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The background of the cover features a green-tinted image of a globe with a white grid. In the foreground, several white paper cutouts of human figures are standing on a field of green grass, holding hands in a circle. The globe is positioned behind the figures, and the overall scene is bathed in a soft green light.

# Greening the Road Ahead: Building a Collective ASEAN Climate Community

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# Executive Summary

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The global community is committing to taking action against climate change and expectations are rising for the Association of Southeast Asian Nations (ASEAN). While not strongly opposing the issue, like many in the developing world, the members of ASEAN have not been early and strong proponents. There is now however emerging consensus to raise climate change high on the agenda. Many more of the ASEAN governments realise that climate change presents an urgent and existential threat – one that can undermine prospects for economic growth and impact the security and lives of communities and citizens.

At the end of 2021, the United Nations Climate Change Conference (COP26) was held in Glasgow, with ASEAN presenting a full Joint Statement on Climate Change. This represents how the issue has now been identified as a regional priority. More commitment and action will be expected. To date, individual ASEAN countries have put in place climate change adaptation and mitigation measures, both as national plans and as Nationally Determined Contributions (NDCs) under the Paris Agreement on Climate Change. These are however only the initial steps needed and current policies remain to be fully aligned with Paris Agreement goals. This is especially when ASEAN as a group is expected to recover from the economic impacts of the COVID-19 pandemic and resume growth, with the potential to be the fourth largest economy in the world.

There is reason to expect, going forward, that each ASEAN member will do more on climate change for itself and for the global goals, and will encounter both risks and opportunities in undertaking those actions. What then must be done at the regional level for ASEAN as a whole?

This report published by the Singapore Institute of International Affairs (SIIA) attempts to answer that question. We provide a case for increased cooperation among the ASEAN member states, and encourage them to synergise efforts and collectively work towards building a “climate community” to advance action. While member states are at different levels of development and have different national priorities, each country has unique capabilities and contributes to climate efforts for the region. Climate change will require stepping up efforts to drastically reduce emissions as well as to adapt to what changes are already emerging. It will be key to capitalise on the strengths of individual countries to accelerate the transition to a world that is safer from climate change, and an economy less dependent on carbon. The report will also consider the prospect that climate change can trigger a broader transformation that can generate widespread economic opportunities and promote sustainable economic growth throughout the region.

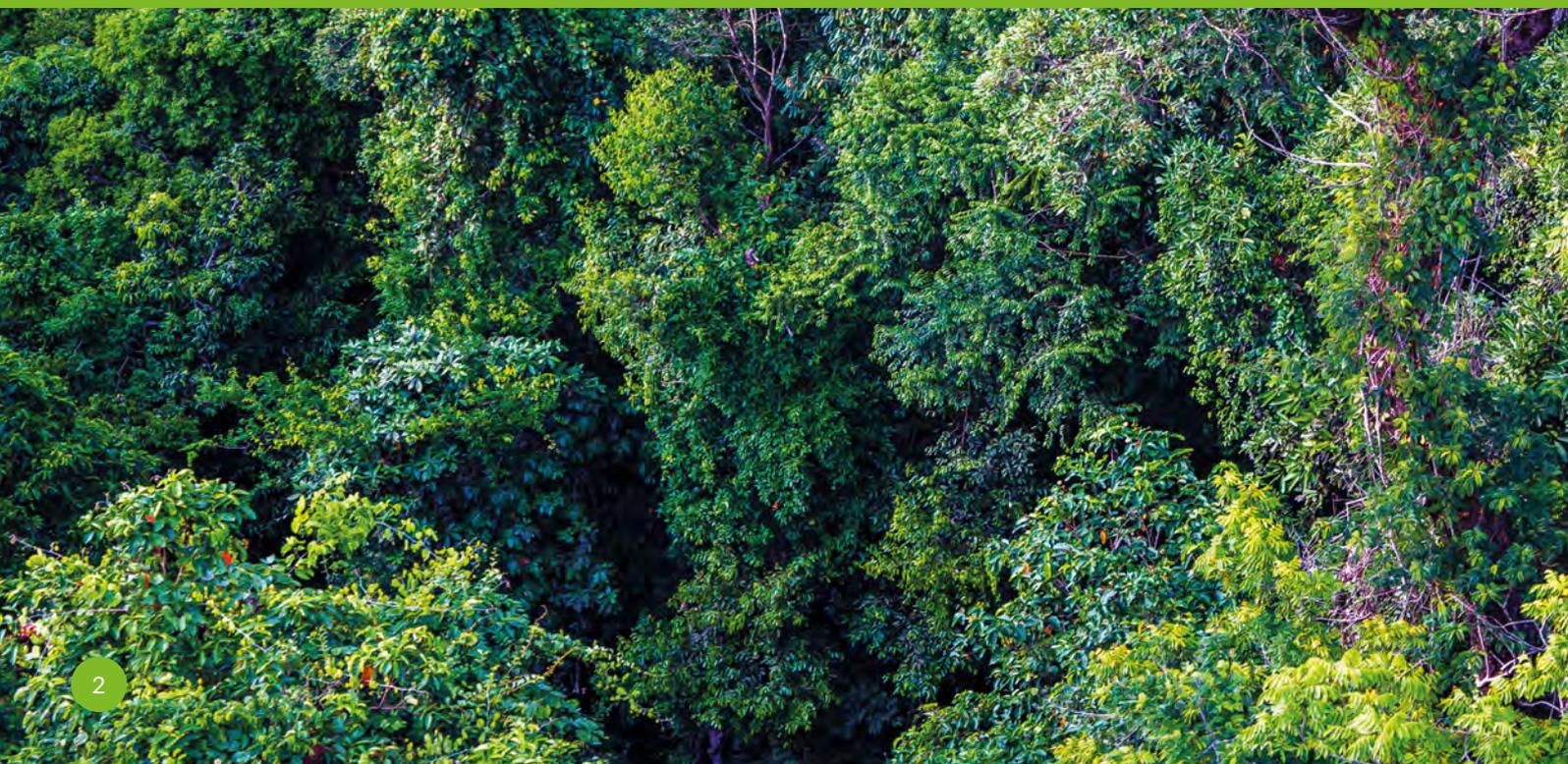
In the first part of this report, we provide a survey overview of the current state of ASEAN efforts on climate action. Several ASEAN-wide climate efforts are highlighted. A summary follows of the climate goals and actions from each ASEAN country’s nationally determined contributions (NDCs) and national initiatives. This includes identifying key sectors prioritised for decarbonisation in each country, as well as green finance and carbon market initiatives. The energy and agriculture sectors feature strongly in several national plans, while a number of countries such as Indonesia, Malaysia, Singapore, and Thailand have taken steps to green their financial sectors. We find that, while a start has been made, there is considerable room for these efforts not only to speed up but also to be better coordinated to benefit from economies of scale in bearing costs and reaping benefits.

The report’s second part will analyse the implications of major moving parts that will influence climate action in the region. These especially include the need for carbon pricing and growing international attention on carbon border adjustments. The report recommends that to maintain resilience in an increasingly carbon-constrained world and remain a vital part of global value chains, ASEAN countries should seek to align their efforts on pricing carbon. This would start with establishing carbon pricing in all countries, progress towards linking or coordinating carbon pricing schemes, and eventually work towards a regional carbon price.

Noting that government policy should work in tandem with private sector participation, the following section of this report surveys carbon markets. These are growing rapidly and can develop a key role in the region. In particular, the report examines the growth of the voluntary carbon market, which has seen robust private sector participation in recent years. While recognising the positive prospects, the report also highlights a triple challenge in pricing issues, varied accounting and verification methodologies, and gaps in policy that have held back the growth of such markets. To scale up carbon trading in Southeast Asia, we recommend establishing cross-border capacity building efforts that can leverage Singapore's plans to grow as a carbon services hub, aligning rules and standards to ensure the integrity of carbon credits, and bilateral arrangements to facilitate carbon trading. Much also depends on rules and agreements at the global level. We discuss how regional efforts will need to align with the goals set out by the Paris Agreement as well as the rules for cross-border carbon trading. The latter have only just been established at COP26 through Article 6 of the Paris Agreement and it remains to be seen how they will operate moving forward.

The penultimate section of the report emphasises the importance and the potential of nature-based solutions (NBS) as a viable means of emissions reductions in ASEAN. There is considerable opportunity for this, especially in Indonesia and countries with larger land areas with conservation and restoration potential. But real challenges lie ahead in developing NBS as a major and market-ready source for carbon credits. These, we find, include issues that relate to the licensing of these lands, the assurance of meeting international standards for additionality, permanence, and leakage, and whether these NBS and their underlying schemes to reduce emissions and conserve ecosystems can effectively secure the acceptance, support and active involvement of local communities on the ground. To be able to scale up NBS to meet Paris Agreement targets, the authors recommend leveraging blended finance to de-risk project development, the creation of a "carbon club" to strengthen demand, and to coordinate research and innovation solutions on the ground.

While the Paris Agreement was greeted as a success in 2015, the global community has since come to recognise how much needs to be done, and how urgently action is needed. The agreement reached at COP26 may be regarded as imperfect. There are nevertheless good points, not least the clear signal of the global willingness to keep warming under 1.5 degrees Celsius. Commitments to avoid deforestation were another major achievement. Working from COP26, a foundation for future progress can be found. ASEAN, now determined to re-open and recover economic growth, must also take on another challenge: to ensure that its recovery and future strong growth will be in tandem with action on climate and a transformation towards sustainability. Establishing an ASEAN Climate Community, as the authors of the report recommend, can be a key step that leverages the individual capabilities of each country and promotes exchange and collaboration, to drive regional efforts and raise collective ambition.



## Introduction

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The current decade has been referred to as the “decisive decade” and will be critical to avoid the worst consequences of climate change. Across the world, effects of climate change can already be observed, such as an increased frequency and intensity of droughts and floods, and the shrinking of glaciers. As the world grappled with the effects of the COVID-19 pandemic, valuable financial resources had to be diverted from mitigating environmental risks towards managing the pandemic. Considering this, it is now paramount to redouble efforts towards climate change mitigation and adaptation. The COP26 climate meeting has renewed hope by bringing together world leaders from across the globe, shining a spotlight on the climate crisis, and serving as a catalyst for governments, businesses, and individuals to take concrete climate action.

Currently, countries around the world are committing to enhanced Nationally Determined Contributions (NDCs) and Long-Term Low-Emissions Development Strategy (LEDS) pledges under the Paris Agreement, in conjunction with a global stocktake of efforts to limit global warming. The European Union (EU), key Asian economies of China, Japan and Korea, as well as large ASEAN economies such as Indonesia and Malaysia have announced net-zero commitments. The Biden administration also brought the United States back into the Paris Agreement with renewed commitments to global leadership.

ASEAN should seize the opportunity to contribute towards the growing trend of Asian climate leadership, seeking opportunities to cooperate within the grouping. Climate change is one of the greatest threats to achieving long-term regional stability in Southeast Asia. The region’s heavy dependence on agriculture and forestry for livelihoods, coupled with a concentration of the population and economic activity along coastlines, makes it vulnerable to climate change impacts such as floods, droughts, and sea level rise. By 2050, up to US\$4.7 trillion of gross domestic product in Asia will be at risk every year from climate change, with the poorest countries hardest hit.<sup>1</sup> With economic growth, and projections for ASEAN to emerge as the world’s fourth largest economy, expectations for ASEAN will also rise.

The fight against climate change is well-suited to a collaborative approach. It requires an extensive range of knowledge that spans across industries, the need to bring together multiple stakeholders to scale up efforts, and long timeframes to see results. To mitigate the climate crisis, both the public and private sectors worldwide need to scale up the decarbonisation push. Global warming is already expected to hit 1.5 degrees Celsius between 2030 and 2052, despite current efforts.<sup>2</sup> Drastic and immediate actions are needed to slash current emission levels of greenhouse gases (GHG).

Working together, ASEAN member states can mutually support each other’s efforts to meet their NDC and LEDS commitments, address risks and secure opportunities. A collaborative approach will also help strengthen ASEAN’s collective voice in global climate negotiations, and build a globally competitive and resilient region.



# Part 1: Where We Are – ASEAN, Climate Change and Sustainable Development

## 1.1 ASEAN-wide Efforts to Address Climate Change

The rate of climate change has been accelerated by urbanisation and rapid economic growth, and it is projected that ASEAN member states will experience an outsized impact. Recognising the benefits of collaboration, steps have been taken to tackle climate change as a region, such as through the development of ASEAN-wide action plans. However, these initiatives mostly exist independently of each other and are not always coordinated with national strategies. Moving forward, more bilateral or multilateral efforts can be used to promote mutual cooperation and understanding within ASEAN, and harmonise existing initiatives. Table 1 and the following section outline existing ASEAN-wide initiatives.

**Table 1: ASEAN regional cooperation on climate change**

Climate Change Adaptation Measures	Climate Change Mitigation Measures
<ul style="list-style-type: none"> <li>• ASEAN Socio-Cultural Community (ASCC) Blueprint 2025</li> <li>• ASEAN Community Vision 2025</li> <li>• ASEAN Comprehensive Recovery Framework (ACRF)</li> <li>• AWGCC Action Plan (Action Plan on Joint Response to Climate Change)</li> <li>• AADMR Work Programme (related to climate resilience)</li> <li>• ASEAN Tourism Strategic Plan 2016–2025</li> <li>• Vision and Strategic Plan For ASEAN Cooperation In Food, Agriculture, and Forestry (2016–2025)</li> <li>• ASEAN Guidelines on Promotion of Climate Smart Agriculture Practices</li> <li>• ASEAN Climate Resilience Network (ASEAN-CRN)</li> <li>• ASEAN Climate Outlook Forum</li> <li>• ASEAN Strategic Plan of Action on Water Resources Management</li> <li>• ASEAN Multi-Sectoral Framework on Climate Change (AFCC) and Food Security (AFCC-FS)</li> </ul>	<ul style="list-style-type: none"> <li>• ASEAN Socio-Cultural Community (ASCC) Blueprint 2025</li> <li>• ASEAN Community Vision 2025</li> <li>• Series of ASEAN Joint Statements on Climate Change since 2007 for each Conference of Parties</li> <li>• ASEAN Action Plan on Joint Response to Climate Change (AAP-JRCC)</li> <li>• AWGCC Action Plan</li> <li>• ASEAN Tourism Strategic Plan 2016–2025</li> <li>• Vision and Strategic Plan for ASEAN Cooperation In Food, Agriculture, and Forestry (2016–2025)</li> <li>• ASEAN Plan of Action for Energy Cooperation (APAEC) 2016–2025</li> <li>• Sub-Sector Networks in the energy sector comprising Energy Efficiency and Conservation, Renewable Energy, Regional Energy Policy and Planning, and Nuclear Energy Cooperation</li> <li>• ASEAN Collaborative Network on MRV (“South East Asia MRV Hub”)</li> <li>• ASEAN Guidelines on Promotion of Climate Smart Agriculture Practices</li> <li>• ASEAN Climate Outlook Forum</li> <li>• ASEAN Initiative on clean air, health and climate change</li> <li>• ASEAN Agreement on Transboundary Haze Pollution (AATHP)</li> <li>• Southeast Asia (ASEAN) MRV Network</li> </ul>

Source: ASEAN State of Climate Change Report<sup>3</sup>

## ASEAN Joint Statement on Climate Change

An ASEAN Joint Statement on Climate Change was issued at COP26 in November 2021, and is ASEAN's official declaration on climate change. The statement is a substantive improvement from a previous Joint Statement issued in 2019. It reaffirms ASEAN's commitment to the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement, and rallies other parties of the UNFCCC to strengthen and accelerate their plans for climate action.<sup>4</sup> However, besides identifying a few areas such as sustainable forest management, energy efficiency and cross-ASEAN cooperation where efforts should be stepped up, the statement is still relatively scarce on specifics. The Joint Statement also emphasises the role of developed country Parties in taking the lead and fulfilling their commitments to support mitigation and adaptation measures in developing countries, including ASEAN member states.

## ASEAN Centre for Energy (ACE)

ACE is an intergovernmental organisation within ASEAN established in 1999 to catalyse economic growth and integration in ASEAN, through facilitation of multilateral collaborations. It aims to provide relevant information and expertise to ensure harmonisation between energy policies and programmes for sustainable economic growth, in order to accelerate the integration of energy strategies in ASEAN.<sup>5</sup>

## ASEAN Plan of Action for Energy Cooperation (APAEC)

The APAEC, overseen by the ACE, ASEAN Secretariat, and Regional Energy Policy and Planning Sub-sector Network (REPP-SSN), is the blueprint for energy cooperation in ASEAN to enhance regional integration towards a sustainable future. The first APAEC was a 5-year action plan adopted in 1999. The current action plan in place is Phase II of the 2016 - 2025 APAEC, and it sets targets and initiatives to advance energy security and sustainability for the period of 2021-2025.<sup>6</sup> The current APAEC retains the theme of "Enhancing Energy Connectivity and Market Integration in ASEAN to Achieve Energy Security, Accessibility, Affordability and Sustainability for All".

There are 7 programme areas under APAEC Phase II, each with a corresponding key strategy:

Programme Area	Key Strategy
ASEAN Power Grid	To expand regional multilateral electricity trading, strengthen grid resilience and modernisation, and promote clean and renewable energy integration.
Trans-ASEAN Gas Pipeline	To pursue the development of a common gas market for ASEAN by enhancing gas and liquefied natural gas (LNG) connectivity and accessibility.
Coal and Clean Coal Technology	To optimise the role of clean coal technology in facilitating the transition towards sustainable and lower emission development.
Energy Efficiency and Conservation	To reduce energy intensity by 32 per cent in 2025 based on 2005 levels and encourage further energy efficiency and conservation efforts, especially in transport and industry sectors.
Renewable Energy	To achieve aspirational target for increasing the component of renewable energy to 23 per cent by 2025 in the ASEAN energy mix, including through increasing the share of renewables in installed power capacity to 35 per cent by 2025.
Regional Energy Policy and Planning	To advance energy policy and planning to accelerate the region's energy transition and resilience.
Civilian Nuclear Energy	To build human resource capabilities on nuclear science and technology for power generation.

Source: APAEC Phase II: 2021 - 2025<sup>7</sup>

## ASEAN Catalytic Green Finance Facility (ACGF)

To support ASEAN's climate change and environment sustainability goals, the ACGF was launched in 2019 to advance the development of green infrastructure projects in Southeast Asia by providing access to more than US\$1.4 billion in loans as well as technical assistance. This helps to de-risk the financing of green infrastructure projects.

Qualifying green infrastructure projects fall into the categories of promoting renewable energy, energy efficiency, sustainable transport, water supply and sanitation, waste management, and climate resilient agriculture. To be eligible, projects must demonstrate a clear contribution to climate change mitigation and environmental targets, potential to improve bankability, and potential to catalyse further private, commercial, and institutional capital.<sup>8</sup> The ACGF is administered by the Asian Development Bank (ADB), with loans offered by the facility provided by the ASEAN Infrastructure Fund (AIF), ADB, and co-financing partners determined on a project-by-project basis.<sup>9</sup>

## ASEAN Taxonomy Board for Sustainable Finance (ATB)

The ATB was established in March 2021 to “develop, maintain, and promote a multi-tiered taxonomy that will take into account ASEAN's needs, as well as international aspirations and goals”. This will be done through identifying sustainable economic activities and directing investments towards those projects. The ATB aims to promote inclusiveness and will complement the sustainability initiatives of individual ASEAN member states, coordinate national taxonomies that are already in place, and serve as ASEAN's common language for sustainable finance.<sup>10</sup> In November 2021, the ATB released the ASEAN Taxonomy for Sustainable Finance – Version 1 in conjunction with COP26. This provides a framework for stakeholders to cooperate on the development of the ASEAN Taxonomy, and serves as a guidance for capital and funding towards activities that promote systemic and sustainable development of the region.

### 1.2 ASEAN Countries' Climate Efforts

Table 2 provides an overview of ASEAN countries' climate goals and actions, including the NDCs of ASEAN countries and the key sectors prioritised for decarbonisation. As the transition to a greener economy requires support from the financial sector, initiatives to develop green finance and the carbon markets are also outlined.



**Table 2: ASEAN countries' climate goals and actions (In order of CO<sub>2</sub> emissions per capita)**

Country, CO <sub>2</sub> Emissions in 2018 <sup>11</sup> and CO <sub>2</sub> Emissions per Capita in 2018 <sup>12</sup>	Emissions Goals	Key Sectors Prioritised for Decarbonisation	Green Finance and Carbon Pricing Initiatives
<b>Brunei</b> CO <sub>2</sub> emissions in 2018: 7,140 kt CO <sub>2</sub> emissions per capita in 2018: 16.6 t	Reduce GHG emissions by 20% relative to business as usual (BAU) levels by 2030.	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Industrial Processes and Product Use</li> <li>• Agriculture</li> <li>• Forestry and Other Land Use</li> <li>• Waste</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon pricing to be established</li> <li>• No government initiatives in green finance or carbon markets</li> </ul>
<b>Singapore</b> CO <sub>2</sub> emissions in 2018: 47,360 kt CO <sub>2</sub> emissions per capita in 2018: 8.4 t	Peak emissions at 65 MtCO <sub>2</sub> e around 2030.  Note: Based on current projections, this will allow Singapore to achieve a 36% reduction in Emissions Intensity from 2005 levels by 2030. <sup>13</sup>	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Industrial Processes and Product Use</li> <li>• Agriculture</li> <li>• Land Use, Land-Use Change and Forestry</li> <li>• Waste</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon tax implemented</li> <li>• Green Finance Action Plan (2019)</li> <li>• Climate Impact X (2021)</li> </ul>
<b>Malaysia</b> CO <sub>2</sub> emissions in 2018: 239,620 kt CO <sub>2</sub> emissions per capita in 2018: 7.6 t	Reduce economy-wide carbon intensity by 45% in 2030 compared to 2005 levels (unconditional).	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Industrial Processes and Product Use</li> <li>• Waste</li> <li>• Agriculture</li> <li>• Land Use, Land-Use Change and Forestry</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon pricing to be established</li> <li>• Sustainable and Responsible Investment (SRI) Sukuk Framework (2014)</li> <li>• SRI Roadmap (2019)</li> <li>• Malaysia Sustainable Finance Initiative (2020)</li> </ul>
<b>Thailand</b> CO <sub>2</sub> emissions in 2018: 257,860 kt CO <sub>2</sub> emissions per capita in 2018: 3.7 t	Reduce GHG emissions by 20% from projected BAU level by 2030. Could increase to 25% (conditional).	<ul style="list-style-type: none"> <li>• Economy-wide (excluding land use, land-use change, and forestry)</li> </ul>	<ul style="list-style-type: none"> <li>• Voluntary ETS under piloting</li> <li>• Sustainable Financing Framework (2020)</li> </ul>
<b>Laos</b> CO <sub>2</sub> emissions in 2018: 18,790 kt CO <sub>2</sub> emissions per capita in 2018: 2.7 t	Reduce GHG emissions by 60% compared to baseline scenario (unconditional), unspecified conditional reduction target.	<ul style="list-style-type: none"> <li>• Land Use, Land-Use Change and Forestry</li> <li>• Energy</li> <li>• Agriculture</li> <li>• Waste</li> </ul>	<ul style="list-style-type: none"> <li>• Under World Bank's Forest Carbon Partnership Facility, World Bank will make payments to Laos for verified reductions</li> </ul>
<b>Vietnam</b> CO <sub>2</sub> emissions in 2018: 257,860 kt CO <sub>2</sub> emissions per capita in 2018: 2.7 t	Domestically reduce emissions by 9% compared to BAU scenario by 2030, and up to 27% with international support. <sup>14</sup>	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Agriculture</li> <li>• Land Use, Land-Use Change and Forestry</li> <li>• Waste</li> <li>• Industrial Processes</li> </ul>	<ul style="list-style-type: none"> <li>• ETS to be established</li> <li>• Law on Environmental Protection (2020)<sup>15</sup></li> <li>• Existing carbon market linkages such as Gold Standard-certified Vietnam Biogas Project</li> </ul>
<b>Indonesia</b> CO <sub>2</sub> emissions in 2018: 583,110 kt CO <sub>2</sub> emissions per capita in 2018: 2.2 t	Reduce emissions from 2020-2030 by 29% (unconditional) up to 41% (conditional upon international assistance) against 2030 BAU scenario. <sup>16</sup>	<ul style="list-style-type: none"> <li>• Energy</li> <li>• Waste</li> <li>• Industrial Processes and Product Use</li> <li>• Agriculture</li> <li>• Forestry and Other Land Uses</li> </ul>	<ul style="list-style-type: none"> <li>• Carbon pricing and trading regulations passed</li> <li>• Sustainable Finance Roadmap (2014)</li> <li>• Green Bond and Green Sukuk Framework (2018)</li> <li>• Carbon Market trial (2021)</li> </ul>
<b>Philippines</b> CO <sub>2</sub> emissions in 2018: 142,240 kt CO <sub>2</sub> emissions per capita in 2018: 1.3 t	Reduce GHG emissions by 75%, of which 3% is unconditional and 72% conditional.	<ul style="list-style-type: none"> <li>• Agriculture</li> <li>• Waste</li> <li>• Industry</li> <li>• Transport</li> <li>• Energy</li> </ul>	<ul style="list-style-type: none"> <li>• ETS under consideration</li> <li>• Green Financing Program by Development Bank of the Philippines</li> </ul>
<b>Cambodia</b> CO <sub>2</sub> emissions in 2018: 11,160 kt CO <sub>2</sub> emissions per capita in 2018: 0.7 t	Reduce emissions by an estimated 42% compared to BAU scenario by 2030.	<ul style="list-style-type: none"> <li>• Forestry and other Land Use</li> <li>• Energy</li> <li>• Agriculture</li> <li>• Industry</li> <li>• Waste</li> </ul>	<ul style="list-style-type: none"> <li>• Cambodian Sustainable Finance Principles Implementation Guidelines (2019)</li> <li>• Existing projects with voluntary carbon market linkages</li> </ul>
<b>Myanmar</b> CO <sub>2</sub> emissions in 2018: 32,520 kt CO <sub>2</sub> emissions per capita in 2018: 0.6 t	Myanmar is a net GHG sink so commitments are focused on climate change mitigation. This includes conserving energy and forests and striving for sustainable transportation.	<ul style="list-style-type: none"> <li>• Forestry</li> <li>• Energy</li> <li>• Transportation</li> </ul>	<ul style="list-style-type: none"> <li>• No government initiatives in green finance or carbon markets</li> </ul>

Source: SIIA research

## Key ASEAN Players

The following section expands on the climate priorities of selected ASEAN countries. The SIIA has identified key players taking into consideration the countries' emissions levels, economic growth trajectory, as well as climate action. We begin with Indonesia, given that it is the largest economy of the region and also the largest emitter of carbon. This is followed by Malaysia and Thailand as two major economies approaching middle-income status, and then Vietnam which is on a promising economic growth trajectory that is yet to be matched by decisive climate action. The final country highlighted is Singapore. Despite its small emissions contribution, the country has key levers of finance, trade and business to influence climate action both within and beyond its shores.

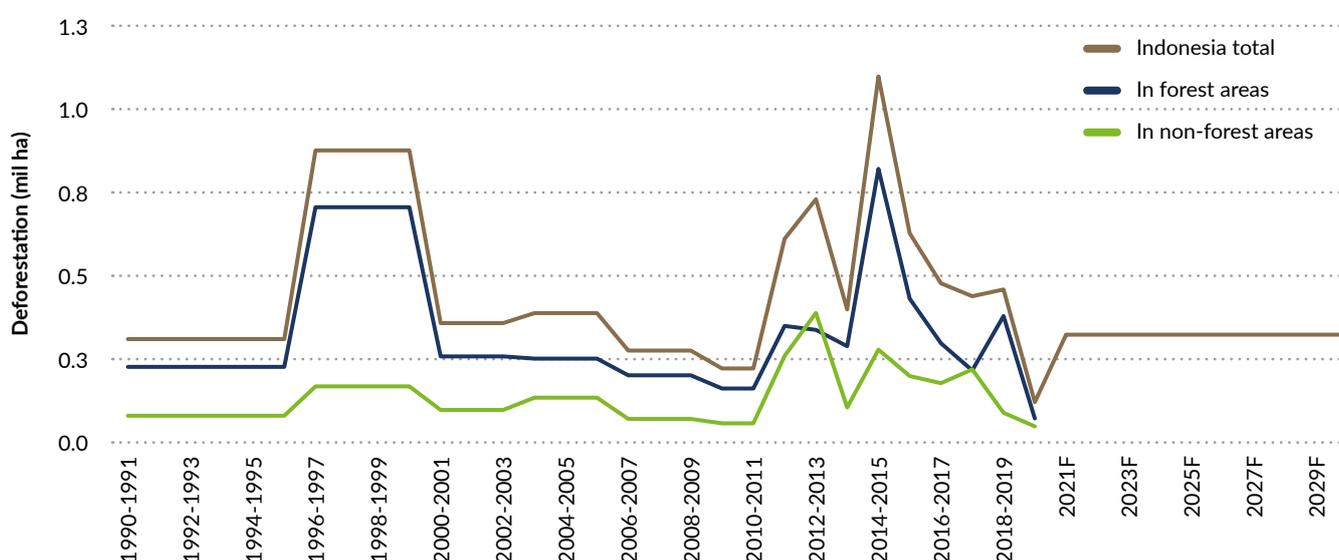
### Indonesia

Indonesia's climate action has been assessed as insufficient to meet Paris Agreement goals. In a recently published G20 Countries' Climate Policy Report Card, Indonesia is the only G20 country to have received a "Red" rating across all assessment areas including NDCs, net-zero targets, climate policies, disclosure policies, and the proportion of COVID-19 spending that is "green".<sup>17</sup> The country's emissions continue to rise and remain on an upwards trajectory. An "Omnibus Law" on job creation passed in 2020 drew widespread criticism for loosening environmental restrictions.

Instead of supporting plans towards a low-emissions pathway, recent developments in Indonesia, such as additional fossil fuel support, suggest that the country is doing the opposite.<sup>18</sup> Indonesia is currently the world's leading exporter of thermal coal, and coal constitutes 60 per cent of its energy mix. That said, it was announced during COP26 that coal-fired power plants could be phased out by 2040 should Indonesia receive sufficient international financial support.<sup>19</sup>

Indonesia has long been criticised for a poor record on deforestation, driven in part by agribusiness sectors such as palm oil, a major export for the country. Indonesia is the world's largest producer and exporter of palm oil, contributing 60 per cent of global palm oil production in 2020.<sup>20</sup> However, as carbon rich peatland forests are drained for palm oil plantations, the country's peat ecosystems become flammable and produce more emissions. Deforestation is the largest source of Indonesia's emissions, accounting for half of total emissions according to government data. Figure 1 shows deforestation rates for Indonesia, including its targets in the next few years.

**Figure 1: Deforestation rate for Indonesia and forward targets, 1990-2030**



Source: SIIA Haze Outlook 2021. Data Source: Official data and targets (annualised), Kementerian Lingkungan Hidup dan Kehutanan (KLHK) (2021)

Indonesia has set a target for its forests to not only be carbon neutral, but also transformed into a carbon sink by 2030. Under Indonesia's NDCs, plans for the forestry sector include sustainable forest management, reducing deforestation and forest degradation, restoring functions of the degraded ecosystems, and developing carbon sequestration projects.<sup>21</sup> The country has had a moratorium on primary forest clearing since 2011 and, from 2018 to 2021, a moratorium on new palm oil plantations. From 2010 to 2021, Indonesia also had a US\$1 billion REDD+ agreement with Norway, where Norway would compensate Indonesia for peatland and forest conservation activities.<sup>22</sup> The Indonesian government came under fire in September 2021 for announcing that the newly-expired palm oil moratorium would not be renewed, and that the REDD+ agreement would be terminated due to non-payment by Norway. Still, the government has stated that these actions would not affect its commitment to reduce GHG emissions.<sup>23</sup>

Indonesia has an overall target to be carbon neutral by 2060. As part of its updated NDCs, Indonesia targets to reduce emissions by 29 per cent independently and 41 per cent with international assistance. A large portion of emissions reductions are expected to come from the forestry and land use sector, at 24.5 per cent. In addition to the COP26 announcement to phase out coal-fired power plants, the government has indicated plans to phase out oil and gas by 2060, and use renewable sources to meet 85 per cent of energy needs. The rest of the country's energy needs will be met using nuclear energy, as well as energy storage and hydrogen fuel cell technology, which is currently being explored.<sup>24</sup>

In addition, Indonesia has developed initiatives in green finance and carbon markets. In 2021, Indonesia set up a task force to advance adoption of sustainable practices in the finance industry by providing an integrated platform.

#### ***Sustainable Finance Roadmap (2014)***

Otoritas Jasa Keuangan (OJK), the Indonesia Financial Services Authority, published a Sustainable Finance Roadmap in 2014, comprising 19 mid- and long-term activities for the period of 2015-2024. The activities in the work plan are categorised by 3 focus areas: (1) increase the supply of sustainable financing, (2) increase the demand for sustainable financing products, and (3) increase the oversight and coordination of sustainable finance implementation. Phase I of the roadmap took place from 2015-2019,<sup>25</sup> during which Indonesia's sustainable finance portfolio was only 913.15 trillion rupiah (US\$64.8 billion). In contrast, the estimated investment required for a green development pathway is US\$300 to US\$530 billion a year. Phase II of the roadmap, which is for the period of 2021-2025,<sup>26</sup> builds on Phase I and priorities include the development of a complete taxonomy, key performance indicators, and incentive schemes.

#### ***Sustainable Finance Umbrella Policy (2017)***

In 2017, OJK published a Sustainable Finance Umbrella Policy to guide Indonesia's financial system. The policy covers the definition and principles of sustainable finance, and includes an action plan for banking, capital markets and non-banking sectors.<sup>27</sup> Under the policy, since 2020, financial institutions have had to submit an implementation plan for sustainable finance and a progress report on an annual basis. The implementation plan can cover the development of a green finance product or service, or an adjustment in the organisation structure that incorporates sustainability principles. As part of the Roadmap for Sustainable Finance Phase II (2021-2025), OJK is presently preparing climate change risk management guidelines for financial services providers.

#### ***Green Bond and Green Sukuk Framework (2018)***

The Green Bond and Green Sukuk Framework was developed in 2018 to finance or refinance eligible green projects, which contribute to Indonesia's objectives of a reduction in GHG emissions, climate change adaptation, and biodiversity preservation.<sup>28</sup> Green Sukuk is a financial instrument, similar to a bond, but based on principles of Islamic finance. Under the framework, eligible sectors for green bond and green sukuk proceeds include renewable energy, energy efficiency, sustainable management of natural resources, green tourism, resilience to climate change for vulnerable areas and sectors, green buildings, sustainable transport, sustainable agriculture, waste to energy and waste management.

## **Carbon Market Development**

The Indonesian government has been deliberating on setting up a carbon trading mechanism since 2019. In 2021, Indonesia launched a trial carbon market running from March to August 2021, in the form of an emissions trading scheme covering 80 coal-fired power plants. During COP26, it was announced that a new policy had been passed, setting a price on carbon emissions and creating a mechanism incorporating emissions trading and a carbon tax.<sup>29</sup>

## **Malaysia**

Similar to Indonesia, Malaysia's forest preservation efforts are often at odds with commercial agricultural activities. In Malaysia, permits can be obtained for the sole purpose of clear-felling in forests, which is the removal of most or all trees in an area. This has made it difficult for deforestation activities to be linked with plantation owners.<sup>30</sup> The country is the world's second largest producer and exporter of palm oil, after Indonesia, and in 2020 accounted for 24 per cent of global palm oil production.<sup>31</sup> Palm oil makes up the largest share of Malaysia's agricultural sector, at 38 per cent,<sup>32</sup> but controversies have arisen around both environmental and social sustainability policies of major companies. In 2018, Malaysia was among the top six countries with the biggest forest shrinkage.<sup>33</sup>

As part of its NDCs, Malaysia will be enhancing adaptation for forestry and biodiversity. The Malaysian Forestry Policy 2020 outlines a clear direction for the forestry sector, including action plans to meet new challenges at the domestic and international levels. Despite the challenges posed by COVID-19, the Energy and Natural Resources Ministry managed to implement its Greening Malaysia Agenda through the 100 Million Trees Planting Campaign, and 18.75 million trees were planted nationwide in 2020. Malaysia is also expected to receive RM400 million (US\$100 million) in the next seven years through the Malaysia Forest Fund, which was established in 2020. The funds will be channelled to state governments for forest conservation and to improve the socio-economic standards of local communities.<sup>34</sup>

The Malaysia Plan is a five-year plan that outlines government development policies and strategies, and charts the country's development plans for the next period. The Twelfth Malaysia Plan (2021 – 2025) was tabled in September 2021. Malaysia has committed to achieving carbon neutrality by 2050 at the earliest, which is the most ambitious of such targets in Southeast Asia. Details of carbon reduction measures are supposed to be announced before the end of 2022, after a review of low-carbon development strategies. Measures to accelerate green growth were also outlined in the plan, with four key announcements:<sup>35</sup>

- 1 No new coal-fired power plants will be built, and electricity generation will be replaced by gas power plants.
- 2 Malaysia will implement carbon pricing and a carbon tax. A domestic emissions trading scheme is under development.
- 3 Production of energy-efficient vehicles will be prioritised.
- 4 A blue economic blueprint will be introduced for coastal and marine development.

However, the plan has come under criticism for having a lack of implementation strategies, despite its promising policy statements. For example, it is unclear how carbon pricing will be set, and there are concerns that the burden of the proposed carbon tax could fall on the general public rather than on large industrial emitters. Malaysia's political conditions could also affect investor confidence and hinder the implementation of climate plans. Attracting investment is necessary for technological adoption to develop green growth opportunities. Experts note that only with the right political climate, and a sustained implementation strategy in place, can Malaysia be on a path to achieve the outcomes of the Twelfth Malaysian Plan.

Notwithstanding the criticisms of the country's overall climate strategy, Malaysia has over the years made efforts to grow its green finance sector.

#### ***Sustainable and Responsible Investment (SRI) Sukuk Framework (2014)***

Under the SRI Sukuk framework, sukuk proceeds will exclusively be used to fund activities or transactions related to eligible SRI projects. There are four eligible green categories, including clean transportation, sustainable management of living natural resources, renewable energy, and green buildings.<sup>36</sup>

#### ***Sustainable and Responsible Investment Roadmap (SRI Roadmap) (2019)***

The SRI Roadmap was created to facilitate the sustainable and responsible investment ecosystem and chart the development of the Malaysian capital market to drive sustainable development. The five-year roadmap has twenty strategic recommendations that fall into five overarching strategies, such as widening the range of SRI instruments and increasing the SRI investor base, to position Malaysia as a leader in the region for sustainable and responsible investment.

#### ***Malaysia Sustainable Finance Initiative (MSFI) (2020)***

The MSFI is an initiative of Capital Markets Malaysia, which is an affiliate of Securities Commission Malaysia. It aims to support the Malaysian financial sector and advance sustainable financing, with the objective to facilitate technical assistance and training on sustainable finance. The initiative will provide a foundation to address the economy and financial system's long-term needs.

### **Thailand**

According to the Climate Action Tracker, an initiative of the Climate Analytics and the New Climate Institute, Thailand's updated NDCs are "critically insufficient" in charting a low-carbon pathway compatible with the Paris Agreement. Starting from a high initial BAU baseline, the country's current targets and policies place it on a trajectory where emissions will continue to rise. While the power sector plans to shift away from a dependency on coal towards natural gas over the next two decades, fossil fuel lock-ins are still a concern. According to Thailand's NDCs, nearly three-quarters of the country's emissions cuts will come from manufacturing and transport sectors, but power generation, although accounting for the largest portion of emissions, is expected to make relatively weaker cuts.

However, there are plans that show the government's intent to step up climate action. The government is currently drafting several climate-related documents, including its Climate Change Act, National Energy Plan, and Long-Term Low Greenhouse Gas Emissions Development Strategy. Thailand leads the region for solar and wind energy generation, which are the two fastest growing segments of renewable energy.<sup>37</sup> There are also plans to increase the generation of renewable energy, reduce the energy intensity of energy sub-sectors, allow only electric vehicles to be sold from 2035, and expand carbon sinks in the forestry sector.<sup>38</sup> In addition, it was announced in October 2021 that state-owned oil major PTT, whose earnings are currently derived mostly from fossil fuels, is expected to make a series of investments over the next decade to promote electric vehicles. This includes local manufacturing of vehicles, batteries and charging stations, turning Thailand into "Southeast Asia's EV hub".<sup>39</sup>

In the area of green finance, Thailand has developed the following initiatives.

#### ***Sustainable Financing Framework (2020)***

Under the Sustainable Financing Framework, Thailand will issue green, social and sustainability bonds and loans, where proceeds will be used to finance or refinance current and future loans or expenditures. Eligible projects aid transition to a low-carbon economy while enhancing Thailand's socio-economic development. There are seven eligible categories: clean transportation; renewable energy; energy efficiency; sustainable water and wastewater management; sustainable management of living natural resources and land use; terrestrial and aquatic biodiversity conservation; and green buildings. In September 2020, a THB30 billion (US\$964 million) sustainability bond was issued by the Ministry of

Finance's Public Debt Management Office, and the proceeds used to finance green infrastructure and social impact projects.<sup>40</sup>

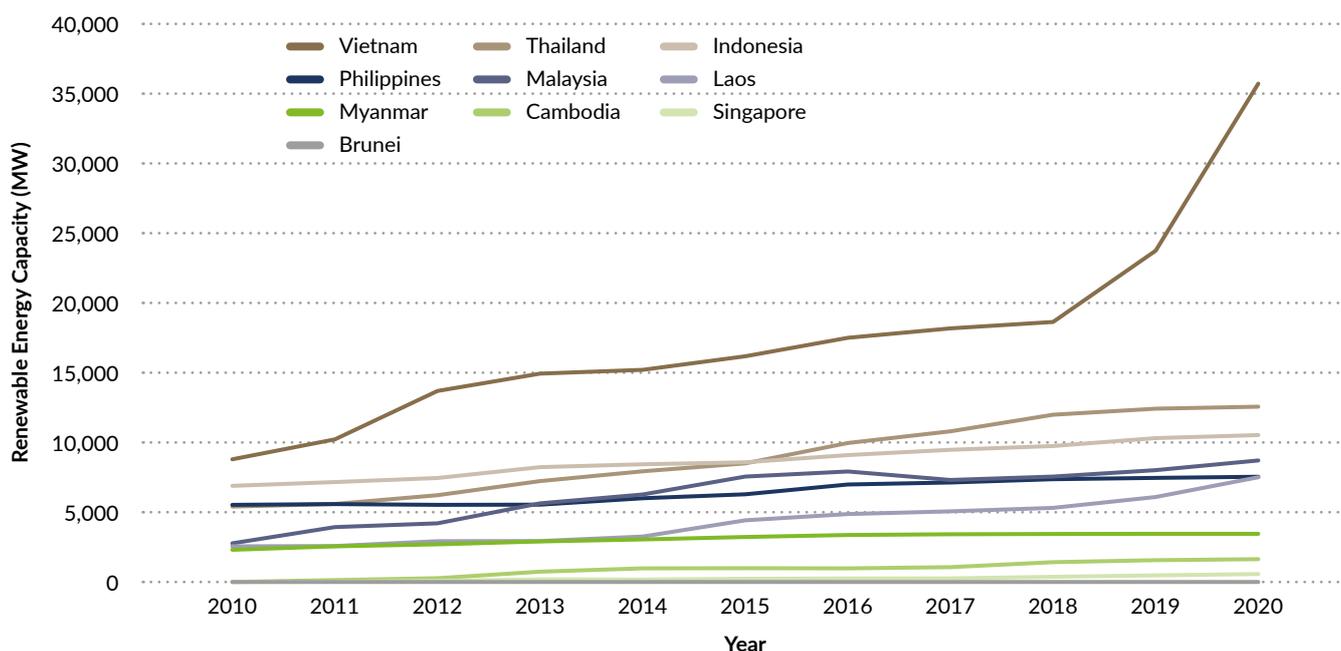
In 2019, a Memorandum of Understanding was also executed by the International Finance Corporation and the Bank of Thailand to accelerate sustainable financing by developing a Sustainable Finance policy framework and roadmap for the country.

## Vietnam

According to the Climate Action Tracker, a full implementation of Vietnam's current policies would reduce emissions beyond the country's targets, but will only be in line with a 3°C global warming. Vietnam's 2021 Investment Law streamlined business regulations, and foreign investment has spiked 13.2 per cent year-on-year,<sup>41</sup> while overall economic growth is projected to increase energy demand by nearly 10 per cent each year in the next decade.<sup>42</sup> However, the country's climate strategy and sustainability efforts do not appear fully aligned with its strong economic growth trajectory.

Vietnam has managed to establish leadership for renewable energy in Southeast Asia by offering favourable tariffs and tax incentives. In 2020, Vietnam installed more renewables than all its Southeast Asian neighbours combined. As outlined in the draft Power Development Plan VIII, Vietnam plans to increase the share of wind and solar in the country's energy generation mix.<sup>43</sup>

Figure 2: Renewable energy installed capacity by country, 2010 - 2020



Data Source: International Renewable Energy Agency<sup>44</sup>

However, the integration of renewables into its electricity system is key to the plan's success, and the country's grid infrastructure is in need of upgrades. Despite the positive policy developments for the renewable energy sector, Vietnam still depends heavily on fossil fuels, primarily coal. Even accounting for tentative cancellation plans for some planned coal projects, the combined share of coal and gas is expected to be about 57 per cent in 2030.<sup>45</sup>

Vietnam's current draft 7<sup>th</sup> Master Plan for power development includes an appeal to international investors for transition financing, signalling the government's recognition that its power sector needs to pivot to a greener growth pathway.

## Singapore

Singapore is the only country in ASEAN to have submitted a long-term climate strategy to the UNFCCC, detailing the country's plans for achieving climate and sustainable development objectives by the mid-century. Singapore's government has stated a long-term vision to achieve net-zero emissions "as soon as viable in the second half of the century".<sup>46</sup> Even though the country is on course to achieving its NDCs based on currently implemented policies, absolute emissions are expected to rise at least until 2030 without additional policies.

The energy, transportation and petrochemical industry sectors dominate emissions in Singapore.<sup>47</sup> The remaining emissions are from commercial-institutional and residential sources, fugitive fuel emissions, industrial processes, land use, land use change and forestry, as well as waste.<sup>48</sup>

Singapore has a carbon tax of S\$5 per tonne of CO<sub>2</sub>-equivalent (tCO<sub>2</sub>e) (US\$3.70/ tCO<sub>2</sub>e), which targets large emitters. It is the only country in Southeast Asia to have placed a price on carbon thus far. The government has announced plans to increase the tax to S\$10-15 per tonne by 2030, as many in the country have noted that the current price is insufficient to incentivise the switch to low-carbon technologies.<sup>49</sup> A revised carbon pricing will be announced at the 2022 Budget.<sup>50</sup>

To facilitate the transition to a low-carbon future, Singapore will take actions across all sectors, with three strategic thrusts to enable this transition:<sup>51</sup>

- 1 Transformations in industry, economy, and society. This includes transitioning to renewable energy sources, increasing energy efficiency, and reducing energy consumption.
- 2 Adoption of advanced low-carbon technologies, such as carbon capture, utilisation and storage, and the use of low-carbon hydrogen.
- 3 Effective international collaboration. Some examples include international climate action, collaborations on regional power grids, and establishing market-based mechanisms.

Although Singapore contributes just 0.11 per cent of global GHG emissions, the country has a significant impact on global climate action due to its status as a finance and trading hub. As such, the country has developed several initiatives to grow its green finance and carbon markets.

### **Green Finance Action Plan (2019)**

The Green Finance Action Plan was launched by the Monetary Authority of Singapore (MAS) in 2019 to strengthen the financial sector's resilience to environmental risks, leverage innovation and technology to facilitate sustainable finance flows, and build knowledge and capabilities in sustainable finance. Singapore accounts for almost 50 per cent of cumulative green bond and loan issuances in ASEAN, making it the region's largest green finance market.<sup>52</sup> As part of the Green Finance Action Plan, a US\$2 billion (S\$2.7 billion) Green Investments Programme was set up to invest in green public market investment strategies to support Singapore's financial sector in mitigating climate risks. The government also announced during its 2021 Budget that it would issue S\$19 billion worth of green bonds for public infrastructure projects.

The country's fintech ecosystem represents more than 40 per cent of all fintech companies in Southeast Asia, putting it in a good position to become a leader in green fintech. MAS has launched Project Greenprint, a technology platform to promote a greener financial system, which includes ecosystem development, a greenprint marketplace, and a data platform.<sup>53</sup> Ecosystem development would involve building environmental, social and governance (ESG) capabilities in Singapore, while the marketplace would match green technology solutions with international capital. The data platform seeks to improve verification of ESG data and facilitate its flows.

### **Carbon Market Development**

In Singapore, an “Emerging Stronger” Taskforce was appointed in 2020 to find new ways to drive and future-proof Singapore’s economy as it recovered from the global pandemic. The taskforce’s recommendations identified carbon markets as a growth area. Singapore’s reputation as a trusted financial services hub, and its neutral location, makes it well-positioned to be a carbon services and trading hub. Following this recommendation, it was announced that Climate Impact X (CIX), a new Singapore-based global exchange for high-quality carbon credits, would be launched. CIX would initially focus on trading carbon credits generated through nature-based solutions, in which the region’s natural landscapes carry vast potential. CIX would not only help to scale these opportunities, but also address long-standing issues of verification and standardisation that have impeded the carbon markets. CIX’s activities can also provide an additional tool for pricing carbon in Singapore, and a reference for adjusting Singapore’s carbon tax over time.

Even with these initiatives and updates to its NDCs, Singapore’s targets are considered “critically insufficient” by the Climate Action Tracker in setting emissions reductions on a path to alignment with the Paris Agreement. Besides the low carbon tax level, critics have noted that the majority of power generation continues to be from natural gas. Singapore’s National Climate Change Secretariat (NCCS) has responded that the Climate Action Tracker might not have considered the country’s unique challenges as a small city-state. For example, given Singapore’s high population density and lack of land, it is unable to employ similar alternative energy solutions as other countries. The NCCS also noted that under the Singapore Green Plan 2030, the country intends to explore increasing solar energy deployment and clean energy imports to diversify Singapore’s energy mix.<sup>54</sup>



## Part 2: Advancing Climate Action in Southeast Asia – The Major Moving Parts

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Climate vulnerabilities have been exposed by adverse climate events around the world, from raging wildfires in California to deadly floods in China. Given the interconnectedness of supply chains, extreme weather in one location can have a ripple effect across the globe. As outlined in the previous section, ASEAN countries recognise the risks and have taken steps to decarbonise their economies. However, there are a few areas requiring special attention for ASEAN countries to achieve their climate targets and do their part for the global greening effort.

First, carbon pricing must play an integral role as part of countries' decarbonisation strategies. It not only pushes the industry to decarbonise, but in a trade-connected world, carbon pricing is also necessary to avoid carbon leakage.

Second, countries are at different stages of transition, and decarbonisation efforts by the public or private sector may be constrained by economic and infrastructure challenges. Carbon offset markets offer an option for governments, businesses, and even individuals to offset their unavoidable emissions, while contributing to an overall reduction in global emissions.

Third, the nature and biodiversity agenda has come to the fore of climate discussions. Southeast Asia's rich and biodiverse national landscapes, as well as the outsized contribution of forests to the carbon emissions of countries like Indonesia, underscore the importance of nature-based solutions to the region. These can and should be developed in tandem with the carbon markets.

Focusing on these key areas, the following section will explore how ASEAN can respond to the evolving global climate conversation and work together as a region to advance efforts.

### 2.1 Carbon Pricing and Carbon Border Taxes

#### 2.1.1 Carbon Leakage

As countries pursue their respective climate action plans based on “common but differentiated responsibilities”, governments with greater ambitions will inadvertently impose stricter climate-related standards as compared to others. One example of this is carbon price differences. This results in a risk of carbon leakage – a situation where efforts to reduce GHG emissions in one country inadvertently cause an increase in emissions elsewhere.<sup>55</sup> Beyond being a climate issue, carbon leakage also gives rise to concerns about competitiveness and unfair economic advantages for countries with lax environmental regulations.

The two largest channels through which carbon leakage takes place are the “competitiveness” channel and the “energy market” channel.<sup>56</sup> In the competitiveness channel, strict climate-related regulations in one country causes producers to relocate to other countries with less stringent standards. The energy market channel, on the other hand, occurs when restrictions on fossil fuels in major economies lead to decreased global demand. This in turn depresses the prices of fossil fuels, which then increases fossil fuel consumption in countries with no or few carbon regulations. Both channels of leakage result in an increase in overall global GHG emissions.

The carbon leakage phenomenon has been widely proven in studies using economic modelling, one suggesting that there was a global carbon leakage rate<sup>57</sup> of up to 28 per cent when only Europe reduced GHG emissions as part of its climate action initiative, and 10 per cent when only the United States

reduced its GHG emissions.<sup>58</sup> This is a concern since a high leakage rate can cancel out individual country efforts.<sup>59</sup> It is also counter to the objectives of the Paris Agreement, which relies on collective goodwill and voluntary contributions to move towards a net-zero world.<sup>60</sup>

### 2.1.2 The Case for Carbon Pricing in Southeast Asia

As countries recover from the COVID-19 pandemic, more governments are recognising the role of carbon pricing in the policy mix to accelerate the shift away from unsustainable pathways. Experts note that carbon pricing is one of the most cost-effective ways for countries to achieve both economic and environmental goals as economies decarbonise. It captures the external costs of carbon emissions and internalises them, providing a price signal to the market on the direct cost of a tonne of emissions. This raises the cost of carbon-intensive energy sources and means of production, hence encouraging companies to decarbonise.

In ASEAN, the past decades of economic growth have been largely enabled by the use of fossil fuels and this is still prevalent today, with oil, coal, and natural gas accounting for 78 per cent of the energy mix in 2017.<sup>61</sup> ASEAN energy demand is projected to increase by 70 per cent between 2015 and 2040,<sup>62</sup> making the current energy mix incompatible with countries' NDCs and net-zero goals. There is certainly a need to diversify the energy mix to meet energy demand while addressing sustainability concerns, and national carbon pricing can accelerate the closing of this gap.

Carbon pricing ensures that the burden of emissions reduction falls on those who are responsible for emissions, and thus can directly reduce them. There are two main methods of carbon pricing: carbon taxes and emissions trading systems (ETS), which is also known as a cap-and-trade system. A carbon tax directly places a price on GHG emissions, while an ETS sets a limit on the total amount of emissions and allows companies to buy or sell extra allowances within this limit.

Carbon pricing can help countries align short-term priorities and long-term climate goals. It can promote sustainable economic growth by generating public revenue that in turn facilitates the development of low-carbon technologies necessary to meet longer-term emissions targets.<sup>63</sup> This applies to both domestic carbon pricing schemes as well as international carbon markets.

### 2.1.3 Status of Carbon Pricing in ASEAN Countries

ASEAN countries differ widely on carbon pricing policies. Table 3 summarises the status of development in six countries that have made concrete plans for setting up a carbon pricing instrument:



**Table 3: Status of carbon pricing in selected ASEAN countries**

Country	Status	Development
Singapore	Carbon tax implemented.	<ul style="list-style-type: none"> <li>The carbon tax is set at S\$5 per tonne of GHG emissions (tCO<sub>2</sub>e) from 2019 to 2023. The tax rate is currently under review, with a view towards increasing it to S\$10-\$15 per tonne of GHG emissions by 2030.</li> <li>Any industrial facility that emits direct GHG emissions equal to or above 25,000 tCO<sub>2</sub>e annually must register as a taxable facility, and submit a Monitoring Plan and an Emissions Report annually. Taxable facilities pay a carbon tax at the prevailing rate.<sup>64</sup></li> </ul>
Indonesia	Regulation passed on carbon pricing and carbon trading, announced during COP26. Completed ETS pilot in 2021.	<ul style="list-style-type: none"> <li>Government regulation mandates the establishment of an ETS by 2024. Presidential Decree Number 77 of 2018 states that Indonesia will establish a public service agency to manage environmental funds and mechanisms, including its ETS.<sup>65</sup></li> <li>Indonesia aims to implement a mandatory national ETS by 2024.</li> <li>Indonesia ran a voluntary emissions trading pilot in the power sector from March to August 2021. The results of the pilot will be used to inform the mandatory ETS.<sup>66</sup></li> </ul>
Thailand	Completed two pilot phases for voluntary ETS. Developing a strategic implementation plan. <sup>67</sup>	<ul style="list-style-type: none"> <li>National Reform Plan (2018) mandates the government to develop an economic instrument, such as a cap-and-trade system, to incentivise the private sector to reduce emissions.</li> <li>Since 2013, the Thailand Greenhouse Gas Management Organization has been developing an MRV system and basic trading infrastructures under the Thailand Voluntary Emissions Trading Scheme (Thailand V-ETS).<sup>68</sup> Thailand V-ETS is designed to pilot the infrastructure for a national emission trading system, and identify gaps and opportunities.</li> <li>By 2020, V-ETS had 191 registered projects that are due to reduce emissions by 5.28 Mt CO<sub>2</sub>-eq annually.<sup>69</sup></li> </ul>
Vietnam	ETS to be established.	<ul style="list-style-type: none"> <li>In November 2020, Vietnam's National Assembly passed the revised Law on Environmental Protection legalising an ETS.</li> <li>The law stipulates that the government will establish an ETS that suits the local context and complies with international climate change treaties. It is supposed to take effect on 1 January 2022.<sup>70</sup></li> </ul>
Brunei	Carbon pricing to be established.	<ul style="list-style-type: none"> <li>Brunei will introduce a carbon pricing mechanism by 2025 as the main pillar of its strategy to cut GHG emissions by 50-60 per cent below BAU by 2035.<sup>71</sup></li> <li>Carbon pricing will apply to industrial facilities and power utilities which emit beyond a carbon emission threshold.</li> <li>Brunei also aims to establish carbon trading.<sup>72</sup></li> </ul>
Malaysia	Carbon pricing to be established.	<ul style="list-style-type: none"> <li>Under the 12<sup>th</sup> Malaysia Plan, economic instruments such as carbon pricing and carbon tax will be implemented to support Malaysia's carbon-neutrality efforts.<sup>73</sup></li> </ul>
Philippines	ETS and carbon pricing under consideration.	<ul style="list-style-type: none"> <li>In 2016, the government commissioned a study to assess feasibility of a carbon pricing instrument.</li> <li>The Philippines was a technical partner to the Partnership for Market Readiness programme of the World Bank from 2018 to 2021. The programme supports the assessment of feasible and cost-effective carbon pricing instrument options for the energy sector.<sup>74</sup></li> <li>In 2021, it was announced that the House of Representatives and Senate were developing legislation to promote and establish appropriate carbon pricing instruments for domestic implementation.<sup>75</sup></li> </ul>

Source: SIIA research

## 2.1.4 The European Union's Proposal to Address Carbon Leakage

ASEAN countries' moves to implement carbon pricing may receive an additional push from external sources. In December 2019, the European Commission announced its plan for an ambitious Green Deal to help the EU work towards its climate objectives.<sup>76</sup> One of the measures put forth was a proposal to pass an EU regulation regarding a carbon border adjustment mechanism (CBAM).<sup>77</sup> This is a border levy on carbon-intensive imports, and is meant to address carbon leakage (specifically, the competitiveness channel) resulting from differing climate ambitions worldwide.

The CBAM is the first formal proposal from the EU, even though border adjustments have been on the EU's agenda since at least 2007.<sup>78</sup> In theory, by levying an equivalent price on the carbon emissions of imported goods, a CBAM creates a level playing field, thus ensuring that imports and domestic production are treated the same.<sup>79</sup> This would prevent the EU Green Deal's policy aims from being undermined by producers relocating production outside of the EU. The CBAM would also allow the EU to gradually phase out free allowances currently used in its ETS, so that the ETS can have maximum impact.

The European Commission is not alone in considering or advocating for a CBAM, although it is the most advanced. Democrats in the US Senate have announced support for enacting a "polluter import fee" to combat climate change.<sup>80</sup> There has also been discussion in the United Kingdom (UK) about a carbon border tax adjustment to protect domestic industries and create a level playing field for UK companies, who are subject to strict regulations and the high prices at which GHG emissions permits are trading.<sup>81</sup> Likewise, the Canadian government has expressed that it is exploring implementing a border carbon adjustment, and engaging with Canadian and international partners to "advance a global dialogue on this important issue".<sup>82</sup>

## 2.1.5 Implications of CBAM for ASEAN and Trade

ASEAN is the third largest trading partner of the EU, after the US and China. In 2020, there was more than €189.47 billion (US\$219 billion) of EU-ASEAN trade in goods.<sup>83</sup> The EU mainly imports machinery and transport equipment, agricultural products, textiles, and clothing from ASEAN. In the short term, the effects of the proposed CBAM will be limited as only cement, iron and steel, aluminium, fertiliser, and electricity are covered in its initial phase. However, if expanded to other goods as the EU intends, the measure has future implications for the EU's trade partners in ASEAN, and could shift economic and trade rules over time.

There is an underlying perception that carbon border measures are both protectionist and unfair. A 2021 expert study conducted by Konrad Adenauer Stiftung suggests that many expert stakeholders in Asia-Pacific regard the CBAM as a measure designed primarily to protect EU businesses.<sup>84</sup> Moreover, critics note that its blanket application runs counter to the "common but differentiated responsibilities and respective capabilities" principle within the UNFCCC and the voluntary, bottom-up approach in the Paris Agreement, and disproportionately affects developing countries. Another issue is that most of the revenue generated from the CBAM will go into the EU budget, instead of being used to help developing nations adapt to the measure and decarbonise.<sup>85</sup> This is unlikely to sit well with trading partners and will not assuage fears of disguised protectionism.<sup>86</sup>

Should the CBAM proposal be implemented, political resistance will likely translate into legal challenges at the World Trade Organisation. These are likely to relate to Article III:4 of the General Agreement on Tariffs and Trade (GATT), which states that imports shall be accorded treatment no less favourable than that accorded to like products in the EU, and the GATT most-favoured-nation treatment (MFN) rule, which states that there must be no discrimination between like-products imported from different countries of origin. For its part, the EU has consistently maintained that the aim of the CBAM is purely environmental,<sup>87</sup> and the EU's economy commissioner Paolo Gentiloni has insisted that the CBAM is "in line with and compliant with international trading rules".<sup>88</sup>

Apart from legal and political resistance, the feasibility of robustly implementing the CBAM on a large scale is also in question. The CBAM proposal outlines the methods that producers will have to follow to calculate the embedded emissions for their products. However, the methodology provided is complicated. Smaller producers in developing economies, including many ASEAN countries, may struggle to adapt to these measuring requirements due to their lack of technical knowhow. Indeed, according to a Konrad-Adenauer-Stiftung study, many companies across complex supply chains in Indonesia do not record their emissions data and are not prepared to comply with a CBAM regulation. Likewise, in Thailand, emissions data is measured differently as compared to the EU, and the methodology adopted is not as detailed. Thai stakeholders have further pointed out that the EU's intention to implement the measure at the start of 2023 is "too short of a timeline", especially in light of the country's lost progress on climate targets due to the COVID-19 pandemic.<sup>89</sup>

In Southeast Asia, some key export industries already face international scrutiny. The palm oil and pulp and paper sectors for instance have been on the receiving end of trade restrictions for alleged ESG violations in recent years. These sectors, and the countries that depend on them, could be disproportionately affected by the CBAM measure if it is eventually expanded to include these goods.

Moreover, the EU itself could struggle to handle the administrative burden of implementing the CBAM regulation fairly and consistently across all their trading partners.<sup>90</sup> The CBAM proposal provides for a reduction in the effective levy based on the carbon price paid in the product's country of origin.<sup>91</sup> As such, the EU requires evidence of the carbon price paid, and the absence of export rebates, which is to be certified by an independent person. The relevant authorities would thus have the tedious task of verifying all documentation provided by producers from across the world. Given that countries' carbon pricing policies are patchworks of regulations and subsidies, the evidence may come in different forms. In addition, as the proposed CBAM empowers the European Commission to determine the exact methodology to calculate the reduction, there is a risk that this would be overly punitive for developing economies.

These practical concerns, coupled with the high carbon pricing set by the EU ETS, may have the unintended consequence of growing leakage markets. To avoid the hassle of trading with the EU, producers in developing economies may elect to sell their products to other markets with less stringent regulations or to trade domestically. For instance, an expert in Indonesia commented that "without help from the EU, developing countries have to be pragmatic and look for other markets".<sup>92</sup> This may result in the world splintering into two trading blocs – a high-carbon and a low-carbon one.<sup>93</sup> Ultimately, the CBAM may become a high barrier to trade for emerging-market exporters, who are shut out from accessing markets in advanced economies. The amount of carbon leakage would thus increase, which is counterproductive.

The SIIA's forthcoming working paper, *Addressing the Risk of Carbon Leakage: Assessing the EU's Carbon Border Adjustment Mechanism*, explores these debates in more detail. If successfully enacted, it is evident that the EU's CBAM regulation will face hurdles upon implementation. More than that, given expected effects on the EU's trading partners, ASEAN should work together to prepare for its potential impacts.

### 2.1.6 Recommendations for Bilateral or Regional Cooperation

It is clear that continued engagement in high-carbon development will expose economies to future climate risks, and induce a reliance on carbon-intensive growth pathways that will be even more costly to reverse in the future.<sup>94</sup> Carbon pricing instruments are an effective means to achieve climate targets domestically, regionally, and internationally. In ASEAN, carbon pricing approaches have mainly been developed on a country level and countries are subject to different circumstances. With the conclusion of COP26, each ASEAN government should accelerate the adoption of carbon pricing instruments, keeping in mind that the climate crisis is already upon us while the implementation of measures will take time. Carbon pricing is a holistic approach that can bring coherence to various policy instruments that discourage GHG emissions, as well as other policies that could inadvertently increase emissions.<sup>95</sup>

While countries' individual efforts to decarbonise their economies are paramount, there are opportunities to work together towards mutual benefit. Given the region's economic interconnectivity, it will benefit from working collectively towards a regional carbon price. This can accelerate transition to a low-carbon economy for the whole region, while ensuring that economic growth is achieved in tandem. ASEAN countries could eventually link or coordinate carbon pricing schemes, which would level the playing field and minimise carbon leakage due to regional trade. In addition, new and existing cross-border efforts for decarbonisation, such as regional carbon capture networks and energy grids, would benefit from carbon price alignment.

Greater regional harmonisation would strengthen ASEAN's collective voice and improve its position to engage with other carbon pricing systems in Asia and globally, thereby facilitating trade with other regions. As noted, the EU is unlikely to remain the only party considering carbon border adjustments; any country wishing to enact domestic carbon regulation is likely to face growing pressures to accompany it with border measures to maintain competitiveness. If ASEAN countries could align approaches to pricing carbon and to calculating emissions from economic activities, this would better enable suppliers in the region to meet global expectations, minimising disruptions to trade and business for the entire region. It would also drive convergence towards a global price on carbon.

Finally, while this section has focused on government policy, it bears noting that climate action cannot advance without robust participation from the private sector. For instance, in the carbon markets, which will be covered in the following section, the private sector has led a tremendous growth in activity despite countries being unable (until COP26) to agree on rules governing international carbon trading. This enthusiasm must also extend to operational decarbonisation, especially for companies' Scope 1 and 2 emissions. While many have already made strong pledges for action, research indicates that companies from the Asia-Pacific region have been slower to join the climate action bandwagon, even though they account for more than half of global carbon emissions. A 2020 survey by ENGIE Impact found that some 60 per cent of companies in the Asia-Pacific region had no decarbonisation roadmaps.<sup>96</sup> Including these companies in the climate conversation is imperative if we are to achieve our collective climate goals.

## 2.2 Developing Carbon Markets

### 2.2.1 Role of Carbon Markets in Meeting Paris Agreement Goals

With growing recognition of the necessity of carbon pricing, carbon markets have also emerged as a way to incentivise decarbonisation. According to Refinitiv, global carbon markets in 2020 were worth €238 billion in 2020, and grew 23 per cent from the previous year.<sup>97</sup> Carbon markets make carbon emissions a tradable commodity, enabling governments or the private sector to limit overall emissions and ensure that emissions reductions are achieved in the most cost-efficient way.

A carbon market works by enabling the trading of units that represent a tonne of carbon emissions. These units are traded between entities that can reduce emissions at a low cost and entities with a higher cost of emissions reductions. This way, reductions are achieved by those entities for whom it is cheaper to cut emissions, resulting in overall cost savings compared to other means of achieving emissions cuts, such as regulations.

According to the Environmental Defense Fund (EDF), the potential gains from carbon markets largely depend on cross-border trading. EDF estimates that international carbon markets could result in double the emissions reductions, at the same cost, compared to countries only complying domestically with their Paris Agreement targets. The same analysis found that 24 per cent more emissions reductions would be achieved with a regional carbon market in the Asia-Pacific region alone.<sup>98</sup>

## 2.2.2 Types of Carbon Markets

There are two main categories of carbon markets – compliance markets and voluntary markets.

**Compliance carbon markets** are created by government regulations, and regulated entities are required to keep within allocated limits, or allowances, of emissions, so that overall emissions levels meet pre-determined targets. Polluters surrender allowances equal to the emissions they produce. The most well-known compliance market is the European ETS, which was established in 2005 and currently represents 90 per cent of global emissions trading value. In line with its 2060 net-zero target, China has also unveiled a national ETS covering 2,000 companies in the energy sector, which together account for 40 per cent of the country's total carbon emissions and 15 per cent of global emissions.<sup>99</sup> An analysis by the Asia Investor Group on Climate Change (AIGCC) and Schroders found that China's ETS could potentially reduce the country's carbon emissions by three to six billion tonnes a year, or up to 60 per cent from 2020 levels, by 2060.

**Voluntary carbon markets** are not driven by government regulations, but rather by public or private entities engaging in voluntary transactions of carbon credits (or "offsets") for emissions prevented or removed in another location, or from a source other than the entity. These could come from various sources, such as renewable energy or clean cooking projects that result in avoided emissions, or a nature-based climate solution that sequesters carbon in trees. In this way, carbon offsets channel funds from firms with harder-to-abate emissions to projects that reduce emissions. In 2020, the global Taskforce for Scaling Voluntary Carbon Markets was set up to study the requirements for establishing a well-functioning global voluntary market for carbon credits, on the premise that this would be fundamental to limiting global warming to 1.5 degrees Celsius.

## 2.2.3 Article 6 of Paris Agreement: Rules for Cross-border Carbon Trading

After years of negotiations, a carbon markets agreement was finally reached at COP26. This could potentially unlock trillions of dollars for forest protection, building new renewable energy facilities and other climate projects. The final deal, adopted by nearly 200 countries, will allow countries to purchase offset credits to partially meet their climate targets. While this should facilitate investment and promote the development of projects that could significantly reduce emissions, safeguards must be put in place to address the risk of greenwashing.<sup>100</sup>

The concept of carbon trading was envisioned in the Kyoto Protocol, where countries could trade parts of their emissions reductions obligations with other countries to improve efficiency and lower costs. The Paris Agreement's Article 6, which sets out rules for international carbon trading, created a framework for voluntary international carbon trading in order to meet NDCs (Article 6.2), and for projects by private or public entities to produce carbon offsets that can then be purchased by countries (Article 6.4).

Article 6 was one of the most complex parts of the Paris accord, and the only item that remained to be resolved at COP26. If structured well, Article 6 could unlock the full potential of carbon markets to achieve up to twice the emissions reductions than from NDCs alone, cut the costs of compliance, as well as channel funding to emissions reductions in countries where they otherwise would not occur. If structured poorly, Article 6 could become a loophole for countries to shirk their climate responsibilities.

Under Article 6, countries unable to meet their NDCs with domestic emissions cuts are able to pay for climate mitigation outcomes, including emissions reductions and removals, in other nations to count towards their own targets. This mechanism allows for countries to pursue the most cost-efficient emissions cuts, while still contributing to lowering overall global emissions. Singapore's Minister for Sustainability and the Environment Grace Fu, and Norway's Minister of Climate and Environment Sveinung Rotevatn co-facilitated COP26 ministerial consultations on the framework.

Article 6 states the importance of robust accounting and review to ensure the integrity of carbon credits, and avoid double counting. This means that a system of registering credits must be in place so that the same tonne of emissions reductions cannot be credited to more than one party (if not, this could result in an *increase* in global emissions). Parties have had differing views about what constitutes double counting - for instance, whether the same credit can be claimed by both the buyer of carbon offsets as well as by the host country where the emissions reduction is taking place. It was argued that this violates the “additionality” principle, in which carbon credits purchased must be linked to emissions reductions that would not have occurred in the absence of carbon finance, as the host country was obliged to make these emissions cuts under its NDCs.<sup>101</sup> The COP26 agreement determined that the credit-generating country will decide if the credit should be authorised for sale or counted under its NDCs.<sup>102</sup> The resolution of this debate will also have implications on the use of carbon offsets by regulated entities to meet compliance carbon market requirements.<sup>103</sup>

Another open point in Article 6 related to the use of leftover credits generated before 2020 from the Kyoto Protocol’s Clean Development Mechanism – which are perceived by some as being of lower quality and could prevent the development of new high-quality projects if allowed.<sup>104</sup> During COP26, a compromise was reached with 2013 set as a cut-off date, which means that credits registered before that would not be carried forward. This will allow 320 million offsets, each representing one tonne of CO<sub>2</sub>, to enter the new market.<sup>105</sup> In addition, parties sought consensus on how Article 6 activities should contribute to adaptation financing. Parties previously could not agree on a tax on carbon trades that would be directed to climate adaptation. During COP26, a two-track approach emerged where the tax would not be imposed during offsets trades between countries, but in Article 6.4 trades, 5 per cent of proceeds would be channelled to an adaptation fund for poorer nations.<sup>106</sup>

Finally, one of the principles of Article 6 is that carbon trading should lead to an “overall mitigation in global emissions”, and many experts argue that the potential income gains from carbon credits should incentivise countries to further increase their NDC goals. To address this, it was decided during COP26 that 2 per cent of offset credits should be cancelled and not utilised by either the seller or buyer. This should serve to create a net global decrease in emissions.<sup>107</sup>

#### 2.2.4 Scaling Voluntary Carbon Markets in Southeast Asia

As section 2.1 of this report discussed existing efforts by ASEAN governments to establish emissions trading systems, this section will focus instead on the voluntary carbon markets and private sector participation. In the wake of the COVID-19 pandemic, many corporates and other entities have recognised the urgency and need for a “green recovery”. The number of companies pledging net-zero commitments is expected to soar worldwide; 1,500 companies made such pledges in 2020, which was a three-fold increase compared to 2019.<sup>108</sup> While this is a positive development, organisations will need time to decarbonise their operations and some operational emissions will be hard to abate. In the interim, purchasing offsets from the carbon markets can offer a way for an entity to still meet its carbon goals. The carbon market also represents an additional source of private financing for innovative climate-related projects that may otherwise struggle to obtain financing.

Several major companies have ventured into carbon offsetting. Singapore Airlines Group, which has a commitment to reach net-zero carbon emissions by 2050, launched a voluntary carbon offset programme for customers to purchase offsets through dedicated microsites. The Group’s airlines – Singapore Airlines and Scoot – would match the offsets purchased by customers for the first six months from the programme’s launch. One of the projects that the Group supports is the Katingan Mentaya Project in Indonesia, which conducts natural forest restoration and peatland conservation in Central Kalimantan. Singapore-based ride-hailing app Grab also announced a regional carbon offsetting initiative, allowing consumers to offset their carbon footprint by choosing to pay a nominal fee (S\$0.10 in Singapore) when they book a ride. For this scheme, Grab works with energy giant Shell, which established a team in recent years to focus on opportunities in nature-based solutions as part of the company’s broader decarbonisation strategy.

There has been an exponential growth in the voluntary carbon markets, with McKinsey predicting that the demand for voluntary credits could increase by a factor of 15 by 2030 and 100 by 2050.<sup>109</sup> Voluntary offset retirements, which indicate demand, exceeded supply in the first quarter of 2021 for the first time in years. The latest State of the Voluntary Carbon Markets report shows markets on track to reaching \$1 billion in transactions in 2021,<sup>110</sup> with the supply of credits from renewable energy projects in Asia particularly strong.<sup>111</sup>

### 2.2.5 Challenges: Pricing, Verification, and Policy

Despite growing demand, a number of longstanding issues have impeded the growth and widespread acceptance of the voluntary carbon markets. First and foremost, the use of carbon offsets is still met with scepticism by many environmental activists, who consider it a disincentive for businesses to make concrete improvements to their operational emissions. Their argument has been bolstered by some high-profile controversies, involving carbon offsets that were shown not to have delivered the claimed environmental benefits.

Reputation issues aside, there are operational factors that have limited carbon market growth. Carbon credits are currently mostly traded in bespoke bilateral transactions between a project developer and a buyer. Offsets have to be certified by an accreditation system - two of the most well-known ones being the Verified Carbon Standard and Gold Standard. They also track and “retire” used offsets to avoid double-counting. However, project developers have complained that start-up costs are high while the lead time for getting a project verified and to market is long, resulting in cash flow issues in the interim. In addition, there is not currently a centralised source where prospective buyers can obtain information about available projects, or comparable data relating to current and past projects. Many worthy projects hence struggle to get off the ground or be commercially sustainable, due to an inability to reach investors and financiers.

Because of the project-specific nature of transactions, the pricing of carbon credits varies widely, both by region and by the type of project. Gold Standard likens investing in carbon credit projects to the “real estate market [where] there are a number of different considerations ranging from quality, type, size, and geographical location”.<sup>112</sup> The pricing of a carbon credit may be determined by market demand and supply, project cost, or the value delivered based on an estimated social cost of carbon (the cost of one emitted tonne of carbon in environmental and social impacts). However, market dynamics and the lack of price floors can result in volatility and depressed prices. Prices may therefore not accurately reflect the environmental and social value of the project, or adequately cover the project cost or broker fees, which are sometimes as high as 40 per cent. One National University of Singapore (NUS) study found that in the absence of a significant carbon price increase, many forest preservation projects would remain financially unviable.<sup>113</sup>

In addition, project developers that claim co-benefits beyond carbon sequestration, such as biodiversity protection, livelihood improvement, and air pollution prevention, may find these factors challenging to quantify, verify, and to place dollar values on. This may lead to carbon sequestration projects being deprioritised in favour of other uses of the land, such as clearing for agriculture, where economic value-add may be more easily defined. Some approaches currently taken to address this include establishing the cost of maintaining biodiversity, and estimating the economic cost to local farming communities should crop-pollinating species be lost.

Another challenge relates to verification. Many buyers have noted that the proliferation of carbon offset standards, verifiers and registries is confusing. Besides the well-known Verified Carbon Standard, Gold Standard, and Corsia (developed by the International Civil Aviation Organization), many other standards exist and are sometimes specific to regions, countries, or industries. Accounting and verification methodologies vary from one to the next, causing uncertainty for both sellers and buyers of credits.

Gaps also persist in policy and standards relating to carbon trading. While there are three basic principles that are widely considered necessary for carbon credits to fulfil: additionality, permanence, and leakage,<sup>114</sup> specific criteria may differ from one standard to another. In addition, most countries currently do not have clear policies or licensing regimes on the types of credits that can be traded, and mechanisms for doing so, although as noted earlier, a number of ASEAN countries have announced plans to establish these. As a result, experts note that a good relationship with local government officials currently appears to be a prerequisite for a project to successfully access voluntary markets.

In addition, carbon is becoming a popular financial commodity, with carbon trading conducted by parties with a purely financial rather than environmental purpose. Industry watchers note that this is the fastest growing segment of demand for carbon offsets, and includes high net-worth individuals, family offices, and commodity traders. While this new demand is likely to benefit developers by driving carbon prices up, it may also increase volatility with no price floors in place. To address volatility, industry watchers note that developers can choose to “lock in” a price through the sale of forward contracts. That said, the carbon derivatives market will likely add an additional layer of complication in linking pricing to the benefits of the underlying project.

Moving forward, standards and policy will need to be set around the types of offsets that can be traded, the use of derivatives, and ensuring that offsets are used only as a complement to supply chain decarbonisation, to avoid future abuse of the system as the market matures.

To address some of these issues, the global Taskforce for Scaling Voluntary Carbon Markets recommended establishing legal principles for the carbon market, a set of “core carbon principles” to assure market participants of the integrity of carbon credits, and a governance body to oversee the application of these principles. This would enable the creation of standardised benchmark contracts and facilitate trading liquidity through carbon exchanges.<sup>115</sup> Steps have also been taken in Southeast Asia. AirCarbon, a carbon exchange established in Singapore in 2019, seeks to facilitate standardised contract trading and price benchmarking, as well as reduce the high broker fees currently seen in the sector. The new Climate Impact X (CIX), as mentioned earlier, aims to facilitate market access for projects, offering corporate buyers a curated selection of projects to help them meet their sustainability goals. Both CIX and AirCarbon aim to offer standardisation to complement the work of existing accreditation systems, to promote an ecosystem with greater trust, integrity, liquidity, and price transparency.

### 2.2.6 Recommendations for Bilateral or Regional Cooperation

While a consensus on international carbon trading has been reached during COP26, it remains to be seen whether the agreement can be implemented successfully. It is therefore necessary to work in parallel at the regional and bilateral levels.

Building robust carbon markets, both nationally and regionally, will help ASEAN countries meet their climate commitments even as they tackle the hard work of decarbonisation. Moreover, as many ASEAN countries are likely to retain high-carbon fossil fuel sectors as key economic sectors for the foreseeable future, offsets may be necessary to help meet climate targets. In 2017, the ASEAN member states agreed to explore the harmonisation of Monitoring, Reporting and Verification (MRV) systems as a preliminary step towards cooperation on a regional carbon market.<sup>116</sup> Further collaborative steps can be taken.

Firstly, the new Singapore-based CIX exchange has committed to ensuring the high quality of credits traded on its platform. With this and its aim to leverage technology such as satellites and blockchain for monitoring, CIX can aggregate carbon credits generated across the region and hopefully kickstart and scale a transparent and liquid regional market for carbon credits. The concentration of multinational companies based in Singapore, several of which are engaged in high-emissions sectors such as petrochemicals (and subject to the country’s carbon tax), is likely to give rise to strong demand for

carbon credits and related services. For example, Singapore's largest buyer of LNG, Pavilion Energy, tendered for LNG purchases in 2020, with requests for sellers to quantify associated GHG emissions and include carbon offsets as part of their bids.<sup>117</sup>

In addition, Singapore's reputation as a trusted international financial hub has already attracted companies that specialise in verification, certification, and accounting, including in relation to sustainability and ESG. The country's strategy to become a carbon services hub is likely to involve further incentives to attract such service providers. Given that there is a current ASEAN-wide gap in expertise relating to the carbon markets, Singapore's efforts to build this industry will be useful in supporting its ASEAN neighbours' respective efforts to develop carbon trading. Cross-border capacity building efforts can be established.

On the supply side, many governments in the region now recognise that nature-based solutions are not only crucial for protecting sensitive natural landscapes but can also support economic development in rural areas. Indonesia and Malaysia have the highest potential return on investment for nature-based projects, at \$15.4 billion per year and \$3.9 billion per year respectively.<sup>118</sup> In addition to the forestry sector, the renewable energy sector also provides significant carbon credit potential. According to Ecosystem Marketplace, an initiative affiliated with the NGO Forest Trends, renewable energy carbon credits were the second largest market category after forestry and land use. A large proportion of these credits were from Asia, given that renewable energy projects no longer meet the additionality criteria in many Western developed markets due to rapidly falling costs.<sup>119</sup> The rapidly expanding energy needs of countries such as Indonesia and Vietnam, and growing efforts to move away from coal and develop renewables, may also give rise to rapid growth in the supply of carbon credits.

As discussed in earlier sections, a number of ASEAN governments have plans to pilot national carbon markets. These frameworks, when established, can help existing carbon projects to reach more investors. However, having multiple national carbon markets with their own rules and standards could reduce efficiency; it would benefit all countries to seek alignment on factors such as carbon pricing and verification standards. To advance cooperation, a pan-Southeast Asian fund could be set up with contributions from multiple countries to de-risk earlier stage carbon credit project development or catalyse offset demand.

In addition to regional efforts, bilateral arrangements could be a first step to facilitate the sale of carbon credits generated in Indonesia, Malaysia, or Vietnam for instance in Singapore's carbon marketplace, in addition to their domestic markets. Governments could agree bilaterally on a framework for allowing credits to be traded across two markets, or to enable market participants in one country to easily trade in the other's market. They could also agree on standards for allowing businesses to use carbon credits to offset carbon taxes, in countries like Singapore where a tax exists. Over time, bilateral agreements can be expanded to include more parties and eventually a regional "carbon club" can be created, with a framework for parties to trade and use each other's emissions reductions.

Ultimately, boosting demand for carbon credits requires robust regulation across the region on emissions from corporations and other entities, so that there is sufficient incentive to participate in carbon markets. Rather than taking a competitive approach, there is an opportunity for ASEAN countries to synergise efforts in building a robust regional carbon market. This would unlock financing for green projects, foster greater innovation, and allow our region to harness green growth opportunities.

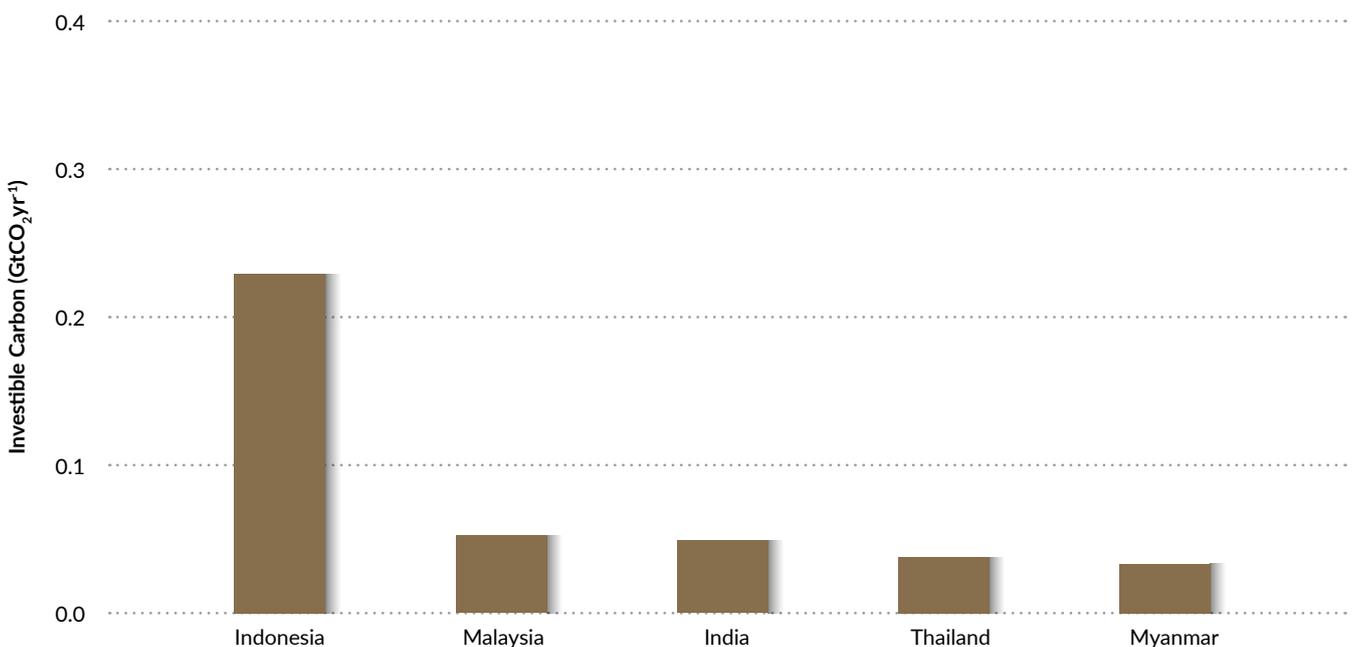
## 2.3 Scaling Nature-based Solutions (NBS)

### 2.3.1 ASEAN's NBS Potential

Nature-based solutions (NBS), also referred to as natural climate solutions (NCS), play an important role in climate mitigation. In particular, nature-based solutions that generate carbon offsets have emerged as a key piece of the climate change puzzle, with recent research indicating that they can deliver a third of the emissions reductions required by 2030 under the Paris Agreement.<sup>120</sup> NBS address “GHG emissions, either by reducing them... or by sequestering carbon through the growth of carbon sinks (reforestation and ecosystem restoration),”<sup>121</sup> and also aim to provide both environmental and societal co-benefits.<sup>122</sup> Due to these co-benefits, they command the highest price in existing carbon markets and are approximately three times more expensive than renewable energy offsets, according to the NUS Centre for Nature-based Climate Solutions (CNCS). Carbon credit certification body Verra reported that 68 per cent of its total issuances for the first quarter of 2021 were from nature-based solutions, a 30 per cent increase from the same period in 2016.<sup>123</sup> The preservation of tropical forests could generate US\$46 billion worth of carbon credits annually, making conservation activities more financially self-sufficient.<sup>124</sup>

Despite the potential, global investment in NBS is low, with less than three per cent of climate finance currently channelled towards NBS.<sup>125</sup> There is an opportunity to scale NBS in Southeast Asia, in tandem with recent global efforts to develop carbon markets. Indonesia and Malaysia are among the top five countries globally for investible carbon (see Figure 3). In terms of annual return-on-investment from NBS projects, the top five countries in Southeast Asia are Indonesia, Malaysia, Thailand, Cambodia and Myanmar.<sup>126</sup> Southeast Asia also has the largest stock of “blue carbon” in the world – referring to mangrove and other marine ecosystems – which by some estimates stores significantly more carbon than terrestrial forests.<sup>127</sup> As noted earlier, by linking NBS to a market mechanism, the value of a natural ecosystem, such as a standing forest, can be compared more fairly to that of an alternative use of the forest, such as agriculture.

Figure 3: Investible forest carbon in Southeast Asia



Source: Koh et al. (2021)<sup>128</sup>

### 2.3.2 Deforestation and Agribusiness: Why it Matters for ASEAN Climate Action

One key competitor to nature-based climate projects in Southeast Asia is the commercial agriculture sector. This sector has been a driver of global deforestation and GHG emissions, contributing to around 2.7 gigatons of carbon dioxide annually between 2013 and 2019.<sup>129</sup> In Indonesia, the Ministry of Environment and Forestry has estimated that 50 to 60 per cent of the country's total annual GHG emissions, even in a year with no severe haze and forest fire event, is attributed to Agriculture, Forestry and Other Land Use (FOLU).<sup>130</sup> For this reason, engaging the agribusiness sector on NBS can make a significant impact on emissions reduction in this region.

As mentioned in Section 1.2, the agribusiness and forestry sectors, especially in Malaysia and Indonesia, have come under heavy scrutiny. ESG controversies surrounding palm oil have led to boycotts - the EU, for instance, has taken a firm stance mandating the phasing out of biofuels by 2030 through its Renewable Energy Directive II (RED II), with some EU member countries implementing their own bans ahead of the RED II schedule. China, the second largest importer of palm oil globally, launched its China Sustainable Palm Oil Alliance in 2018.<sup>131</sup>

Producer countries, therefore, recognise the need to better communicate publicly the positive steps the industry has taken and continues to take. Likewise, many companies operating in forest-related sectors in Indonesia and Malaysia have taken it upon themselves to strengthen their sustainability policies and nature conservation activities, often going above and beyond legal requirements, recognising that staying on top of sustainability issues will serve long-term business interests.<sup>132</sup>

### 2.3.3 Private Sector Action on NBS

Section 2.2 discussed examples of companies utilising carbon offsets to address the harder to abate emissions in their supply chains. This section will explore how companies that operate within forest ecosystems are in a unique position to leverage opportunities in carbon sequestration from nature-based solutions.

Most major players in the agribusiness sector have adopted “No Deforestation, No Peat, No Exploitation” (NDPE) policies, indicating commitment towards the sustainable use of forest and peatlands. Such commitments can be strengthened by supporting conservation projects. As these companies operate in carbon-rich areas and carry deforestation risk in their supply chains, NBS is theoretically an obvious solution for offsetting their operational emissions or meeting other sustainability goals. It could also become a new business opportunity for them and their suppliers, given the increased global interest in trading carbon as a commodity. Revenue from carbon trading could in turn be used to improve existing community engagement and forest fire prevention efforts. It can also provide an alternative source of income for local communities, supporting better education and employment opportunities.<sup>133</sup>

A handful of large plantation companies interviewed by the SIIA are looking into developing carbon projects within their land concessions. Traders have also entered the market - Louis Dreyfus Company B.V., which trades several agri-commodities, recently launched a Carbon Solutions Platform as part of its decarbonisation effort, noting in an official statement that it “will be an active participant in both compliance and voluntary carbon credits markets”.<sup>134</sup>

The Rimba Collective, a new 25-year initiative by Lestari Capital, allows companies in the palm oil sector to invest in conservation and carbon sequestration projects in proportion to the palm oil volume they procure, enabling companies to integrate the cost of conservation into their operational costs. The US\$1 billion initiative in Southeast Asia is backed by founding members including Nestle, PepsiCo, Procter & Gamble and Wilmar, and is starting with 0.5 million hectares of conservation area spread across Malaysia and Indonesia. More broadly, Lestari Capital is aiming to facilitate long-term, cost-efficient portfolio-building in conservation activities - including participation at the project level or via exchanges.

Despite some pioneer efforts, however, NBS, on the whole, remain at an early stage in Southeast Asia. Table 4 showcases a few existing projects. If implemented properly, NBS could be a key carbon management strategy for many countries, especially those rich in forest or mangrove ecosystems, and help shift climate risks to opportunities.

**Table 4: Case studies of existing initiatives in Southeast Asia**

Country	Initiative
Indonesia	<p><b>Katingan Mentaya Project:</b> Producing an annual average of 7.5 million triple gold certified carbon credits, the Katingan Mentaya Project is currently the largest REDD+ project approved by the Verified Carbon Standards (VCS)<sup>135</sup> and seeks to involve local communities in conservation activities to improve their livelihoods.</p> <p><b>Rimba Raya Project:</b> The Rimba Raya Project aims to protect over 65,000 hectares of peat swamp in Central Kalimantan while offering an alternative livelihood to local communities.<sup>136</sup> It is the first REDD+ project to be validated by the Sustainable Development Verified Impact Standard (SD VISTA) programme for contributing to all 17 UN Sustainable Development Goals.<sup>137</sup></p> <p><b>Mangrove Rehabilitation Programme:</b> The Indonesian government aims to rehabilitate 34,000 hectares of mangrove by end-2021 across nine provinces in Sumatra, Kalimantan, and Papua.<sup>138</sup> The mangrove rehabilitation programme is managed by Indonesia's Badan Restorasi Gambut dan Mangrove (Peat and Mangrove Restoration Agency) and the Ministry of Environment and Forestry.</p>
Malaysia	<p><b>Kenyir for Life Project:</b> Led by Rimba, a Malaysian not-for-profit research organisation, this initiative aspires to increase protection of the Kenyir watershed in Terengganu through green financing mechanisms.<sup>139</sup></p> <p><b>Penang Replanting Project:</b> In 2021, Penang state officials announced aims to plant 200,000 trees by 2023 and 500,000 trees by 2030.<sup>140</sup> The state, which is facing increasing flood risks, planted over 70,000 trees from 2018 to 2021, and over 300,000 trees from 2008 to 2018.<sup>141</sup></p>
Singapore	<p><b>City in Nature:</b> As part of the Singapore Green Plan 2030, the City in Nature project can contribute to reducing Singapore's GHG emissions through planting one million more trees across Singapore, establishing 140 hectares of parks and gardens, as well as restoring 30 hectares of various habitats.<sup>142</sup></p>
Vietnam	<p><b>Vietnam Biogas Programme:</b> Founded in 2003 by international development NGO SNV, the programme aims to establish a profitable biogas sector in Vietnam,<sup>143</sup> while preventing half a million tons of carbon dioxide emissions annually. While not directly a nature-based project, it aims to reduce air pollution and deforestation for household fuel use.<sup>144</sup> In May 2020, SNV reported that the project had issued over 700,000 Gold Standard carbon credits.</p>

### 2.3.4 Challenges to Developing NBS

To move forward, however, companies need more clarity on the rules and regulations surrounding the carbon market. Some of these have been resolved by the Article 6 agreement, which will now need to be implemented.

The issue of licensing remains unclear. In Indonesia, for instance, international NGOs wishing to develop carbon projects often face the obstacle of not having the requisite land concession without partnering with a government body. There is also no clear pathway for companies in the agribusiness sector to convert production concessions to conservation areas. Section 2.2 noted the lack of governing rules for carbon trading, and the same applies to NBS in many ASEAN countries: there is often no governing land use framework for rights, governance, or investment relating to carbon projects. This results in success often depending on arbitrary factors, such as relationships with government officials, and has significantly increased the risk for prospective investors.

In addition, NBS come with their own set of risks and criteria to fulfil. The three most often discussed are additionality, permanence, and leakage.

- **Additionality** refers to the reductions or removals of GHG emissions that would not have occurred if the carbon project was not implemented.<sup>145</sup> In other words, if the emissions reductions were realised even in the absence of an NBS project, they cannot be regarded as “additional”. Project developers often analyse adjacent or similar landscapes to their project area as benchmarks for alternate scenarios.
- **Permanence** refers to the reductions or removals of GHG from the atmosphere for the long term. The reductions or removals should not be “reversed” at a future point in time.<sup>146</sup> Project developers sometimes set aside buffer credits to be used as “insurance” for permanence issues, such as carbon loss due to forest fires or logging activities. This requirement is also embedded in existing carbon credit certification standards.
- **Leakage** refers to the increase of emissions in one area, as an unintended consequence of emissions reductions elsewhere.<sup>147</sup> A “jurisdictional approach” has been recommended to address leakage issues, where projects are not monitored in isolation but in relation to others in the same locality.

Finally, securing the involvement and buy-in of local communities is a cornerstone of many successful NBS projects, and also helps drive co-benefits that could potentially raise the price of carbon credits generated. However, this process is often a challenging and long-drawn one. It involves extensive on-the-ground consultations and both cultural and behaviour change, especially in relation to the use of natural resources.

### 2.3.5 Recommendations for Bilateral or Regional Cooperation

Given Southeast Asia’s rich biodiversity, countries in the region could cooperate to leverage the potential of NBS to meet their Paris Agreement targets. Governments must take the lead in establishing baseline standards for NBS, and a sound policy environment for land licensing and carbon trading, to ensure compliance and a level playing field for businesses to grow. There is a need for bilateral and multilateral dialogue, as well as coordinating solutions with researchers, companies, and NGOs on the ground.

Many of the recommendations in section 2.2 for developing carbon markets would apply to scaling NBS. A “carbon club” in the region could be established, where members not only agree to trade emissions cuts but also commit to creating demand for NBS projects towards shared climate goals. Countries

can also create a fund to collaboratively invest in carbon project development across host countries, utilising blended finance to grow private financing over time.

Countries can strengthen cooperation through exchanges of research and innovation, to help source countries to create a stable supply of high-quality carbon credits for buyers. This can leverage digital solutions. For instance, in Singapore, NUS CNCS is working on technology-driven approaches to develop realistic models of carbon stocks and flows in Riau, Indonesia, integrating remote sensing and machine learning techniques with field data. NUS CNCS also aims to scale these technological outcomes to other high carbon ecosystems in Southeast Asia. Continued cross-border cooperation on such research would help countries meet both sustainability and economic goals.

Actions from the private sector will also be important in scaling NBS projects. Initiatives such as the Rimba Collective, as well as Lestari Capital's other activities in developing market-based demand for conservation, should be encouraged and incentivised to expand their reach in the future. More companies will then be able to step up efforts to engage in higher-quality conservation work. Finally, access for NBS to carbon markets needs to be inclusive. For example, agri-commodity sectors often involve millions of smaller producers, including smallholder farmers. These actors would benefit greatly from carbon trading income from the land where they operate, but the market ecosystem, including certification and trading schemes, must be made accessible for trade in smaller amounts of credits.



## Conclusion

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Much like ASEAN already has Political-Security, Economic, and Socio-Cultural Communities, the region can also work towards a “Climate Community”. This report has outlined some key areas where cooperation could help realise the goals of reducing carbon leakage, building carbon markets, and decarbonising the overall economy, while addressing development priorities and maintaining openness to trade.

ASEAN countries could work towards a unified approach to pricing carbon. Individual capabilities of each country can be developed towards mutually beneficial partnerships in areas such as clean energy and nature-based solutions. Resources could be shared, for instance through a climate fund, which may include contributions from ASEAN countries as well as valued development partners towards low-carbon initiatives.

Establishing a collaborative climate community would mitigate not only climate change but also the new challenges posed by the COVID-19 pandemic, such as supply chain resilience. It would build on existing climate adaptation and mitigation efforts by individual ASEAN countries, to better align national priorities with the global climate agenda. Finally, as economic and trade dynamics shift with growing global efforts on carbon pricing, cooperation within ASEAN will help keep the region competitive and a vital part of global value chains.



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# About the Singapore Institute of International Affairs

## Insights • Networks • Access

Established in 1962, the Singapore Institute of International Affairs (SIIA) is a non-profit and independent think tank committed to producing policy analysis, fostering in-depth dialogues and bridging gaps between policymakers, private sector decision-makers and experts to shape public policy and social responses. Centred around ASEAN focused themes, the institute aims to deliver policy analysis in international affairs and on issues driving environmental sustainability. The SIIA has been consistently ranked as one of the leading think tanks in Southeast Asia and the Pacific, in the Global Go To Think Tank Index by the University of Pennsylvania. Since 2017, the SIIA was ranked the No. 1 independent think tank in Asia. It was also recognised as one of the top 50 think tanks globally, excluding the United States of America. For two consecutive years since 2019, it was recognised as the No. 1 think tank in South Asia, Southeast Asia, and the Pacific (excluding India). In 2020, it was also recognised as one of the think tanks with the best policy and institutional response to the COVID-19 pandemic.

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The SIIA's Sustainability Programme was established in 1997 when it organised Singapore's first haze dialogue with the Singapore Environment Council. Since then, the Sustainability Programme has evolved to address a range of sustainability issues ASEAN faces. The Programme continues to focus on the haze and resource sector, as well as using green finance and carbon financing as levers to advance supply chain sustainability and drive Southeast Asia's "green recovery" from the COVID-19 pandemic.

As part of its Sustainability Programme, the SIIA facilitates dialogues between governments, private sector, academia and NGOs. One of the SIIA's key platforms is its flagship event, the Singapore Dialogue on Sustainable World Resources (SDSWR), launched in 2014. The annual event attracts about 300 high-level participants to discuss best practices, new commitments and noteworthy cross-sector collaborations in ASEAN's resource sector, to prevent and mitigate the recurrence of transboundary haze. A key research output by the Institute is the SIIA Haze Outlook report. Launched in 2019, the report serves as a risk assessment and predictive tool for countries in the region to determine the likelihood of a severe transboundary haze incident. In 2020, the SIIA released the report "ESG in Practice: A Closer Look at Sustainability in ASEAN's Palm Oil and Pulpwood Sectors", providing recommendations to align agribusiness and forestry stakeholders on environmental, social, and governance factors towards a long-term vision of sustainable production.



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