.pdf.

Table 8
Government expenditure on climate change based on CPEIRs, 2010–2017

	Climate expenditure *(USD million)*				Climate budget % of national budget				Adaptation *(USD million)*				Mitigation *(USD million)*			
	2010	2011	2016	2017	2010	2011	2016	2017	2010	2011	2016	2017	2010	2011	2016	2017
Cambodia[a]	-	-	188	-	-	-	3.10	-	-	-	-	-	-	-	-	-
Indonesia[a]	-	-	-	-	-	-	3.47	3.93	-	-	-	-	-	-	-	-
Philippines[a]	-	-	3 708.69	4 060.26	-	-	5.86	6.10	-	-	3 315.16		-	-	3 315.16	
Thailand[b]	1 399.23	1 842.50	-		2.60	2.70	-	-	901.34	1 278.50	-		901.34	1 278.50	-	
Vietnam[c]	-	-	435.70	438.42	-	-	33.30	28.20	-	-	828	438.42	-	-	828	438.42

[a] UNDP Submissions to 2018 BA - Domestic Climate Finance Data. Available at https://unfccc.int/sites/default/files/resource/Submission%20UNDP.pdf.

[b] Available at https://www.climatefinance-developmenteffectiveness.org/sites/default/files/documents/03_02_15/thailand%20cpeir%20report_final_24%20june.pdf.

[c] Available at https://www.vn.undp.org/content/vietnam/en/home/library/environment_climate/climate-and-green-growth-public-expenditure-and-investment.html.

C. Private climate finance

66. Climate finance from international public sources is often presented together with private finance as either a cross-border or a domestic source. In other words, most private investment is co-financed with some element of public (domestic or international) finance. Developers, corporations, commercial banks and institutional investors typically provide senior debt or equity finance, while public sources (such as MDBs) provide cover for the riskier portion of the investment or provide technical assistance funding or services – from the supply side, this is known as leveraging. It is still extremely challenging to clearly delineate verifiable quantities of private finance flows for AMS, and these flows are often expressed as public finance leveraged private finance.

67. The South-east Asian region is home to international finance hubs such Singapore, but it also includes low income economies where capital markets are in an early stage of development. Financial systems differ from each other in terms of market size and participants as well as from an institutional and regulatory point of view. The financial sector in the region is dominated by banks: loans represent over 80% of total climate and non-climate debt funding for most AMS economies. This is different from the market in the United States, where corporate bonds are a major source of financing.

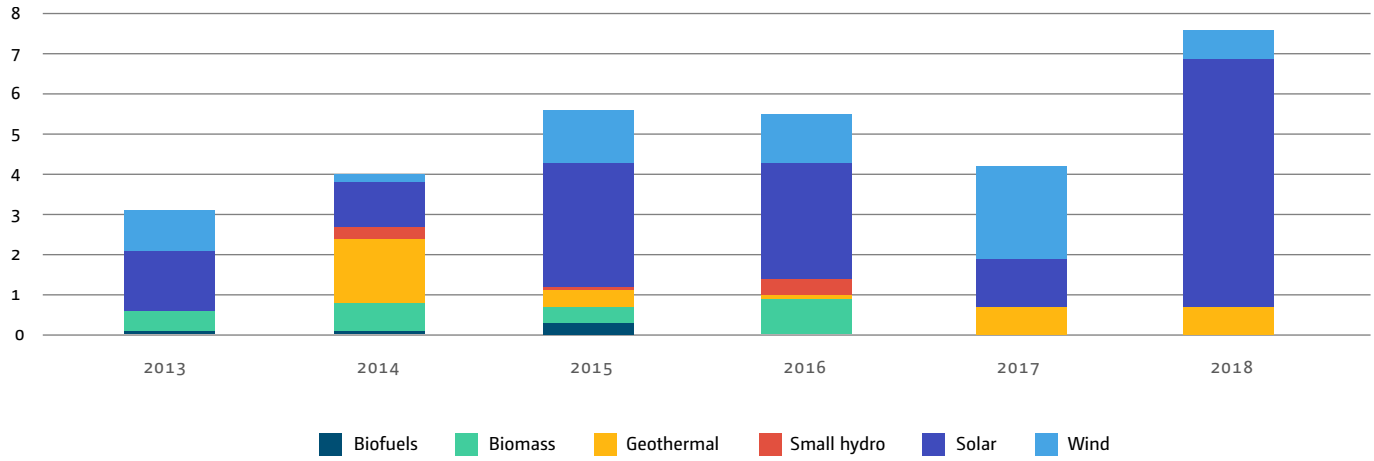
68. Mobilizing private sector and institutional investors' financial resources is recognized by all AMS as key for increasing the flow of finance. For instance, a shift of just 5% of Asian institutional investors' allocation in favour of climate would create an additional annual flow of USD 8–10 billion per year. However, this requires the availability of sufficient investable climate projects and resilient infrastructure assets in the region and a structural change in investor behaviour, despite the challenge of defining clearly what portion of private funds are involved and how much is climate-related.

Mobilizing private sector and institutional investors' financial resources is recognized by all AMS as key for increasing the flow of finance.

69. The size of institutional investors also differs widely among countries. Given its position as a financial hub, Singapore has the largest asset size (more than 50% of its assets are derived from foreign capital inflows). Meanwhile, the asset size of institutional investors to GDP in other countries is lower, for example in Indonesia and the Philippines, where it is approximately 7% and 14%, respectively. Obviously, countries with strong local institutional investors have more potential to tap these investors for climate-related development.

70. Data related to private climate financed actions and flows is therefore limited to specific sectors and instruments or means, both globally and in the region (UNFCCC 2019). Renewable energy project finance – from both public and private sources – averages USD 5 billion a year in the region (see figure 12), with a strong increase (78%) to USD 7.6 billion seen in 2018 owing to solar photovoltaic investments in Viet Nam.

Figure 12
Investment in ASEAN renewable energy projects by technology, 2013–2018
(USD million)



Source: Bloomberg New Energy Finance renewable energy investment database. Available at: https://about.bnef.com/.

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IV. Climate finance needs and priorities

71. All AMS are Parties to the Convention, have ratified the Kyoto Protocol and the Paris Agreement, and have submitted one or more NCs. All AMS identified climate finance needs to support their NDCs and adaptation priorities.

A. Methodological approach to identifying needs

72. The climate finance needs for the region were gathered from official reports and documents such as national climate change plans and strategies, national development plans, BURs, NAPs, NAPAs, NCs, NDCs, TAPs, and TNA.

These sources were supplemented by information provided by participants at the NBF project workshop ("Technical workshop on climate finance in the Association of Southeast Asian Nations") held in Quezon City on 29 and 30 October 2019.[23]

73. Table 9 presents an overview of the communications submitted as part of the UNFCCC process by each AMS.

Table 9
Communications submitted by ASEAN member States as part of the UNFCCC process by year of submission (up to January 2020)

	BUR1	BUR2	BUR3	BUR4	(Intended) NDC1	NDC1 update	NAPA	NC1	NC2	NC3	NC4	TNA1	TNA2	TNA barrier analysis and enabling framework	TAP	GCF country programmes
Brunei Darussalam	–	–	–	–	2016/ 2020	–	–	2016	2017	–	–	–	–	–	–	–
Cambodia	2020	–	–	–	2017	2020	2007	2002	2016	–	–	2003	2013	–	–	–
Indonesia	–	2018	–	–	2016	–	–	1999	2011	2017	–	2010	2012	–	–	2018
Lao People's Democratic Republic	2020	–	–	–	2016	–	2009	2000	2013	–	–	2004	2013	2017	2013	2019
Malaysia	2015	2018	2020	–	2016	–	–	2000	2011	2018	–	–	–	–	–	–
Myanmar	–	–	–	–	2015	2021	2012	2012	–	–	–	2020	–	2021	To be completed in 2021	–
Philippines	–	–	–	–	2015	2021	–	2000	2014	–	–	2004	2018	–	–	–
Singapore	2014	2016	2018	2020	2016	2020	–	2000	2010	2014	2018	–	–	–	–	–
Thailand	2015	2017	2020	–	2016	2020	–	2000	2011	2018	–	2000	2012	–	2012	2017
Viet Nam	2014	2017	–	–	2016	2020	–	2003	2010	2019	–	2005	2012	–	2012	–

[23] Available at https://unfccc.int/topics/climate-finance/workstreams/determination-of-the-needs-of-developing-country-parties-related-to-implementing-the-convention-and/needs-based-finance-nbf-project/needs-based-finance-nbf-project-regional-projects/technical-workshop-on-climate-o.

B. Overall finance needs

74. The amount of climate finance needed for the ASEAN region, based only on data in national reports (these data being the most recent), is estimated to be USD 422 billion up to 2030 for most sectors. Most of the needs expressed are for mitigation (USD 293.01 billion), with the remainder being for adaptation (USD 129.15 billion), as detailed in table 10.

75. Of the 10 ASEAN countries, 5 had no data or sparse data on the amount of climate finance needed in their NDCs (Brunei Darussalam, Myanmar, Philippines, Singapore and Thailand). Assuming a similar magnitude of needs for these countries as for the other 5, finance needed for the region would be between USD 400 and 800 billion in total, or between 40 and 80 billion per year over the next 10 years.

76. Further work is required by the AMS to enable a regional estimate of climate finance needs, potentially by making use of processes being developed and information being gathered in preparation for reporting under Article 9, paragraph 5, of the Paris Agreement.

77. Of the 10 AMS, 6 have conducted TNAs; data from these assessments are incorporated in the subsections on adaptation needs and on mitigation needs below. Figures on finance needs from other communications submitted as part of the UNFCCC process are in sum an order of magnitude lower than those presented in the NDCs; these are reported in table 11.

Table 10
Volume of climate finance needed by country

	Mitigation	Adaptation	Source
Brunei Darussalam	No data	No data	–
Cambodia	USD 5.77 billion by 2030, including for forestry, waste and energy	USD 2.04 billion overall needs, including for infrastructure, water and agriculture	NDC, 2020
Indonesia	USD 247 billion for 2018–2030, including for forestry and other land use, energy and transportation, industrial processes and product use, waste and agriculture	USD 91 billion (132 trillion Indonesian rupiah) by 2050 for sea level rise, health and agriculture	Mitigation needs: BUR2, 2018 Adaptation needs: Indonesia: Costs of climate change 2050[a]
Lao People's Democratic Republic	USD 1.4 billion by 2030, including for forestry and renewable energy	USD 709 million by 2030 for agriculture USD 40.5 million by 2020 for LUCF USD 44 million by 2030 for water USD 190 million by 2020 for transport and urban development USD 5 million by 2020 for public health	Intended nationally determined contribution, 2015

Table 10 (continued)
Volume of climate finance needed by country

	Mitigation	Adaptation	Source
Malaysia	By 2025: USD 2.942 billion for renewable energy USD 1.53 billion for energy efficiency USD 1 million for industrial processes and product use USD 4.5 million for transportation USD 400 million for forestry USD 22.5 million for waste USD 8 million for cross-cutting sectors USD 5 million for climate modelling USD 6 million for GHG inventories USD 50 million for water USD 3 million for public health	USD 104 million by 2025, including for water, agriculture and public health	BUR2, 2011; BUR3, 2020
Myanmar	USD 1,209 million for the energy sector USD 224.4 million for the agroforestry systems and practices across the country Other sectors: FOLU, energy efficiency and priority sectors (agriculture, natural resources, health, disaster risks, urban planning. Education, training and research) also require funding support but need to be calculated	No data	NDC update
Philippines	USD 12–15 billion by 2030 PHP 83.22 billion for the alternative transport fuel programme PHP 48.69 billion for the energy efficiency and conservation programme	No data	NC2, 2014
Singapore	No data	No data	–
Thailand	USD 4.5 million for a smart grid project (2012–2014) USD 16.3 million for energy efficiency improvement in the industrial sector (2012–2022) USD 11.5 million for a second-generation biofuel project THB 94 million for a hydrothermal technology research laboratory project	USD 1.34 million for a water project	TNA for mitigation, 2012; TNA for adaptation, 2012
Viet Nam	USD 17.9 billion by 2030	USD 35 billion by 2030	Adaptation: NDC, 2020 Mitigation: BUR2, 2017

[a] USAID, 2016.

Table 11
Climate finance needs of ASEAN member States
(USD billion)

		NC		BUR		TNA		TAP	
	National reports	Adaptation	Mitigation	Adaptation	Mitigation	Adaptation	Mitigation	Adaptation	Mitigation
Brunei Darussalam	NC2, 2017	Unspecified	Unspecified	–[a]	–	–	–	–	–
Cambodia	NC2, 2016; BUR1, 2020[b]	Unspecified	Unspecified	158.00	11.60	Unspecified	Unspecified	Unspecified	Unspecified
Indonesia	NC3, 2017; BUR2, 2018	Unspecified	4 194.90	Unspecified	247 220.00	Unspecified	Unspecified	Unspecified	Unspecified
Lao People's Democratic Republic	BUR1, 2020; NC2, 2013; TNA, 2013, TAP, 2013	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	144.40	132.10
Malaysia	BUR3, 2020; NC3, 2018	Unspecified	21.25	66.00	5.90	–	–	–	–
Myanmar	NC1, 2012)	Unspecified	Unspecified	–	–	–	–	–	–
Philippines	NC2, 2014,[c] TNA, 2018	Unspecified	Unspecified	–	–	Unspecified	Unspecified	–	–
Singapore	NC4, 2018; BUR4, 2020	Unspecified	Unspecified	Unspecified	Unspecified	–	–	–	–
Thailand	NC3, 2018; BUR3, 2020; TNA, 2012; TAP, 2012	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	2.10	Unspecified
Viet Nam	TAP, 2012	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	Unspecified	13.60	34.90
Total		**–**	**4 2162.50**	**224.00**	**247 237.50**	**–**	**–**	**160.10**	**167.00**

[a] No submissions received.
[b] World Bank exchange rate available at https://data.worldbank.org/indicator/PA.NUS.FCRF.
[c] The Philippines lists USD 131.91 billion for two national programmes in mitigation: transport, and energy efficiency.

C. Mitigation needs

78. AMS require climate finance to be able to carry out their part in mitigating global GHG emissions. All have ratified the Paris Agreement and submitted their first NDC, where mitigation needs are predominantly stated, to the secretariat. All countries except Brunei Darussalam and Singapore have pledged a reduction in GHG emissions conditional on international support. It is assumed, therefore, that climate finance is predominantly needed from international sources as opposed to coming from domestic budgets.

1. Priority mitigation sectors

79. Based on information in recent NCs and NDCs, the predominant sectors needing climate finance include (also see table 12):

(a) Renewable energy;

(b) Energy efficiency;

(c) Industrial processes;

(d) Forestry and other land use;

(e) Waste management.

80. These sectors align well with the emission profiles in the region, as presented in section II.C above.

Table 12
Priority sectors in mitigation for ASEAN member States

	Energy	Transport	Agriculture	Industrial processes	Forestry and other land use	Waste management
Brunei Darussalam	✓	✓	✓	✓	✓	✓
Cambodia	✓	✓	✓	✓	✓	
Indonesia	✓		✓	✓	✓	✓
Lao People's Democratic Republic	✓	✓			✓	
Malaysia	✓	✓			✓	✓
Myanmar	✓				✓	
Philippines	✓	✓		✓	✓	✓
Singapore	✓					
Thailand	✓	✓				✓
Viet Nam	✓	✓	✓	✓	✓	✓

Source: Communications submitted as part of the UNFCCC process.

2. Mitigation needs expressed in financial institution country programming

(a) Climate Investment Funds

81. Several AMS have developed investment plans under the CIF, namely Cambodia, Indonesia, the Lao People's Democratic Republic, Thailand, and the Philippines. Projects supported provide an indication of needs by country. For example:

(a) Renewable energy: In Cambodia, USD 30 million for the Scaling Up Renewable Energy Program is supporting an extensive, multi-scale solar energy development programme, as well as a biomass power project, policy support and public awareness efforts. Cambodia has also developed an investment plan, which can serve as a road map for improving natural resource management and promoting sustainable production forests;

(b) Energy efficiency: The Government of Viet Nam has developed a Clean Technology Fund investment plan for USD 250 million. Concessional financing by the Fund is helping to demonstrate the commercial viability of energy efficiency and renewable energy investments in order to create an enabling environment for scaled-up private sector investment and reduce GHG emissions;

(c) Geothermal energy: Under the Clean Technology Fund, Indonesia has created an investment plan that is using USD 400 million to advance geothermal development.

(b) Green Climate Fund

82. Three AMS have developed a GCF country programme (see table 13). The priorities for mitigation match well with those listed above.

Table 13
Green Climate Fund country programmes: priorities for mitigation

	Priorities
Indonesia (2018)	Energy generation and access Transport Building cities, industries and appliances Forestry
Lao People's Democratic Republic (2019)	Increasing and maintaining national forest cover Medium- to long-term priorities (2022–2030): Promoting energy efficiency measures; Increasing renewable energy supply; Implementing low-carbon transport measures.
Thailand (2017)	Creating an enabling environment for GHG information management Developing GHG reduction policies and measurement Developing a reporting and verification system Deploying tools and instruments for mitigation Conducting awareness-raising and capacity-building on mitigation Engaging the private sector in mitigation Climate change mitigation priority areas: Energy; Transportation; Energy consumption in buildings and construction; Industry; Waste management; Agriculture; Forestry; Urban planning.

Source: GCF country programmes. Available at: https://www.greenclimate.fund/.

D. Adaptation needs

1. Adaptation priority sectors

83. The priority sectors for adaptation action vary across the ASEAN region. These sectors were determined from an assessment of NAPAs, NCs and NDCs. Table 14 provides an overview of the sectors each AMS considers a priority for adaptation action.

84. For the purpose of this assessment, adaptation sectors that are determined as priority by at least 6 of the 10 AMS are considered priority adaptation sectors for the region. These are:

(a) Water supply and sanitation;

(b) Public health;

(c) Biodiversity, forestry and watershed management;

(d) Food security (agriculture, livestock and fisheries);

(e) Coastal zone protection and marine resources.

Table 14
Priority sectors in adaptation for ASEAN member States

	National reports	Critical infrastructure and spatial planning	Transport and urban development	Tourism	Water supply and sanitation	Public health	Biodiversity, forestry and watershed management	Food security (agriculture, livestock and fisheries)	Coastal zone protection and marine resources	Disaster risk reduction	Energy
Brunei Darussalam	NC2, 2017; NDC, 2020				✓	✓	✓	✓	✓	✓	
Cambodia	NC2, 2016; NDC, 2020	✓		✓		✓	✓	✓	✓		✓
Indonesia	NDC, 2016	✓	✓		✓	✓	✓	✓	✓		
Lao People's Democratic Republic	NDC, 2015		✓		✓	✓	✓	✓			
Malaysia	NDC, 2016; NC3, 2018	✓			✓	✓		✓	✓	✓	✓
Myanmar	NAPA, 2012; NDC, 2015, NDC update, 2021, TNA, 2020				✓	✓	✓	✓	✓		✓
Philippines	NDC, 2016				✓			✓			
Singapore	NC3, 2014; NC4, 2018; NDC, 2020; Long-term Low-Emission Development Strategy, 2020	✓			✓	✓	✓	✓	✓		
Thailand	NDC, 2020			✓	✓	✓	✓	✓	✓	✓	
Viet Nam	NC3, 2019; NDC, 2020	✓					✓	✓	✓		

Source: Communications submitted as part of the UNFCCC process.

2. Adaptation needs expressed in financial institution country programming

(a) Green Climate Fund

85. Only three AMS have developed a GCF country programme. Their priorities for adaptation are presented in table 15.

Table 15
Green Climate Fund country programmes: priorities for adaptation

	Priorities
Indonesia (2018)	Health, food security and water security Livelihoods of people and communities Infrastructure and built environment Ecosystems and ecosystem services
Lao People's Democratic Republic (2019)	*Short-term priorities (2019–2021):* Increase and maintain national forest cover; Increase the resilience of urban areas to water impacts, in particular to floods; Increase the resilience of rural areas to climate-induced droughts and floods; Enhance resilience of smallholder farming communities in vulnerable areas; Establish a climate-friendly agribusiness value chain. *Medium- to long-term priorities (2022–2030):* Increase the resilience of the health system (infrastructure and population); Enhance the resilience of urban infrastructure.
Thailand (2017)	*Creating an enabling environment:* Information management for adaptation; Climate projection and risk assessment; Early warning systems and surveillance networks for climate change related disaster relief; Awareness-raising and capacity-building for adaptation; Private sector engagement in climate resilience; Tools and instruments for adaptation. *Climate change adaptation priority areas:* Water resources, flood and drought management; Agriculture and food security; Tourism; Public health; Natural resources and environment; Human settlements and security; Land-use planning for local adaptation.

Source: GCF country programmes. Available at https://www.greenclimate.fund/.

E. Enabling environment

1. Access to finance needs

86. Most AMS have indicated (in their NDCs and other policy documents or at the NBF project workshop) that improving ways to access finance, especially through technical assistance, is a priority. In particular, the following aspects have been indicated as necessary in an enabling environment:

(a) Focusing support on strengthening the NDA for GCF programming and project development;

(b) Increasing cross-border flow of investments from developed markets in ASEAN corporate bonds;

(c) Enabling the sustainability of projects in the long term, that is, beyond project support;

(d) Receiving assistance for harmonizing standards –through alliances between central banks and climate sustainable finance guidelines, while others use a bottom-up approach, pushed by the banking sector;

(e) Identifying how different sectors relate to climate action and how funding can stimulate further economic development;

(f) Strengthening monitoring and evaluation procedures and overall financial governance and financial institutions through development of a green banking law;

(g) Receiving technical assistance for developing a national sustainable/green financing road map and its supporting regulatory tools and mechanisms;

(h) Improving access to finance in wider markets.

2. Capacity-building needs

87. Capacity-building is seen as an urgent need across all 10 AMS and is considered a major challenge to successfully implementing the stated emission reduction targets and adaptation action. Challenges faced include procedural delays because of a lack of knowledge and technical expertise.

88. AMS have identified the following areas for capacity-building support or barriers to be addressed:

(a) **Finance needs.** Most AMS have indicated (in their NDCs and other policy documents or at the NBF project workshop) the following as finance needs:

(i) Participate in future market-based mechanisms;

(ii) Match the best available financial instrument to the specific need (feasibility) and then access the instrument (bankability);

(iii) Create or strengthen specific climate action instruments (innovation);

(iv) Make continuous efforts to address common enablers in order to increase chances of access to finance;

(v) Develop a technical advisory service on financial instruments;

(vi) Conduct a training course or module on green banking and climate finance to train staff of the central and other banks.

(b) **Technology, research and awareness-raising needs.** Most AMS have indicated (in their NDCs and other policy documents or at the NBF project workshop) the following as technology needs:

(i) Conduct science-based risk vulnerability assessments;

(ii) Monitor and evaluate procedures, costs and benefits (environmental, economic and social) and overall climate governance;

(iii) Keep abreast of international best practices (knowledge transfer);

(iv) Develop outreach programmes.

(c) **Institutional capacity needs.** Most AMS have indicated (in their NDCs and other policy documents or at the NBF project workshop) the following as institutional capacity needs:

(i) Develop integrated national climate finance strategies (planning) that correspond to NDCs;

(ii) Take climate action at the local level and integrate national and provincial government work;

(iii) Enhance planning capacity and sound proposal development skills;

(iv) Improve institutional governance tools for climate action;

(v) Provide advice to decision makers and in support of the communication of cross-sectoral coordination committees with ministries of finance;

(vi) Conduct training for cities so that they become more proactive in climate action.

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V. Climate finance sources

A. Dedicated climate funds

1. Green Climate Fund

(a) Approved projects

89. Table 16 shows eight projects have been approved in the region, together committing USD 325.8 million. The projects and programmes are in Indonesia, the Philippines and Viet Nam and are, on average, 65% co-financed. Of the approved funds, USD 292.38 million is pending disbursement. A further eight projects have been submitted to the GCF secretariat. Brunei Darussalam, Malaysia and Singapore have not yet submitted any funding proposals to the GCF.

(b) Readiness support

90. The GCF Readiness Programme was created to enhance country ownership and help countries access GCF resources. The programme provides resources for strengthening the institutional capacities of NDAs or focal points and direct access entities to effectively engage with the GCF. It also assists countries in undertaking adaptation planning and the development of strategic frameworks for programming with the GCF.

91. As at January 2020, a total of 31 readiness proposals had been approved in the region, mostly via international partners and only three via country governments directly (Cambodia, Indonesia and Malaysia). Brunei Darussalam and Singapore have not yet made use of the Readiness Programme. Of the 31 proposals, 26 are for NDA strengthening, including country programming and strategic framework activities.

92. Countries in the region have requested a total of USD 25.56 million in readiness funding, with Indonesia, Myanmar and Thailand requesting the highest total amounts. A total of USD 14.78 million has been approved, of which USD 3.91 million has been disbursed to date (January 2020).

Table 16
Projects funded by the Green Climate Fund

	Accredited entity	Total GCF finance approved (USD million)	Total project value	Percentage disbursed	Percentage co-financed	Project theme and sector	Project pipeline: Number	Project pipeline: Accredited entity, date
Cambodia	ADB	40.00	141.00	2.00	71.60	Cross-cutting: agriculture	3	Conservation International Foundation, 2018; UNOPS, 2017
Indonesia	Nederlandse Financier-ings-Maatschap-pij voor Ontwik-kelingslanden	100.00	821.50	21.50	87.80	Mitigation: energy		
	World Bank	100.00	410.00	0	75.60	Mitigation: energy	2	GIZ, 2019; UNDP, 2018
Lao People's Democratic Republic	UNEP	10.00	11.50	No data	13.00	Adaptation: livelihoods of people and communities	3	UNDP, 2016; UNEP, 2015; UNOPS; 2017
	German Corporation for International Cooperation GmbH	16.70	71.40	No data	76.60	Mitigation: forests		
Myanmar	No data	No data	No data	No data	No data	Adaptation: people and communities; health; and food and water security	1	World Me-teorological Organization, 2016
Philippines	Land Bank of the Philippines	10.00	20.19	0	50.50	Adaptation: livelihoods of people and communities	2	Land Bank, 2016; UNDP, 2017
Thailand	No data	No data	No data	No data	No data	Adaptation: people and communities; health; food and water security; and infrastructure and built environment	1	UNDP, 2016
Viet Nam	World Bank	86.30	497.20	0	82.60	Mitigation: buildings, cities, industries and appliances	3	FAO, 2018; GIZ, 2018; UNDP, 2017
	UNDP	29.50	40.50	40.40	27.20	Cross-cutting: forest and other land use, livelihoods, ecosystem service and infrastructure		

Source: GCF-approved projects. Available at https://www.greenclimate.fund/projects.
Note: There are no GCF approved projects indicated for Brunei Darussalam, Malaysia and Singapore.

2. Adaptation Fund

(a) Approved projects

93. Table 17 shows four projects have been approved in the ASEAN region to date (February 2020), with the total amount of funding approved close to USD 24 million. Projects have been implemented mainly by United Nations agencies in Cambodia, Indonesia, the Lao People's Democratic Republic and Myanmar.

(b) Project pipeline

94. Indonesia is the most active of the AMS in submitting concepts and proposals to the AF, with nine submissions in the year January 2019 to January 2020 via its Partnership for Governance Reform (Kemitraan). Cambodia, the Lao People's Democratic Republic and Viet Nam have also submitted concepts and proposals via United Nations agencies (UN-Habitat, UNEP and United Nations Educational, Scientific and Cultural Organization).

95. In total, 14 projects from the region are currently in the Adaptation Fund's pipeline, together requesting a total of USD 45 million. The sectors of focus are urban development (two proposals), water management (three proposals), coastal management (two proposals), EbA (two proposals), and disaster risk reduction, agriculture and multisectoral (one proposal each).

(c) Readiness support

96. The AF Board has made available several small grants under the Readiness Programme to help national implementing entities provide peer support to countries seeking accreditation with the Fund and to build capacity for undertaking various climate finance readiness activities. These include South-South cooperation grants, project formulation assistance grants (maximum USD 20,000 per project), technical assistance grants and project scale-up grants (maximum USD 100,000 per project and programme). To date (February 2020), no readiness grants have been approved for the ASEAN region. The only accredited national implementing entity in the ASEAN region is the Partnership for Governance Reform (Kemitraan) of Indonesia.

Table 17
Projects funded by the Adaptation Fund
(USD thousand)

	Total project value	Percentage disbursed	Percentage co-financed	Project theme and sector	Accredited entity, date
Cambodia	UNEP	EbA	4 954	4 954	June 2012
Indonesia	Partnership for Governance Reform (Kemitraan)	Food security	835	–	July 2019
Lao People's Democratic Republic	UN-Habitat	Disaster risk reduction	5 500	804	July 2019
	UN-Habitat	Disaster risk reduction	4 500	2 376	October 2016
Myanmar	UNDP	Rural development	7 909	7 909	February 2014
Total amount	**–**	**–**	**23 698**	**16 043**	**–**

Source: Adaptation Fund-approved projects.

3. Global Environment Facility

97. GEF funds are allocated to projects addressing biodiversity, climate change, land degradation, international waters, chemicals and waste.

98. In total, the region has received USD 611 million in GEF grants and USD 6.3 billion in co-financing for climate change projects. In addition, AMS were co-beneficiaries in projects that went beyond the ASEAN region amounting to USD 958 million in GEF grants and USD 8 billion in co-financing.

99. Excluding regional projects, table 18 shows the total financing approved for individual AMS. The Philippines has received the most total funding via GEF co-financed projects, followed by Viet Nam and Indonesia.

100. Additionally, four regional projects limited to the ASEAN region have been approved for funding by the GEF (see table 19).

Table 18
Projects funded by the Global Environment Facility
(USD million)

	GEF grant	Co-financing	Total
Cambodia	56.5	226.1	282.6
Indonesia	121.7	998.6	1 120.3
Lao People's Democratic Republic	44.7	245.1	289.8
Malaysia	53.8	271.6	325.4
Myanmar	57.7	254.7	312.4
Philippines	97.4	1 814.9	1 912.3
Thailand	72.1	765.9	838
Viet Nam	79.6	1 647.6	1 727.2
Total	**583.4**	**6 224.7**	**6 808.1**

Source: GEF-approved projects.

Table 19
Regional projects funded by the Global Environment Facility
(USD million)

Project	Countries	GEF grant	Co-financing
Building Climate Resilience of Urban Systems through EbA in the Asia-Pacific Region[1]	Cambodia, Lao People's Democratic Republic and Myanmar (as well as Burma)	6.0	88.2
SFM Rehabilitation and Sustainable Use of Peatland Forests in South-East Asia[2]	Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam	4.3	10.2
Sustainable Management of Peatland Ecosystems in Mekong Countries[3]	Cambodia, Lao People's Democratic Republic and Myanmar	2.9	10.4
CTI Coastal and Marine Resources Management in the Coral Triangle: Southeast Asia under Coral Triangle Initiative[4]	Indonesia, Malaysia and Philippines	11.2	29.0

Source: GEF-approved regional projects.
Notes: (1) Available at https://www.thegef.org/project/building-climate-resilience-urban-systems-through-ecosystem-based-adaptation-eba-asia; (2) Available at https://www.thegef.org/project/sfm-rehabilitation-and-sustainable-use-peatland-forests-south-east-asia; (3) Available at https://www.thegef.org/project/sustainable-management-peatland-ecosystems-mekong-countries; and (4) Available at https://www.thegef.org/project/cti-coastal-and-marine-resources-management-coral-triangle-southeast-asia-under-coral.

4. Least Developed Countries Fund

101. The LDCF addresses the special needs of the LDCs, which are especially vulnerable to the adverse impacts of climate change. The LDCF reduces the vulnerability of sectors and resources that are central to development and livelihoods, such as water, agriculture and food security; health; disaster risk management and prevention; infrastructure; and fragile ecosystems.

102. All the LDCs, as defined by the United Nations, that are also a Party to the Convention are eligible to access the LDCF. The list of the LDCs is reviewed every three years by the United Nations Economic and Social Council.

103. The LDCF is tasked with financing the preparation and implementation of NAPAs. NAPAs use existing information to identify a country's priorities for adaptation actions. The LDCF is currently the only fund whose mandate is to finance the preparation and implementation of NAPAs.

104. Table 20 shows Cambodia, the Lao People's Democratic Republic and Myanmar have received funding via the LDCF.

Table 20
Projects funded by the Least Developed Countries Fund
(USD thousand)

Country and implementing entity	LDCF grant	Co-financing
Cambodia (total)	31 619	148 193
FAO	18 457	104 013
UNDP	11 527	39 985
UNEP	1 635	4 195
Lao People's Democratic Republic (total)	26 598	93 217
FAO	13 700	49 147
UNDP	9 345	38 591
UNEP	3 553	5 478
Myanmar (total)	27 151	93 911
FAO	14 932	52 885
UNDP	7 031	21 815
UNEP	5 188	19 211
Total	**85 368**	**335 321**

Source: LDCF-approved projects.

5. Special Climate Change Fund

105. The SCCF was established with four funding windows:

(a) Adaptation;

(b) Transfer of technologies;

(c) Energy, transport, industry, agriculture, forestry and waste management;

(d) Economic diversification for fossil fuel dependent countries.

106. Currently the only the adaptation and transfer of technologies windows are active, and projects funded in the region are listed in table 21.

Table 21
Projects funded by the Special Climate Change Fund
(USD thousand)

Country and implementing entity	SCCF grant	Co-financing
Cambodia (total)	4 600	21 092
International Fund for Agricultural Development	4 600	21 092
Indonesia (total)	5 000	74 311
UNDP	5 000	74 311
Philippines (total)	6 024	66 700
World Bank	4 974	50 450
UNDP	1 050	16 250
Thailand (total)	869	2 705
UNDP	869	2 705
Viet Nam (total)	7 966	223 062
ADB	7 966	223 062
Total	**24 459**	**387 870**

Source: SCCF-approved projects.

6. Capacity-building Initiative for Transparency

107. The CBIT was created at the request of Parties to help strengthen the institutional and technical capacities of Parties not included in Annex I to the Convention to meet the enhanced transparency requirements defined in Article 13 of the Paris Agreement. Cambodia and the Lao People's Democratic Republic have received funding via the CBIT as shown in table 22.

Table 22
Projects funded by the Capacity-building Initiative for Transparency
(USD thousand)

Country and implementing entity	CBIT grant	Co-financing
Cambodia		
FAO	863	2 131
Lao People's Democratic Republic		
UNEP	1 210	150
Total	**2 073**	**2 281**

Source: CBIT-approved projects.

B. Multilateral sources

1. Asian Development Bank

108. ADB is committing USD 80 billion in climate finance cumulatively between 2019 and 2030 and is ensuring that at least 75% of its projects will address climate change mitigation and adaptation by 2030. ADB supports the developing member countries in the implementation of NDCs and other climate and development plans and projects.[24]

109. ADB has two specialized facilities for climate change:

(a) NDC Advance: an initiative that helps ADB's developing member countries mobilize finance, build capacity and support to implement NDCs;

[24] Available at https://www.adb.org/sites/default/files/institutional-document/358881/ccof-2017-2030.pdf.

(b) ASEAN Catalytic Green Finance Facility: an innovative financing facility designed to scale up green infrastructure projects in South-east Asia. Launched in April 2019 under the ASEAN Infrastructure Fund, this facility will provide loans and technical assistance for sovereign green infrastructure projects on sustainable transport, clean energy and resilient water systems. It aims to catalyze private capital by mitigating risks through innovative finance structures. The facility will mobilize a total of USD 1 billion, including USD 75 million from the ASEAN Infrastructure Fund, USD 300 million from ADB, USD 336 million from KfW bank of Germany, EUR 150 million from the European Investment Bank and EUR 150 million from the AFD.

2. World Bank

110. The NDC Support Facility is a multi-donor trust fund created to facilitate the implementation of the NDCs pledged by countries under the Paris Agreement in 2015. Its activities are implemented in close coordination with and in support of the country engagement process of the NDC Partnership, a global coalition of developed and developing countries and international institutions, including the World Bank Group, working together to mobilize financial and technical support to achieve countries' climate goals and enhance sustainable development. To increase NDC ambition and promote a more systematic and economy-wide approach to NDC implementation, the World Bank is embarking on a 'deep dive' approach in the ASEAN region, focusing on Viet Nam and the Philippines.

111. The Joint Report on Multilateral Development Banks' Climate Finance is an annual collaborative effort to make public MDB climate finance figures together with a clear explanation of the methodologies used for tracking this finance.[25] This joint report, alongside the MDBs' publication of climate finance statistics in their respective corporate media, is intended to track progress in relation to climate finance targets such as those announced around COP 21 and the greater ambition pledged. In 2019, the AMS received a total of USD 3,489 million in climate finance, divided as follows: Cambodia, USD 139 million; Indonesia, USD 959 million; Lao People's Democratic Republic, USD 69 million; Myanmar, USD 90 million; Philippines, USD 1,693 million; Thailand, USD 97 million; and Viet Nam, USD 442 million.

112. The SEADRIF is ASEAN's first regional catastrophe risk financing facility, and a key initiative in strengthening ASEAN's economic resilience to disaster risk and addressing the natural catastrophe protection gap in the South-east Asian region. Supported by the World Bank, Japan and Singapore, SEADRIF serves as a regional platform to provide disaster and climate risk resilience solutions to South-east Asian countries. The SEADRIF Insurance Company, domiciled in Singapore, was launched in October 2019 and its first product is a flood risk policy. In the unfortunate event of a flood disaster, the risk pool will provide quick financing to reduce the impact on affected communities. SEADRIF has the potential to expand to other AMS and to cover more perils in the future, and SEADRIF members are currently in discussions to develop a public asset financial protection programme.

C. Bilateral sources

113. Examples of bilateral funding sources in the region are discussed in the following subsections.

1. International Climate Initiative[26]

114. Since 2008, the International Climate Initiative of the BMU has been financing climate and biodiversity projects in developing and newly industrializing countries, as well as in countries with economies in transition. In the early years of the programme, its financial resources came from the proceeds of auctioning allowances under the emissions trading scheme of the European Union. To ensure financial continuity, further funds were made available through the Special Energy and Climate Fund. Both funding mechanisms are now part of the Ministry's regular budget.

115. The International Climate Initiative is a key element of Germany's climate financing and the funding commitments in the framework of the Convention on Biological Diversity. The Initiative places clear emphasis on climate change mitigation, adaptation to the impacts of climate change and the protection of biological diversity. These efforts provide various co-benefits, particularly the improvement of living conditions in partner countries. Examples of its current projects in the ASEAN region are presented in table 23.

[25] Available at https://publications.iadb.org/publications/english/document/2019-Joint-Report-on-Multilateral-Development-Banks-Climate-Finance.pdf.

[26] Available at https://www.international-climate-initiative.com/en/.

Table 23
Example projects of the International Climate Initiative in the ASEAN region

Projects	Countries	Key area(s)	Duration	Funding amount (EUR)
Accelerating Climate Finance Impact to Support the Momentum of Paris	Indonesia	Financial sector and mobilization of investment in the private sector	April 2018 to December 2020	1 999 699
EbA in the North Central Coast of Viet Nam: Restoration and Co-Management of Degraded Dunes and Mangroves	Viet Nam	EbA (including adapted water and land management) restoration of ecosystems	April 2018 to March 2022	1 879 539
Production Driven Forest Landscape Restoration under REDD+ through Private Sector – Community Partnerships as Asian Regional Learning Exchange	Lao People's Democratic Republic, Thailand and Viet Nam	REDD+ forest and landscape restoration REDD+ business models, financing concepts and public–private partnerships, EbA (including adapted water and land management)	May 2018 to April 2022	2 317 860
Sustainable coastal protection through biodiversity conservation in coastal ecosystems affected by typhoons in the Philippines (ProCoast)	Philippines	EbA (including adapted water and land management) conservation, sustainable use and restoration of natural carbon sinks without relevance for REDD+, marine and coastal protected areas, reduction of loss rate, degradation and fragmentation of ecosystems/ areas, restoration of ecosystems, sustainable use of ecosystems/ areas	–	–

Source: Available at https://www.international-climate-initiative.com/en?iki_cookie_check=1.

2. NAMA Facility[27]

116. During the negotiations at COP 18 in 2012, BMU and the BEIS jointly established the NAMA Facility. In 2013, they contributed jointly an initial EUR 69 million of funding to support developing countries and emerging economies that show leadership on tackling climate change and that want to implement ambitious climate protection measures. BMU and BEIS jointly contributed an additional EUR 49 million to fund a second bidding round for NAMA Support Projects 2014. The Danish Ministry of Energy, Utilities and Climate and the European Commission joined the NAMA Facility as donors in 2015. The third call for NAMA Support Project outlines was made possible owing

[27] Available at https://www.c40.org.

to a joint contribution of additional funding of up to EUR 84 million by BMU, BEIS, the Danish Ministry of Energy, Utilities and Climate, and the European Commission. Recognizing the current and future role of NAMAs in the climate architecture, BMU and other donors continue to provide tailor-made funding for their implementation in partner countries. They will jointly provide up to EUR 59 million for a fourth call of the NAMA Facility. Examples of the NAMA Facility's current projects in the ASEAN region are presented in table 24.

3. French Development Agency[28]

117. The AFD funds, supports and accelerates the transition to a fairer and more sustainable world. Focusing on climate, biodiversity, peace, education, urban development, health and governance, its teams carry out more than 4,000 projects in France's overseas departments and territories and another 115 countries. In this way, AFD contributes to the commitment of France and the French people to support the SDGs. Examples of the AFD's current projects in the ASEAN region are presented in table 25.

Table 24
Example projects of the NAMA Facility in the ASEAN region

Country and project	Key area	Duration	Funding amount (EUR)
Indonesia			
Sustainable Urban Transport Program	Transport	2015–2019	14 000 000
Thailand			
Refrigeration and Air Conditioning NAMA	Industry	2016–2021	14 700 000

Source: https://ndcpartnership.org/funding-and-initiatives-navigator/nama-facility.

Table 25
Example projects of the French Development Agency in the ASEAN region

Countries and project	Theme	Type of financing	Year	Funding amount (EUR)
Philippines				
Promoting Development by Preventing and Managing Disaster Risks	Climate	Sovereign concessional loan	2016	50 000 000
Philippines				
Improving the Transport System in Cebu	Infrastructure, sustainable cities, climate	Sovereign concessional loan	2015	50 893 000
Indonesia and Viet Nam				
Climate Variability in Indonesia and Viet Nam	Climate, fighting inequalities	–	2019	100 000

Note: See more at: https://www.afd.fr/en.

[28] Available at https://www.afd.fr/en.

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VI. Financial and monetary policy instruments and mechanisms

118. As discussed above, there are many financial and monetary instruments available and in use for sourcing and delivering climate finance, but because of the dominance of bank financing, their wide use is limited in the ASEAN region. These instruments can be broadly subdivided into climate risk focused tools and climate finance promoting policies:

(a) Climate risk focused tools aim to correct the lack of accounting for climate risks for individual financial institutions and to support mitigation by changing the demand for green and carbon-intensive investments, as well as their relative prices. These tools include:

(b) Monetary policy instruments, including developing central banks' own climate risk assessments, and ensuring that climate risks are appropriately reflected in central banks' collateral frameworks and asset portfolios;

(c) Financial policy tools, including reserve, liquidity and capital requirements, loan-to-value ratios, caps on credit growth, climate-related stress tests, disclosure requirements and financial data dissemination to enhance climate risk assessments, corporate governance reforms, and better categorization of green assets through development of a standardized taxonomy;

(d) Climate finance promoting policies seek to account for externalities and co-benefits of mitigation at the level of society – to account for how economic activity harms the environment but could in addition to mitigating climate change generate social value (e.g. reduced air pollution or more rapid technological progress). Policies help shift relative prices and increase investments. However, the fact that they add new goals to existing policies makes them more controversial. These policies include:

i. Monetary policy instruments to promote climate finance, including improving access to central bank funding schemes for banks that invest in low-carbon projects, central bank purchases of low-carbon bonds issued by development banks, credit allocation operations, and adapting monetary policy frameworks;

ii. Financial policy instruments to actively promote climate investment, including 'green supporting' and 'brown penalizing' factors in banks' capital requirements, and international requirements of a minimum amount of green assets on banks' balance sheets.

A. Monetary policies

119. Monetary policy instruments are considered central to the achievement of climate finance objectives and target long-term sustainable impact. There is increasing harmonization between central banks in the region.

120. The NGFS is a network of central banks and supervisors willing, on a voluntary basis, to exchange experience, share best practices, contribute to the development of environment and climate risk management in the financial sector, and to mobilize mainstream finance to support the transition towards a sustainable economy. Its purpose is to define and promote best practices to be implemented within and outside the membership of NGFS and to conduct or commission analytical work on green finance. NGFS has structured its work into three dedicated workstreams:

(a) Microprudential and supervision;

(b) Macrofinancial;

(c) Scaling up green finance.

B. Blended finance

121. Blended finance is a structuring approach that uses capital from public or philanthropic sources that are willing to accept disproportionate risk and/or below-market returns to increase private sector investment towards sustainable development. Innovative finance solutions to mobilize private capital in new and more efficient ways towards development objectives have been pursued.

122. There are four common blended finance structures (see figure 13):

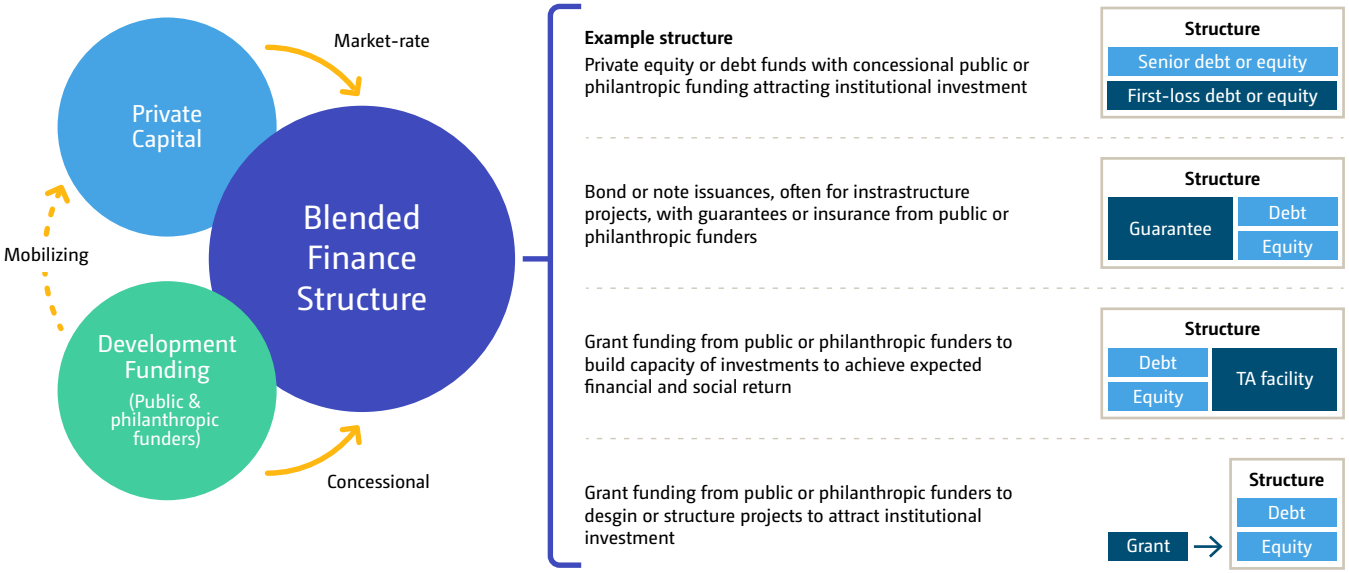
(a) Public or philanthropic investors provide funds at below-market terms within the capital structure to lower the overall cost of capital or to provide an additional layer of protection to private investors;

(b) Public or philanthropic investors provide credit enhancement through guarantees or insurance at below-market terms;

(c) Transaction is associated with a grant-funded technical assistance facility that can be utilized pre- or post-investment to strengthen commercial viability and developmental impact;

(d) Transaction design or preparation is funded by grants (including project preparation or design-stage grants).

Figure 13
Typical blended finance mechanisms and structures



Source: Convergence, The State of Blended Finance. 2019.

123. Asia has established itself as the new frontier for blended finance. Energy and financial services continue to be the two most common focus sectors; however, agriculture, water and sanitation, and health are ripe for more blending.[29]

124. Examples of blended finance in the region include:[30]

(a) Private sector capital development;

(b) The Private Financing Advisory Network – USD 700 million for clean energy projects;

(c) The Private Infrastructure Fund established by ADB – USD 1.5 billion from the Japan International Cooperation Agency;

(d) Technical assistance grants from Clean Power Asia of the USAID;

(e) GuarantCo – USD 13.5 million guarantee for Thai Biogas Energy Co. waste-to-energy projects;

(f) Bank Mandiri – a credit line to finance 90 MW biomass in Indonesia;

(g) The 10-year private equity fund for new and renewable energy launched by Maybank, ADB, the International Finance Corporation, and others.

125. Examples of public–private partnerships in the region include:

(a) UNESCAP's Pro-Poor Public Private Partnership for rural electrification in the Lao People's Democratic Republic;

(b) The 20-year solar power purchase agreement of Sunseap with Électricité Du Cambodge (Cambodia's state-run utility), to which ADB agreed to lend USD 9.2 million to build a 10 MW solar facility.

126. Another area of innovative financing is the use of impact investing to mobilize private capital as approaches to scale up investment in the Asia-Pacific region. To harness potential, governments work to facilitate the development of investable social enterprises (which are defined as organizations committed to explicitly including social and/or environmental returns as part of their core business while seeking profit or return on investment), to create an enabling impact investment climate, and to engage the mainstream private sector.

127. The Global Impact Investing Network[31] is the global champion of impact investing, dedicated to increasing its scale and effectiveness around the world. By convening impact investors to facilitate knowledge exchange, highlighting innovative investment approaches, building the evidence base for the industry, and producing valuable tools and resources, the Network seeks to accelerate the industry's development through focused leadership and collective action. Ultimately, the Global Impact Investing Network focuses on reducing barriers to impact investment so more investors can allocate capital to fund solutions to the world's most intractable challenges.

C. Climate bonds, green bonds and sustainable bonds

128. Green and climate bonds have become an increasingly popular form of share of proceeds-based funding and means of raising debt for corporations and governments alike.

129. Green Bond Principles were set out in 2014 by the International Capital Market Association, and the Climate Bonds Initiative developed the Climate Bonds Taxonomy, currently used as a global reference for climate-related bonds by most green bond issuers and investors. The taxonomy distinguishes between 'labelled' green bonds, which are used to finance projects that are 100% green, and 'aligned' bonds, which are used to finance projects that are at least 75% green but not fully green. Some countries have defined their own standards; for example, the Chinese Green Bond Endorsed Project Catalogue, the project eligibility criteria of the European Investment Bank's Climate Awareness Bonds, and the MDB–International Development Finance Club Common Principles for Climate Mitigation Finance Tracking.

130. USD 5 billion in green bonds has been issued in the ASEAN region to 2018 through 19 green bond issuers from diverse segments (see table 26) – sovereign, corporate and bank. Indonesia, Singapore and Malaysia are the top three countries for labelled green bond issuance. Buildings is the largest category financed by green bonds (43% of the market by volume), followed by energy at 32%.

[29] Convergence, The State of Blended Finance 2019.

[30] Technical workshop on climate finance in the ASEAN. 2019. Available at https://unfccc.int/sites/default/files/resource/Tongson_UNFCC_30Oct2019.pdf.

[31] https://thegiin.org2.

Table 26
Summary of climate bonds and green bonds in ASEAN member States

Indonesia	Indonesia was the first Asian country to issue a sovereign green bond for USD 1.25 billion. The Green Bond and Green Sukuk Framework states that eligible projects will promote the transition to a low-emission economy and climate resilient growth, including climate mitigation, adaptation and biodiversity. These will fall into the following sectors: renewable energy, energy efficiency, resilience to climate change and disaster risk reduction, sustainable transport, waste-to-energy and waste management, sustainable management of natural resources, green tourism, green buildings and sustainable agriculture. The proceeds of the Green Sukuk can be used for the financing and/or refinancing eligible green projects. The framework aligns with the Green Bond Principles, the ASEAN Green Bond Standards, and Indonesia's Financial Services Authority's green bond regulations. The Green Sukuk is a shariah-compliant bond, issued to finance or refinance green projects that contribute to climate change and biodiversity. The Climate Budget Tagging exercise has been used to identify the project pipeline for the Green Sukuk. In March 2018, Indonesia made a bond issuance for USD 1.25 billion.
Malaysia	The first Green Sukuk in the world was issued by Malaysia's Edra Power, consisting of a USD 58 million solar project.
Philippines	The Securities and Exchange Commission of the Philippines approved in 2018 guidelines on the issuance of green bonds under the ASEAN Green Bonds Standards, effectively adopting the procedures for issuance set out in the ASEAN Green Bond Guidelines but with a clear exclusion of fossil fuel power generation projects.[a] Philippine firms have raised USD 1.32 billion equivalent across seven transactions. Notably, 45% was denominated or linked to Philippine pesos. A high proportion of the Philippine-related green bonds have been climate bonds certified – therefore automatically eligible for ASEAN – but only one, to date, has sought the ASEAN label: Rizal Commercial Banking Corporation.
Singapore	More than SGD 8 billion of green, social and sustainability bonds have been issued in Singapore. The Monetary Authority of Singapore's Sustainable Bond Grant Scheme aims to offset 100% of the cost of obtaining pre and post issuance external reviews for green, social, sustainability, and sustainability-linked bonds for qualifying issuances, of up to SGD 100,000 per issuance. The scheme applies to green, social, sustainability, and sustainability-linked bonds to be issued and listed in Singapore with a minimum size of SGD 200 million and tenure of at least one year.
Thailand	The Securities and Exchange Commission of Thailand published "Guidelines on Issuance and Offer for Sale of Green Bond, Social Bond and Sustainability Bond", providing issuers with a clearer understanding of the guidelines on the issuance and disclosure requirements. The private sector had issued various related bonds; for example, BTS Group issued THB 1.3 billion green bonds for financing or refinancing projects that provide clear environmental benefits, specifically related to clean transportation, Energy Absolute Public Company Limited issued THB 10 billion green bonds for renewable energy (wind) and B. Grimm Power Public Company Limited issued THB 5 billion green bonds for renewable energy projects. In addition, Krungsri Bank issued THB 7 million Women SME Bonds, which is a social bond (gender bond) for refinancing existing facilities or financing new facilities that fund social projects in the following categories: employment generation through women-owned SMEs finance and microfinance for women; and socioeconomic advancement and empowerment through providing finance to women with low incomes or in disadvantaged women's groups. Kasikorn Bank also issued USD 100 million sustainability bonds for financing or refinancing, in whole or in part, existing and future projects that improve access to affordable and renewable energy, as well as the financing of SMEs providing socially impactful projects in eight areas: renewable energy, energy efficiency, green buildings, clean transportation, access to essential services, affordable housing, employment generation, and socioeconomic advancement and empowerment.

[a] Available at http://www.sec.gov.ph/wp-content/uploads/2015/10/2018PressRelease_AdoptsTheAseanGreenBondsStandards.pdf.

131. With the establishment of the ACMF working group, better reporting and transparency of green bonds issuance is expected. In August 2018, the ACMF approved the "Guidelines on the Issuance of Green Bonds Under the ASEAN Green Bonds Standards." The ASEAN Green Bonds Standards are aligned with the International Capital Market Association's Green Bond Principles, with key additional features. Eighty-one per cent of ASEAN green bonds, by volume, have an external review, which demonstrates best practice.

D. National development banks, funds and the Coalition of Finance Ministers for Climate Action

132. Indonesia, Malaysia and the Philippines have established national development banks and funds. Indonesia's PT Sarana Multi Infrastruktur (Persero),[32] a state-owned enterprise under the coordination of the Ministry of Finance with a main role as catalyst to support the acceleration of infrastructure development in the country, issued the first green bond in Indonesia. In addition, Indonesia has set up micro banking units of Bank Rakyat Indonesia. The roots of this bank date back to the end of the nineteenth century with the creation of the first cooperative financial institution in Indonesia, which bore the Dutch name for savings bank – 'Spaarbank'. To organize a delivery channel for the subsidized loans, an extensive system of 'village units' was set up.

133. The Bank Pertanian Malaysia[33] was established in 1969 with a focus on agricultural development. Its loan facilities are available to finance the entire value chain of the agriculture sector, from downstream activities, primary production and processing to marketing and distribution. Financing can be arranged through conventional lending or under Islamic financing. Concessionary rates are charged for loans under special government funds to develop priority agriculture subsectors. Other commercial agricultural projects are financed through mobilized funds, and competitive interest rates are offered for such loans.

134. In the Philippines, the People's Survival Fund[34] was created as an annual fund intended for local government units and accredited local or community organizations to implement climate change adaptation projects. It supplements the annual appropriations allocated by relevant government agencies and local government units for climate change related programmes and projects. The Philippine Government programmed at least PHP 1 billion (USD 20 million) annually into the Fund from the national budget. The allocation is augmented by mobilizing funding sources such as counterpart local government units, the private sector and individuals who support adaptation initiatives.

135. The Monetary Authority of Singapore has a USD 2 billion Green Investment Programme through which it invests in public market investment strategies that have a strong green focus. The Authority places funds with asset managers who are committed to deepening green finance activities and capabilities in Singapore and driving regional efforts out of Singapore.

136. The Coalition of Finance Ministers for Climate Action is a group of 52 finance ministers engaged in efforts to address climate change through economic and financial policies according to the Helsinki Principles. Peer learning and knowledge exchange plays a strong part in the Coalition's success. The Helsinki Principles are a set of six aspirational principles that promote national climate action, especially through fiscal policy and the use of public finance. Indonesia and the Philippines are part of the Coalition, and the Philippines chairs one of its working groups.

137. A first step in the work of the Coalition of Finance Ministers for Climate Action to support its members in designing their NDCs was to strengthen the involvement of finance ministries in the preparatory process. It was found that challenges associated with fiscal and financial domestic constraints (such as climate-related disasters and/or pandemics) require coordination, a clear connection with national policy priorities and strong leadership. Furthermore, it was found that:

(a) NDCs developed in close collaboration with ministries of finance are fiscally sound and consider macroeconomic factors and wider financial and private sector implications;

(b) Mainstreaming NDCs in national public financial management systems ensures that economic and fiscal externalities of the climate agenda are factored into growth and development strategies;

(c) Ministries of finance can deploy tools such as public financial management laws and regulations to drive climate actions in a coordinated way, for example, via annual budgeting and macroeconomic forecasts;

(d) Monitoring and evaluation systems can enable an effective and achievable NDC by providing reliable costing and macroeconomic assessments of climate interventions, improving the chances of NDCs being designed as realistic and achievable commitments and thereby attracting greater support.

[32] Available at https://ptsmi.co.id.

[33] Known as Agrobank since 2007.

[34] Available at http://psf.climate.gov.ph.

E. Institutional investor engagement

138. With rapidly growing assets under their management, institutional investors in the ASEAN region have the potential to play a greater role in climate financing if governments provide the right enabling policies and investment products are attractive to markets. The extent of this role will vary considerably in each AMS – some countries already have a well-developed institutional investor base and functioning capital market, whereas others are less well developed in this regard. Lower country credit ratings can be a barrier to investment by international investors, as their mandates do not allow it, while other, more risk-averse, investors may see the alignment of financial policies with climate objectives in the region as an opportunity. A strategy for the region could be to develop a cohesive narrative on climate finance backed up with a clear account of climate-aligned standards, soft instruments and taxation polices (see below) that provide a stable enabling environment for institutional investors. Some potential approaches to attracting investors are listed in table 27.

Table 27
Approaches to attracting institutional investors

Country characteristics	Phase III	Phase II	Phase I
Rating	High-rating (investment grade)	Medium-rating (Lower medium grade or just below investment grade)	Highly speculative grade or not rating
Stock market	Developed and liquid	Emerging	No / Limited market
Bond market	Developed and liquid government and corporate bond markets	Relatively developed government and emerging local currency corporate bond markets	No / Limited government bond market
Possible strategies	Consider securitization to increase the size of infrastructure assets Examine the possibility to develop infrastructure funds / special purpose vehicle listing and use of capital markets for asset recycling Support the development of project bonds through credit enhancement mechanisms where appropriate Review the prudential framework of institutional investors related to investment limits	Strengthen capital market development in particular corporate bond market (notably by improving credit information services and finding ways to increase liquidity) Study collaboration opportunities with development banks regarding local currency issuances Expand investor base and reinforce legal environment	Strengthen government bond market (as a price reference) and investment environment by reinforcing regulatory frameworks and ensuring stable macroeconomic environment Focus on developing an investor base and seek optimal ways to access already developed market in the region Tap institutional investors through direct lending to infrastructure projects

Source: Verougstraete M. 2017. *Tapping Capital Markets & Institutional Investors for Infrastructure Development*. Available at https://www.unescap.org/resources/tapping-capital-markets-and-institutional-investors-infrastructure-development.

F. Climate and Land Use Alliance

139. Given the importance of sustainably managing land in the ASEAN region, nearly all countries have embarked on REDD+ policy design and implementation. Several other initiatives of relevance have emerged, including the Climate and Land Use Alliance, a collaboration of foundations that believe forests and sustainable land use are an essential part of the global response to climate change. The Alliance comprises ClimateWorks, the David and Lucile Packard Foundation, the Ford Foundation, the Gordon and Betty Moore Foundation, the Good Energies Foundation and the Margaret A. Cargill Foundation. The Alliance has both a global and a country focus. It supports policies, practices and partnerships that halt and reverse forest loss, advance sustainable land use and development, and secure the rights and livelihoods of indigenous and forest communities.

G. Small and medium-sized enterprise financing

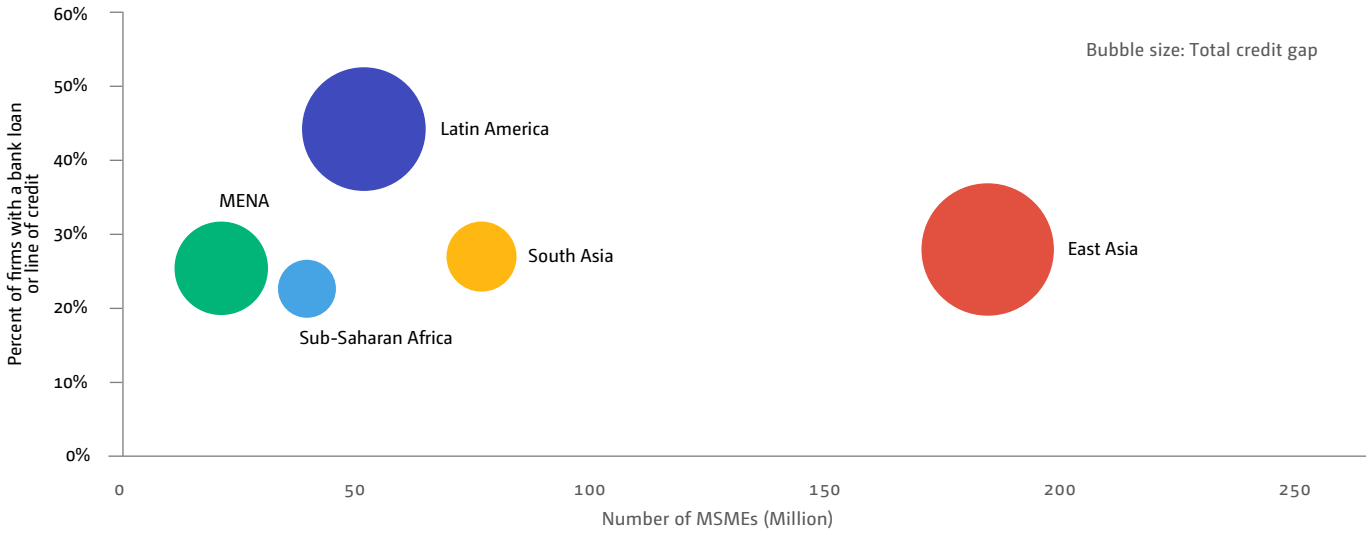
140. Stable access to appropriate funding sources is an important factor for the survival and growth of SMEs. However, most SMEs face poor access to finance in the region`s bank-dominant system, as is evident in figure 14.[35]

141. The diversification of financing modalities beyond conventional bank lending can provide an alternative platform for the financing needs of SMEs and expand their financial access. To develop SMEs capital markets, strategies should be developed to expand the investor base for SMEs and promote market literacy for SMEs and investors. The active SMEs markets also need professionals that support SMEs in capital markets. From the regulatory perspective, a well-established regulatory and supervisory framework – including a mechanism that supports SMEs in preparing disclosure documents and simplified listing procedures – should be a priority for policymakers.

H. Standards, soft instruments and taxation

142. Standards, soft policies and taxes are all potential short-term domestic revenue sources as well as policy tools for shifting markets towards higher climate ambition.[36] AMS are showing increased interest in these policy instruments (see table 28), many of which are being applied in the energy demand, energy supply, industrial and transport sectors. Recognizing the significant additional domestic public resources needed to achieve the SDGs, the Addis Ababa Action Agenda commits to scaling up international tax cooperation.[37]

Figure 14
Financing gap of small and medium-sized enterprises globally



Source: Aras, A. 2017. Small and Medium Enterprises Financing. Available at https://www.unescap.org/resources/small-and-medium-enterprises-financing.

[35] See more information at https://www.unescap.org/resources/small-and-medium-enterprises-financing.
[36] Available at https://www.unescap.org/publications/tax-policy-sustainable-development-asia-and-pacific.
[37] Available at https://www.unescap.org/resources/dp01-asia-pacific-tax-forum-sustainable-development-ap-tfsd-proposal.

Table 28
Advantages and disadvantages of environmental policy instruments

Policy instrument	Advantages	Disadvantages
Standards, e.g. emission standards, technology standards	• Achievement of specific environmental targets relatively certain • Relatively simple to setup • Clarity for business • Experience / best practice widely available • Independent from market conditions	• No dynamic efficiency – few incentives for regulated to improve beyond standard or to innovate • Less efficient than market-based instruments • Monitoring and sanctions for non-compliance • Vulnerable to weak governance • Information asymmetry – standards difficult to define – may be set too low
"Soft" instruments, e.g. voluntary agreements	• If government perceived to be strong, compliance with voluntary measures increases = compliance at low cost • Provide greater flexibility than regulations • Encourage precautionary attitudes in industry and raise environmental awareness • Boost trust between industry and other stakeholders	• Enforcement not possible – so difficult to apply unless aims are in line with business interests • Where costs of compliance are high, agreements tend not to be met • "Free riders" • Evidence of effectiveness e.g. of ISO 14001 is mixed • Difficult to ensure global application
Environmental taxes	• Dynamic incentive to reduce pollution also in the long-term • Cost-effective and efficient, low administrative costs • Revenue-raising potential – important where government revenues are low • Address market failures and distortions • Can have positive social impacts e.g. on employment / poverty reduction	• Can reinforce informal economic activity • Politicised debate can result in low tax rates, numerous exemptions => less efficient and cost-effective • Revenues may fall over time if tax rates are not adjusted • Market distortions may remain e.g. if harmful subsidies are not reformed • Negative social impacts possible due to rising prices ("trade-offs")

Source: Cotrell J, Ludewig D, Runkel M, et al. 2017. Environmental Tax Reform in Asia and the Pacific. Available at https://www.unescap.org/resources/environmental-tax-reform-asia-and-pacific.

143. UNESCAP recommends a differentiated, pragmatic and prudent approach for progressive tax reforms in the Asia-Pacific region. First, countries at different stages of development should follow different strategies. Second, countries need to anchor their policymaking on actual outcomes rather than on theoretical assumptions and should always be prepared to adjust their policies according to local context and realities. Finally, policymakers, and to some extent the general public, need to understand that there is a learning curve of policy design and implementation when it comes to progressive taxation, and therefore they should allow policies to improve and mature over time.

Box 2
Metropolitan area financing in the Asia-Pacific region

The Asia-Pacific region is witnessing the world's fastest urbanization in history. In 2000–2025, 1.1 billion people are projected to migrate to Asian cities and the region is now home to more than half of the megacities worldwide. Providing quality jobs, housing, urban infrastructure and public services for urban migrants and supporting sustainable development of the region's large metropolitan areas is a significant fiscal challenge for many governments. The current approach of revenue mobilization for cities and municipal fiscal reform efforts are unlikely to meet the substantial financing needs. Instead, there is a need for a metropolitan public financing strategy that is integrated into national urban development plans and matches national development objectives. Three elements for a successful metropolitan public finance strategy can be highlighted. First, there is no universal solution, and policy choices should be aligned with local policy objectives. Second, where local fiscal autonomy is deemed important, local governments should be provided with adequate space for revenue mobilization. However, at the same time, they should be constrained from accessing intergovernmental transfer and special subsidy regimes. Third, higher level governments might consider establishing a commission to study the feasibility of a special regime for metropolitan area finances.

Source: Bahl R. 2017. Metropolitan City Finances in Asia and the Pacific Region Issues, Problems and Reform Options. Available at https://www.unescap.org/resources/metropolitan-city-finances-asia-and-pacific-region-issues-problems-and-reform-options.

144. Soft instruments voluntary initiatives to attract or classify private sector finance provided and/or investments made in climate or related action, standards that define what is climate-aligned or -related action are needed. The lack of an international level definition has resulted in myriad regional and pro-private sector voluntary initiatives. Some initiatives relevant to the ASEAN region that could be integrated and consolidated into the region's efforts to mobilize and align finance for climate action are as follows:

(a) Common Principles for Climate Mitigation Finance Tracking:[38] the purpose of these principles is to set out an agreed means of tracking climate change finance. The principles have been developed by members of the International Development Finance Club with the intention of being shared with other institutions that are looking for common approaches for tracking and reporting;

(b) Task Force on Climate-related Financial Disclosures:[39] established to develop voluntary, consistent climate-related financial risk disclosures for use by companies in providing information to investors, lenders, insurers and other stakeholders. The Task Force has considered the physical, liability and transition risks associated with climate change and what constitutes effective financial disclosures across industries;

(c) Network for Greening the Financial System:[40] contributes to the development of environment and climate risk management in the financial sector and seeks to promote finance to support sustainable development;

(d) Sustainable Banking Network:[41] a unique voluntary community of financial sector regulatory agencies and banking associations from emerging markets committed to advancing sustainable finance in line with international good practice. The 38 member States of the Network represent USD 43 trillion (85%) of the total banking assets in emerging markets. Network members are committed to moving their financial sectors towards sustainability, with the twin goals of improved environmental, social and governance risk management (including disclosure of climate risks) and increased capital flows to activities with positive climate impact;

(e) Asia-Pacific Rural and Agricultural Credit Association:[42] an organization for rural and agricultural finance that helps promote productivity, inclusive growth, self-reliance and welfare of the rural poor in the Asia-Pacific region. Its mission is to promote the efficiency and effectiveness of rural finance and improve access to financial services through a network of knowledge-sharing and learning, capacity-building, research and exchange of expertise. All AMS except Brunei Darussalam are members of the Association.

[38] For more information see https://www.eib.org/attachments/documents/mdb_idfc_adaptation_common_principles_en.pdf.

[39] For more information see https://www.fsb-tcfd.org/.

[40] For more information see https://www.ngfs.net/en.

[41] Available at https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/company-resources/sustainable-finance/sbn.

[42] Available at https://www.apraca.org.

145. Depending on the economic, social and environmental objectives ASEAN wishes to achieve, an approach to deciding on the right policy options for the region could be as follows:

(a) If the risk, for example to human health, of a pollutant is great, then the corresponding measure should keep risk to a minimum;

(b) If a certain level quantity of emissions is required, a cap-and-trade system or regulation can ensure that the target is met (but price volatility for emission allowances is a substantial risk);

(c) If creating a dynamic incentive for change is required, a tax might be appropriate (but cannot guarantee specific emission reductions).

I. Carbon markets and carbon pricing

146. Carbon markets put a price on GHG emissions and are typically defined as credits for emission reductions that can be sold for cash, cancelled or traded within a region. Examples are the Korean emissions trading scheme, the European Union Emissions Trading Scheme, and international cap-and-trade or compliance programmes. All countries partaking in carbon markets typically require an apparatus to track and record units for trust purposes. These tools are known as national or regional carbon unit registries.

147. A credit for an emission reduction, usually representing 1 t CO2 eq, is a unit issued from a specific emission reduction activity from a project or programme. It is part of an achievement corresponding to the difference between the emissions that occurred and those that would have occurred in the absence of the project. A well-known form of credits from emission reductions are certified emission reductions from clean development mechanism projects.

148. A mechanism like the clean development mechanism offers project development entities financial resources obtained through the sale of units that represent the results of GHG mitigation actions certified through the mechanism to those interested in acquiring the units. There will be many buyers of these units, as the units can help these buyers demonstrate compliance with obligations imposed by their governments arising from mitigation commitments they have as Parties to international agreements.

149. Most AMS can design strategies to fulfil the unconditional and conditional mitigation commitments expressed in their NDCs. The realization of NDCs will include the participation of public and private entities in those jurisdictions as a result of the public policies put into practice by governments. These entities can carry out GHG mitigation actions (investments) within the framework of the regulations and obligations imposed by those policies. Undoubtedly, the existence of a mechanism these entities may access can be part of the strategy for facilitating compliance with obligations countries have imposed for achieving their NDCs.

150. Globally, there are 61 initiatives implemented or scheduled for implementation, covering 46 national and 32 subnational jurisdictions and 22% of global emissions, and USD 45 billion of carbon pricing revenues have been raised.[43]

151. The AWGCC has started investigating the potential and feasibility of an ASEAN regional carbon market for interested AMS, in cooperation with Japan's Overseas Environmental Cooperation Center through its Partnership to Strengthen Transparency for Co-Innovation project under the CI-ACA[44] project implemented by UNFCCC RCCs. In the region, the project currently supports the consideration of a potential regional carbon market while the World Bank Partnership for Market Readiness supports, Indonesia, the Philippines, Thailand and Viet Nam consider carbon pricing at the domestic level. The following potential for the region has been identified:

(a) A regional carbon market provides flexibility and lower cost of mitigation and allows sharing of some large-scale infrastructure costs;

(b) A large regional carbon market ensures more liquidity, robustness and attractiveness of the market;

(c) AMS prefer an emissions trading scheme over carbon taxation;

(d) A regional carbon market could be aligned with cooperative approaches, as foreseen in Article 6 of the Paris Agreement.

152. Almost all AMS are already engaged in setting up carbon markets and carbon pricing in several ways, as detailed in table 29, supported by, *inter alia*, the World Bank Partnership on Market Implementation, the CI-ACA project, the International Climate Action Partnership, GIZ and ADB. The questions are, then, what can be done across these efforts at the regional level to assist national efforts or create regional markets, and how can carbon markets help to finance climate action, with or without the need for corresponding adjustments to national inventories?

[43] Available at https://www.apraca.org.

[44] Available at http://documents.worldbank.org/curated/en/191801559846379845/pdf/State-and-Trends-of-Carbon-Pricing-2019.pdf.

Table 29
Carbon pricing experience in the ASEAN region

	Experience with carbon pricing
Brunei Darussalam	Brunei Darussalam intends to introduce carbon pricing applicable to all industrial sector facilities and new power utilities emitting beyond a carbon emission limit threshold at a carbon price per CO2 eq by 2025.[a]
Indonesia	In 2018–2019, Indonesia assessed the various key economic instruments for implementing its NDC and chose an emissions trading scheme. Since then, the country is advancing fast towards concrete elements for its roll-out. Indonesia is advancing towards the establishment of a measurement, reporting and verification system as the basis for its intended emissions trading scheme and is elaborating detailed road maps for its implementation,
Philippines	The Philippines is considering implementing a domestic carbon pricing instrument, with the support of the World Bank Partnership for Market Readiness. Statements by ministries indicate that a carbon tax will not be the instrument pursued.
Singapore	Singapore implemented its carbon tax from January 2019. The carbon tax rate is set at SGD 5/t CO2 eq (USD 4/t CO2 eq) for 2019–2023 as a transition period for companies to put in place measures to improve their carbon efficiency. Singapore will review the carbon tax rate by 2023, with the intention to increase the rate to SGD 10–15/t CO2 eq (USD 8–11/t CO2 eq) by 2030. The carbon tax applies to all facilities with annual GHG emissions of at least 25 kt CO2 eq. This covers around 80% of national GHG emissions. The carbon tax revenue will be used to support other initiatives to address climate change such as incentives for energy efficiency improvements for the industrial sector.
Thailand	Thailand is currently operating a system of energy efficiency certificates for large emitters on a voluntary basis.
Viet Nam	Viet Nam is analysing options for carbon pricing approaches applicable to the county and developing pilot crediting programmes for the steel and waste sectors, which could start after 2020. A decree on a road map for GHG emission reduction is planned for approval in 2019, which references the use of carbon credits and a carbon policy initiative.

Source: Communications submitted as part of the UNFCCC process.

[a] The CI-ACA project, announced at COP 22, assists Parties in developing carbon pricing instruments for implementing their NDC under the Paris Agreement and fostering cooperative climate action with other jurisdictions. They build on existing NDC support projects, promote awareness of carbon pricing and explore possibilities of joining carbon markets. CI-ACA projects are implemented with the assistance of the relevant RCC.

153. Results-based finance is a viable option to derive new and additional climate finance. Pay-for-results financing (also known as payment by results, results-based financing or cash-on-delivery aid) has advantages for some AMS. Under this instrument, development banks or donors via financial organizations make full payment for achievement of all outcomes, partial payment for achievement of some outcomes, or provide a mix of cost- and performance-based reimbursement (incentive payments). The World Bank, the Department for International Development of the United Kingdom, the Swedish International Development Agency, the Millennium Challenge Corporation and impact investors have experimented with this approach. Pay-for-results financing can be implemented through contracts, grants, prizes, bonds, advance market commitments, or conditional cash transfers and social impact bonds. Performance-based contracts or grants offer specified payments for predetermined results.

154. Work on carbon markets and carbon pricing and result-based finance in the South-east Asian region could be furthered supported by (i) developing and advancing market-based climate policy instruments in close collaboration with partners; (ii) supporting and providing public decision makers with policy advice on carbon market instruments and approaches; and (iii) supporting the private sector technically through capacity-building to increase its market readiness and promoting regional cooperation on carbon markets and climate finance in the region. Finally, a regional registry for all units from cooperative mechanisms could be administered at the regional or sub regional level.

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