Private Sector Perspectives on Carbon Pricing Instruments in ASEAN

IGES
Institute for Global Environmental Strategies

ISBN 978-4-88788-260-7

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Acknowledgements

The Institute for Global Environmental Strategies (IGES) would like to express its sincere gratitude for the financial support provided by the United Nations Environment Programme Regional Office for Asia and the Pacific (UNEP ROAP) for the implementation of the survey on the Private Sector Perspectives on Carbon Pricing Instruments in ASEAN.

The authors (Yuqing Yu and Chatthep Chanyam, IGES Regional Centre in Bangkok) are grateful for the visionary leadership and extensive technical guidance of Dr. Sudhir Sharma (UNEP ROAP) as well as insightful review comments from Mr. Jens Radschinski (UN Climate Change), Dr. Mark Elder (IGES Strategic Management Office), Dr. Xianbing Liu (IGES Climate and Energy Area), Dr. Satoshi Kojima (IGES Climate and Energy Area), and Prof. Kazuo Matsushita (IGES Senior Fellow). Our appreciation also goes to Dr. Ngoc-Bao Pham (IGES Adaptation and Water Area) for close coordination with the Vietnamese consultants, as well as to Ms. Emma Fushimi (IGES editing manager) for considerable editorial efforts. We would also like to thank our Vietnamese consultants (Ms. Dang Hong Hanh and Ms. Hong Loan, Viet Nam Energy and Environment Consultancy Joint Stock Company) for intensive outreach efforts to solicit Vietnamese interest. Last but not least, we would like to thank Dr. Sudarmanto Budi Nugroho (IGES City Task Force), Mr. Kentaro Takahashi (IGES Climate and Energy Area), Mr. Albert Altarejos Magalang (Department of Environment and Natural Resources, the Philippines), and Mr. Andrew Saw (Carbon Mitigation Division, National Environment Agency, Singapore) for their facilitation of reaching out to private sector actors.

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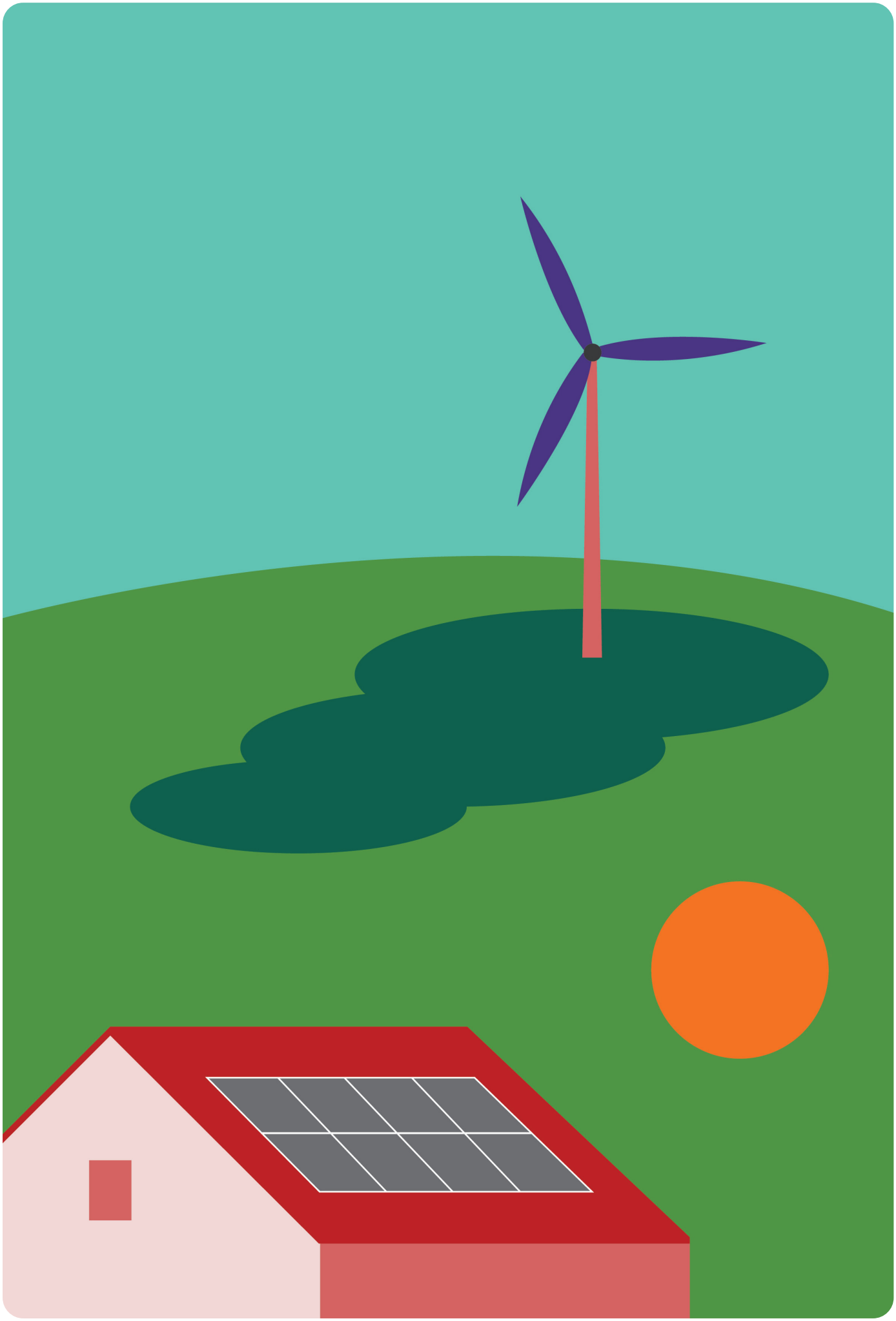
Glossary

AMS – ASEAN Member States
ASEAN – Association of Southeast Asian Nations
BAU – Business As Usual
CB – Capacity Building
CBAM – Carbon Border Adjustment Mechanism
CCUS – Carbon Capture Utilization and Storage
CIACA – Collaborative Instruments for Ambitious Climate Action
COP26 – 26th Conference of Parties to the UNFCCC
C-PFES – Carbon Payments for Environmental Services
CPI – Carbon Pricing Instrument
EPT – Environmental Protection Tax
ERC – Ecosystem Restoration Concession
ETS – Emission Trading Scheme
FiT – Feed-in Tariff
GHG – Greenhouse Gas
GITA – Green Investment Tax Allowances
GITE – Green Income Tax Exemption
GS – Gold Standard
GTFS Green Technology Financing Scheme
IGES – Institute for Global Environmental Strategies
JAIF – Japan ASEAN Integrated Fund
LEPT – Law on Environment Protection Tax
MRV – Measurement, Reporting and Verification
NAMA – Nationally Appropriate Mitigation Action
NbS – Nature-based Solutions
NDC – Nationally Determined Contributions
NEM – Net Energy Metering
OECC – Overseas Environmental Cooperation Center
PaSTI – Partnership to Strengthen Transparency for Co-Innovation
REC – Renewable Energy Certificate
SEC – Securities and Exchange Commission
SMEs – Small and Medium Enterprises
Thailand V-ETS – Thailand Voluntary Emissions Trading Scheme
T-VER – Thailand Voluntary Emission Reduction
UNEP – United Nations Environment Programme
UNFCCC – United Nations Framework Convention on Climate Change
VCS – Verra's Verified Carbon Standard



Foreword

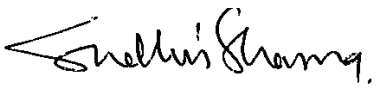
Climate change is a clear and present danger to the existence of humanity. The devastating impacts of climate change are spreading across the globe and growing ever stronger with each passing year, as the probability of exceeding a 1.5°C temperature threshold within the next few decades is now 50%.

The UNFCCC NDC Synthesis report published before COP26 clearly highlighted that even with updated NDCs, the global reduction of greenhouse gas emissions by 2030 is way below the required effort to ensure the world has a fair chance of keeping the increase in temperature to within 1.5°C [1]. To get on track to limit global warming to 1.5°C, the world needs to take an additional 28 gigatons of carbon dioxide equivalent ($GtCO_2e$) off annual emissions by 2030, over and above what is promised in updated unconditional NDCs. For the 2°C Paris Agreement target, the additional need is lower: a drop in annual emissions of 13 $GtCO_2e$ by 2030.

The outcomes of COP26 do provide some light at the end of the tunnel, especially with the completion of the Paris Rulebook that will enable implementation of the Paris Agreement effectively. One key COP26 decision was on the adoption of the Cooperative and Global Mechanism under Article 6 to kick-start the carbon markets.

As this year's Emissions Gap Report shows, carbon markets could help to accelerate action by decreasing mitigation costs. By enabling the role of international cooperation in addressing mitigation opportunities, Article 6 provides a tool to increase climate ambition. A study conducted by the International Emissions Trading Association in 2019 [2] estimated a total of USD250 billion per year in 2030 can be saved globally from improved economic efficiency savings which could be diverted by country governments to other priorities, or channelled to enhance climate mitigation actions which will result in an increase in global carbon emissions mitigation by up to 5 gigatons of CO_2 equivalent per year.

Key actors in enabling effectively implementing NDCs and leveraging carbon markets to create a positive cycle are the private sector and public sector entities. Effective implementation of Article 6 requires their participation in enabling fully operational and effective carbon markets. In light of this key role, and as governments start working on systems to establish national carbon markets as well as for participation in Article 6 mechanisms, UNEP and IGES took the initiative to assess the awareness, readiness and needs of the private sector in operationalising the carbon markets. The study is limited to six ASEAN countries and a small group of entities but provides some very useful insights that could help the donor community and country governments in shaping the institutional structure and rules for operationalising carbon markets. We hope this will enable countries to fully participate in carbon markets and start a virtuous cycle towards increased NDC ambition for a net-zero world by mid-century.



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[1] United Nations Climate Change. (2021). *Nationally Determined Contributions under the Paris Agreement: The synthesis report by the secretariat.* https://unfccc.int/sites/default/files/resource/cma2021_08E.pdf

[2] International Emissions Trading Association. (2019). *Greenhouse gas market report.* https://www.ieta.org/resources/Resources/GHG_Report/2019/IETA%20-%20GHG%20Report%202019_WEB.pdf

Executive Summary

The ASEAN region is facing a substantial emissions gap regarding its contribution to the 1.5°C pathway. If the ASEAN Member States (AMS) are to fully implement both their unconditional and conditional pledges under the new and updated Nationally Determined Contributions (NDCs), the ASEAN region needs to ratchet up GHG emissions reductions in 2030 by 60% and 44% to get on the 1.5°C pathway. Carbon markets can be a lever for unlocking greater NDC ambition, as seen in Article 6 of the Paris Agreement which encourages cooperation. Additionally, the cost-effectiveness of carbon markets can incentivise the private sector and help remove political resistance to strengthened commitments.

The UNEP-IGES survey on Private Sector Perspectives on Carbon Pricing Instruments (CPIs) in ASEAN (hereafter referred as the CPI survey) comes just as the Paris Rulebook has been finalised, with its major point—detailed guidelines for implementing Article 6—finally adopted in Glasgow. The CPI survey aims to assist AMS to move towards adoption of carbon pricing in NDC implementation and NDC revision, with a primary objective of raising awareness in the private sector and enhancing ownership by businesses in the context of CPI discussion and development. Specifically, the CPI survey aims to gain insights from the private sector on the following issues:

- Private sector climate change-related experience and knowledge of CPIs;
- Views on the significance of CPIs in the implementation of NDCs;
- Views on the domestic development of CPIs and interest in international trading of carbon credits;
- Support needed to enable the engagement of private sector actors in CPIs and possible areas of collaboration.

CPIs are being developed at different rates and in different forms in AMS. Among the 10 AMS, nine countries explicitly mentioned their intention to use CPIs or Article 6 mechanisms as one of the important approaches to achieving their NDCs, with the exception of Malaysia which expressed no intention to use voluntary cooperation under Article 6 in its updated NDC. Specifically, Singapore has enforced a carbon tax since 2019; Indonesia, Thailand and Viet Nam are mandated to implement carbon markets by various legislation and regulations; and the Philippines is exploring this option. However, it is noteworthy that the government of Malaysia has advanced the development of carbon markets after its NDC submission in July 2021 and has agreed on the development of voluntary markets as a reference for international carbon credit transactions since September 2021.

The CPI survey focused on six AMS—Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam (hereafter referred as AMS-6)—as they have developed or are in the process of developing facility-level guidelines for the measurement, reporting and verification (MRV) of GHG emissions, while the other four AMS have not planned to develop facility-level MRV guidelines. After contextualising the NDCs and CPI development status of AMS-6, a set of six questionnaires was developed and these were distributed to about 100 recipients in a range of companies from mid-September to the end of October, 2021. A total of 31 respondents either sent written responses or undertook interviews with the project team within the same period. Subsequently, a private sector dialogue was organised on 23 November, 2021 to further solicit inputs from the survey recipients who had not responded and to validate preliminary findings and recommendations with the survey recipients. Taking into account the availability of facility-level MRV guidelines as well as the sectoral importance to respective NDCs, the CPI survey

prioritised the energy, cement, iron and steel, petrochemical, automotive, palm oil and waste sectors. It is notable that the CPI survey has several limitations resulting from the survey methodology. For example, respondents were not evenly distributed across countries and sectors; large enterprises, industrial leaders and publicly listed corporations tended to be more responsive to the survey than small and medium enterprises (SMEs); and survey responses were evaluated only in a sectoral dimension, and not in a country dimension as the project team did not receive a meaningful number of inputs from several AMS-6. Nevertheless, the CPI survey sheds light on an improved understanding of: (1) private sector experience on climate change and CPIs; (2) private sector perspectives on CPIs and interest in international trading of carbon credits; and (3) support needed to prepare the private sector for the introduction of CPIs.

Overall, respondents from the survey in AMS-6 are fully aware of the urgency of climate action and have undertaken a wide range of mitigation measures related to energy efficiency, renewable energy, nature-based solutions, and target setting and reporting of GHG emissions. The reaction of AMS-6 survey respondents to climate urgency is in line with the global trends in the climate regime, potentially emerging from the obligations arising from the Paris Agreement. The factors that have motivated survey respondents to take climate action include cost reduction, compliance with regulations, government incentives, corporate social responsibilities, and long-term mindset and vision.

Around 60% of the respondents have had carbon market experience, having participated in either international schemes (i.e. Clean Development Mechanism, Joint Crediting Mechanism, Gold Standard, and Verified Carbon Standard) or domestic initiatives (i.e. Thailand Voluntary Emission Reduction and Renewable Energy Certificate). Additionally, only the Vietnamese respondents expressed concern about disclosing GHG-related data, with other country respondents not expressing concern on data disclosure. Among the Vietnamese respondents, half of them do not have GHG data disclosure concerns, while the remaining half expressed concerns, including worries that data disclosure may affect their company's image, reputation and competitiveness; the lack of guidelines for GHG reporting; the lack of organisational, financial and human capacity; the lack of available data; and the lack of data disclosure from competitors. Moreover, about two thirds of the respondents mentioned that their companies have established GHG data collection systems and have reported GHG emissions regularly. About half of all the respondents have had their corporate GHG inventory reports externally reviewed and verified.

The respondents showed sectoral differences regarding their perspectives on CPIs. The respondents representing the energy sector generally consider that carbon pricing is a double-edged sword as it provides opportunities but imposes obligations at the same time. The industrial respondents from Viet Nam mainly see carbon pricing as an obligation and called for substantial government support for their readiness for CPI introduction. In contrast, the industrial respondents from the other AMS view CPIs in a relatively positive way, stressing that the introduction of CPI can scale up climate action at the industry level and mobilise concerted action to maintain a level playing field. The respondents from the palm oil sector largely highlighted the opportunities that CPIs may bring about, as CPIs would allow the sector to explore untapped opportunities such as nature-based solutions (NbS). Likewise, the waste sector respondents also had a positive view, agreeing that CPIs could bring extra revenue.

Regarding the opinions on an emission trading scheme (ETS) compared to a levy on carbon emissions, the energy, palm oil and waste sector respondents broadly have a strong preference for ETS. The respondents from these three sectors highlighted the incentive mechanisms inherent in ETS. For example, the energy sector is responsive to marginal production costs resulting from ETS, while ETS may create demand for offsetting credits from the palm oil and waste sectors. However, the industrial respondents have diversified views. One group of industrial respondents showed a preference for ETS, highlighting ETS incentives for low-carbon transformation. Another group of industrial respondents expressed a preference for carbon tax, stressing the ease of implementation and scalability of carbon tax. Several industrial respondents mentioned that they cannot make

a judgement as their understanding of CPIs is not sufficient. Moreover, some respondents mentioned that they do not have a preference as the effectiveness of CPIs depends on policy design and implementation.

The respondents did not express strong interest in international trading of carbon credits. This lack of interest may result from the fact that the private sector is waiting for governments to interpret the rules set out in Article 6, and to formulate country positions regarding contentious topics such as internationally transferred mitigation outcomes (ITMOs) and corresponding adjustments. Additionally, several respondents highlighted that policies in other domains can be a prerequisite for accessing international carbon markets. For example, holding an ecosystem restoration concession license is imperative for Indonesian palm oil producers to generate carbon credits from NbS. Nevertheless, the respondents recognised the significance of cooperation and called for a wide range of international support for capacity building.

Specifically, the respondents requested capacity building in the following three areas:

- Concept of CPIs, such as the need to understand how CPIs function; how international trading of carbon credits functions; how to analyse texts of CPI-related legislation, regulations and policies; and how to assess the consequences of introducing CPIs;
- MRV-related activities, including facility-level GHG data collection and quantification as well as measures to improve quality assurance and control;
- Infrastructure for carbon trading, such as the establishment and operation of a registry account as well as the management of CPI-related company tax and accounting implications.

The respondents came up with the following five recommendations for CPI development:

- **Provision of incentives:** Financial incentives in the form of tax rebates, tax exemptions, low-interest loans, subsidies for third party verification, and government procurement for low-carbon products are expected to assist the private sector in adopting CPIs. Additionally, moral incentives, for example linking the participation in CPIs with a prestigious award, would encourage private sector engagement.
- **Enforcement of regulations:** Industry-wide or national-wide mandatory measures rather than voluntary adoption would provide a level playing field, and are preferred by the respondents. Additionally, the protection of energy-intensive industries is crucial for maintaining industry competitiveness, and hence the application of the same regulations on imported products is expected to prevent carbon leakage.
- **Institualisation of capacity building:** The establishment of a CPI Academy is one approach to ensuring that capacity building is not provided in a one-off way. Linking the CPI Academy with employee career development and adding CPI courses to corporate employee career development programmes is an effective means of training CPI professionals.
- **Linkage between corporate emissions and NDCs:** The disaggregation of NDC from a national target to lower level targets, including targets for key emitting enterprises, is crucial for translating NDC into on-the-ground action. Establishing linkage between corporate emissions and NDCs will greatly build the private sector's capacity to carry out facility-level MRV activities, which will serve as the foundation for CPIs.
- **Harmonisation and cooperation:** The need for harmonisation of MRV guidelines takes place both at the national level and at the ASEAN level. Domestically, governments are recommended to consider one set of MRV requirements to help companies save on financial costs associated with third-party verification and reduce administrative burden. At the ASEAN level, the identification of appropriate emissions sources for harmonisation and the development of harmonised guidelines based on those in place in AMS will lay the foundation for carbon trading across borders and will allow market players to access a regional market with better liquidity. As the rules for Article 6 mechanisms have become clearer, AMS need to build consensus on the intended use of international credits in their national carbon markets. To enable cooperation, the development of a linked roadmap, the development of joint framework activities, and pilot schemes for cross-border initiatives (e.g. the transaction of NbS) credits between Singapore and Indonesia, the transaction of green electricity between two AMS) are some proposed activities for consideration in the near term.

1

Introduction

The ASEAN region is facing a substantial emissions gap to achieving the 1.5 °C pathway. The emissions gap is estimated as the difference between projected ASEAN Member States' (AMS) greenhouse gas (GHG) emissions assuming full implementation of the mitigation pledges that AMS have unconditionally and conditionally made for 2030 under their updated or new Nationally Determined Contributions (NDCs), and emissions under a cost-effective pathway consistent with the Paris Agreement's goal of pursuing efforts to limit global average temperature increase to 1.5°C [3]. It is estimated that full implementation of AMS' unconditional NDCs will result in an emissions gap to the 1.5°C pathway of 2,670 $MtCO_2e$ (in the range of 2,227-3,515 $MtCO_2e$); and the emissions gap will be reduced to 1,458 $MtCO_2e$ (in the range of 1,015-2,303 $MtCO_2e$), if the conditional NDCs are also fully implemented (Figure 1).

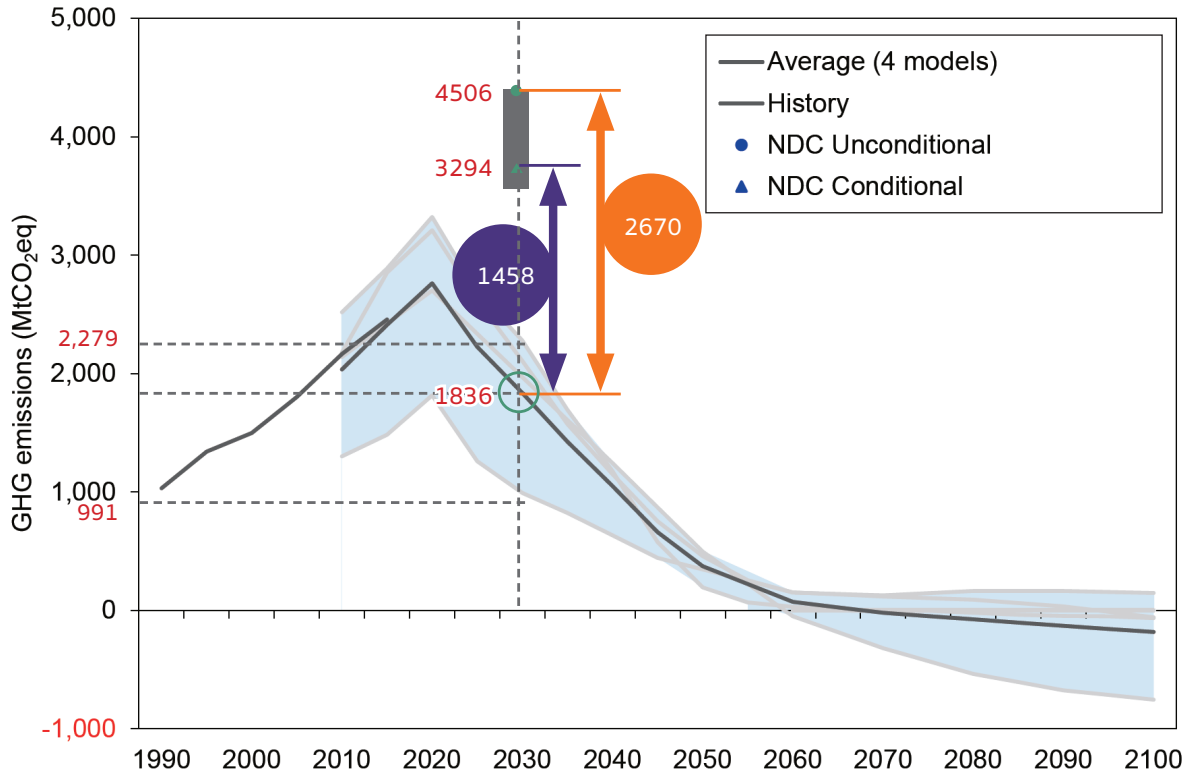

Figure 1. ASEAN's emissions gap [4]
Source: The ASEAN Secretariat (2021)

[3] ASEAN Secretariat. (2021). *ASEAN state of climate change report.* https://asean.org/book/asean-stateof-climate-change-report/

[4] Sources of data: The 2030 emissions under the NDC Unconditional and Conditional scenarios are from ASCCR (2021); emissions consistent with the 1.5°C pathway are from IISA (2020); historical emissions are from EC (2019).

Specifically, the full implementation of AMS' unconditional NDCs will result in ASEAN aggregate emissions of 4,506 $MtCO_2$ in 2030, while the implementation of AMS' conditional NDCs will reduce aggregate emissions to 3,294 $MtCO_2$ in 2030. However, the average outcome of four modelling exercises indicates that ASEAN should emit 1,836 $MtCO_2$ (in the range of 991-2,279 $MtCO_2e$ depending on different modelling assumptions) in 2030 to get on the 1.5°C pathway. In other words, to get on the 1.5°C pathway, AMS need to achieve an additional GHG emissions reduction of 60% on top of unconditional NDC pledges, and an additional 44% reduction on top of conditional NDC pledges. This substantial gap in emissions indicates that AMS need to dramatically increase ambition to stay on track for the 1.5°C pathway.

Meanwhile, carbon pricing can be a lever for unlocking greater climate ambition through internationally-transferred carbon credits that can be used in other countries towards meeting the aims of NDCs. At the global level, estimates show that global emissions reduction could be roughly doubled over the next decade at no added cost to Parties under the Enhanced Ambition scenario from Article 6 of the Paris Agreement [5] (Figure 2). The Article 6 mechanisms encourage stronger cooperation among countries on mitigation and adaptation as a way to implement NDCs and enhance ambition, whilst also fostering sustainable development and encouraging broad participation from the public and private sectors. By providing incentives, carbon markets allow GHG emitting entities to discover low cost mitigation options and bring short- and medium-term flexibility to the practice of defining their emissions reduction trajectory within the overall reduction goal, which in turn could lower stakeholder and political resistance to strengthened GHG reduction targets.

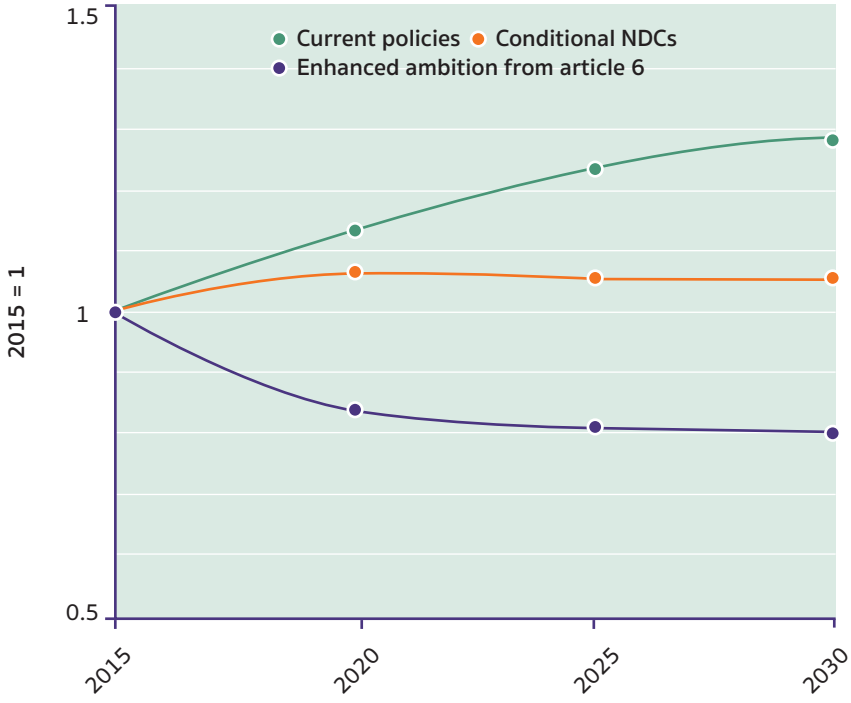

Figure 2. Increased ambition potentially available from the ideal implementation of Article 6
Source: UNEP (2021)

[5] United Nations Environment Programme. (2021). *The emissions gap report 2021: The heat is on.* https://www.unep.org/resources/emissions-gap-report-2021#:~:text=The%20Emissions%20Gap%20Report%202021,worst%20impacts%20of%20climate%20change.

The ASEAN region is in the early stages of developing carbon pricing instruments (CPIs) [6]. The multiple initiatives that support ASEAN in exploring mitigation cooperation through carbon pricing have a focus on improving data consistency and data sharing [7] (Figure 3). These initiatives generally consider government agencies as their targeted stakeholder group. On the other hand, ASEAN private sector actors need to enhance their understanding of CPIs and raise awareness of mitigation potential that CPIs may bring about. This paper aims to fill this gap, and highlights private sector perspectives on CPIs in ASEAN.

Sponsor	Initiative	Focus
UNFCCC	CiACA 1.0 (completed)	Review of AMS MRV systems
	CiACA 2.0 (ongoing)	Harmonisation of facility-level MRV systems
	REdiCAP (completed)	Opportunities for CPI collaboration
UN Issue-Based Coalition	Mitigation & Air Pollution (ongoing)	Roadmap for ASEAN Carbon Trading Platform
European Union	E-READI (ongoing)	Funding various country-level activities on climate change cooperation
Government of Japan	PaSTI-JIAF Phase I (completed)	Roadmap for design of facility-level M&R guidelines
OECC	PaSTI-JIAF Phase II (proposed)	Pilot facility-level M&R guideline
IGES	ASEAN State of Climate Change Report	Recommend priorities for regional cooperation
JCM	57 projects registered in ASEAN. Cooperating with World Bank to scale-up as part of Article 6 support	Development of joint GHG emissions reductions and removals projects under bilaterally agreed MRV systems (agreements in place among AMS with Cambodia, Indonesia, Lao PDR, Myanmar, the Philippines, Thailand and Viet Nam)
Government of Republic of Korea	ASEAN-ROK Carbon Dialogue (ongoing)	Knowledge-building for carbon pricing in ASEAN
Government of Germany IKI	Article 6 funding	Capacity-building for Article 6 and opportunities for strategic intemnational cooperation (Thailand participating from AMS)

[6] According to World Bank, carbon pricing is an instrument that captures the external costs of greenhouse gas (GHG) emissions—the costs of emissions that the public pays for, such as damage to crops, health care costs from heat waves and droughts, and loss of property from flooding and sea level rise—and ties them to their sources through a price, usually in the form of a price on the carbon dioxide (CO_2) emitted. A price on carbon helps shift the burden for the damage from GHG emissions back to those who are responsible for it and who can avoid it. Available at https://carbonpricingdashboard.worldbank.org/what-carbon-pricing

[7] World Bank. (2021). *Discussion paper on exploring regional mitigation cooperation through carbon pricing in ASEAN.* Internal World Bank Report. Unpublished.

Sponsor	Initiative	Focus
ADB	Article 6 Support Facility (ongoing)	Capacity-building in Article 6 international carbon markets (work plans agreed for Indonesia and Viet Nam among AMS)
World Bank	Climate Market Club (ongoing)	Support to piloting Article 6 international carbon markets (Singapore invited from AMS)
	Climate Warehouse (ongoing)	Establish linked database of national registries (Singapore participating from AMS)
	Carbon Pricing Leadership Coalition (ongoing)	Communicating benefits of CPIs (Singapore participating from AMS)
	Networked Carbon Markets Initiative (ongoing)	Collaborative design of Article 6 carbon markets (no direct AMS participation)
	Carbon Partnership Facility (ongoing)	Facilitate long-term projects through sale of emissions reductions (public entities in Philippines, Thailand and Viet Nam participate as sellers)
	Transformative Carbon Asset Facility (ongoing)	Facilitate sectoral and policy-based crediting programs through carbon accounting methodologies (host countries not identified)
	Ci-Dev (ongoing)	Facilitate small and micro-scale programs of projects using technology-based accounting (Lao PDR participating as host from AMS)
	Partnership for Market Implementation (PMI) (Window 3, potential)	Facilitate harmonization of carbon pricing infrastructure, adoption of innovative tools, development of transparent accounting procedures
IEA-TGO	Collaborative Project on Carbon Pricing (ongoing)	Knowledge-building for carbon pricing in the power sector

Figure 3. Carbon pricing initiatives in ASEAN.
Source: World Bank (2021)

CPIs are being developed at different rates and in different forms in AMS. Among the 10 AMS, nine countries explicitly mentioned the intention to use CPIs or the Article 6 mechanisms as one of the crucial approaches to achieving their NDCs, with the exception of Malaysia which highlighted the lack of intention to use voluntary cooperation under Article 6 in its updated NDC. Specifically, Singapore has enforced a carbon tax since 2019; Indonesia, Thailand and Viet Nam are mandated to implement carbon markets by various legislation and regulations; and the Philippines is exploring this option. However, it is noteworthy that the government of Malaysia has advanced the development of carbon markets after its NDC submission in July 2021 and has agreed for the development of voluntary markets as a reference for international carbon credit transactions since September 2021.

Six AMS—Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam—have developed or are in the process of developing facility-level guidelines for the measurement, reporting and verification (MRV) of GHG emissions, while the other four AMS have not planned to develop facility-level MRV guidelines, Therefore, the UNEP-IGES survey on the Private Sector Perspectives on Carbon Pricing Instruments (CPIs) in ASEAN (hereafter referred as the CPI survey) has an initial focus on the six aforementioned AMS (hereafter referred as AMS-6). The CPI survey aims to raise awareness in the private sector and enhance understanding on the mitigation potential of CPIs, thereby gaining insights into the following aspects:

- Private sector climate change-related experience and knowledge of CPIs;
- Views on the significance of CPIs in the implementation of NDCs;
- Views on the domestic development of CPIs and interest in international trading of carbon credits;
- Support needed to enable the engagement of private sector actors in CPIs and possible areas of collaboration.

This paper is structured as follows:

- Section 2: Overview of current CPI development in AMS-6;
- Section 3: Assessment of private sector perspectives on CPIs
- Section 4: Recommendations for designing CPIs

2

Overview of CPI Development in ASEAN

Indonesia

In July 2021, Indonesia submitted its updated NDC, and made an unconditional commitment to reducing its total GHG emissions by 29% compared to the business-as-usual (BAU) level by 2030 and a conditional commitment to reducing total GHG emissions by 41% from BAU by 2030 with international support [8].

In 2017, Indonesia passed the Government Regulation (no.46/2017) on Environment Economic Instruments, which set a mandate for an emissions and/or waste permit trading system to be implemented by 2024 [9]. Advanced progress is being made on a Presidential Regulation that will provide a national framework for carbon pricing instruments, including ETS.

Furthermore, a voluntary emissions trading trial was launched for the power sector, running from March to August 2021. Eighty coal-fired power plants participated, of which 59 are owned by the state electricity company PLN. This voluntary programme is considered a pilot and is focused on familiarising stakeholders with the development of a national ETS, ETS compliance procedures and offset mechanisms.

The Government of Indonesia is in the process of drafting a more progressive emissions reduction scheme under a draft Presidential Regulation on Instruments of Carbon Economic Value for NDC (Carbon Economic Value Bill) [10]. The proposed scheme would regulate carbon trade, provide payments based on performance in reducing GHG emissions, and impose a levy on carbon emissions. According to the recent development, the country is set to introduce a new carbon tax as part of its commitment to reducing carbon emissions [11]. While the carbon tax is part of the country's recent efforts to reform its outdated tax laws, the cost of taxation per metric tonne of CO_2 equivalent would be around USD 2.1 making it one of the lowest taxes amongst countries with similar measures. The carbon tax is expected to be levied from April 2022, starting with coal power plants [12]. In this regard, the Indonesian government has sent a strong signal that it is committed to reduce its GHG emissions and would encourage the development of carbon markets and carbon trading to achieve its net-zero target by 2060 [13].

[8] Republic of Indonesia. (2021). *Updated Nationally Determined Contribution.* https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Indonesia%20First/Updated%20NDC%20Indonesia%202021%20-%20corrected%20version.pdf

[9] International Carbon Action Partnership. (2021). *Indonesia* [Fact Sheet]. https://icapcarbonaction.com/system/files/ets_pdfs/icap-etsmap-factsheet-104.pdf

[10] International Monetary Fund. (2021). *Indonesia and Climate Change: Recent Developments and Challenges.* https://www.elibrary.imf.org/view/journals/002/2021/047/article-A007-en.xml

[11] Indonesia is Set to Introduce $2.1 per Ton of CO2e Carbon Tax. (2021, October 1). *Jakarta Globe.* https://jakartaglobe.id/business/indonesia-is-set-to-introduce-21-per-ton-of-co2e-carbon-tax

[12] Indonesia to Impose Carbon Tax in April 2022, Starting With Coal Power Plants. (2021, October 08). *Jakarta Globe.* https://jakartaglobe.id/business/indonesia-to-impose-carbon-tax-in-april-2022-starting-with-coal-power-plants

[13] Ho, Y. (2021, October 22). *Indonesia's Path to Net Zero CO2 Includes a Nuclear Plant and Banning ICE Cars.* Bloomberg. https://www.bloomberg.com/news/articles/2021-10-22/indonesia-zero-carbon-path-includes-nuclear-plant-car-sales-ban

Malaysia

In July 2021, Malaysia submitted its updated NDC, and made an unconditional commitment to reducing economy-wide carbon intensity (against GDP) of 45% in 2030 compared to the base year in 2005 [14].

Since 2009, Malaysia has made significant progress on policies, legislative frameworks and implementation mechanisms to accelerate the transition to a sustainable, green and low-carbon future. Malaysia produces 22.4% of its power from renewable sources and aims to hit 30% by 2030 [15]. Much of this renewable generation is from hydropower projects. The Feed in Tariff (FiT), Net Energy Metering (NEM) and Green Technology Financing Scheme (GTFS) policies adopted in the last few years are key drivers that have propelled substantial new investment in renewable energy. Currently, the government of Malaysia is planning a study on the need for climate change legislation, and is revising the Environmental Quality Act 1974 to include climate change and sustainability, as well as mandating GHG management and reporting [16].

Although there are no explicit CPIs in place, Malaysia has implemented implicit carbon prices. For example, the FiT mechanism under the Renewable Energy Policy and Action Plan allows electricity produced from indigenous RE resources to be sold to power utilities at a fixed premium price for a specific duration [17]. Additionally, the MYCarbon Programme introduced in 2013 allows corporate entities to deduct the actual expenses incurred ranging from RM30,000 to RM 200,000 in preparing and verifying their GHG inventories [18]. Furthermore, the Green Investment Tax Allowances (GITA) and Green Income Tax Exemption (GITE) were introduced in 2014 to strengthen the development of green technology [19]. Companies that acquire green technology assets or undertake green technology projects, as well as green technology service providers, are eligible to apply for the incentives.

Moreover, the Ministry of Energy and Natural Resources published the National Guidance on Forest Carbon Market [20], while the Ministry of Environment and Water is preparing carbon market guidelines and a carbon pricing policy to provide clear guidance to those who want to get involved in the voluntary carbon market [21].

[14] The Government of Malaysia. (2021). *Malaysia's update of its first Nationally Determined Contribution.* https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Malaysia%20First/Malaysia%20NDC%20Updated%20Submission%20to%20UNFCCC%20July%202021%20final.pdf

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[16] Yunus, A. (2021, February 25). Govt reviewing Environmental Quality Act 1974, says PM. *New Straits Times.* https://www.nst.com.my/news/government-public-policy/2021/02/669027/govt-reviewing-environmental-quality-act-1974-says-pm

[17] Sustainable Energy Development Authority Malaysia (SEDA Malaysia). (2018). *Feed-in Tariff (FiT) in Malaysia* [Brochure]. https://www.seda.gov.my/wp-content/uploads/2018/12/FiT-Brochure.pdf

[18] Malaysia: Companies participating in MyCarbon programme get tax incentives. (2016, February 19). *Eco-Business.* https://www.eco-business.com/news/malaysia-companies-participating-in-mycarbon-programme-get-tax-incentives/

[19] Malaysia MyHiJau. (2021, November 18). *Green incentives.* https://www.myhijau.my/green-incentives/

[20] Ministry of Energy and Natural Resources Malaysia. (n.d.). *National guidance on forest carbon market.* https://www.ketsa.gov.my/ms-my/pustakamedia/Penerbitan/National%20Guidance%20on%20Forest%20Carbon%20Market.pdf

[21] Hazim, A. (2021, September 20). Govt agrees for Voluntary Carbon Markets development. *The Malaysian Reserve.* https://themalaysianreserve.com/2021/09/20/govt-agrees-for-voluntary-carbon-markets-development/

The Philippines

In April 2021, the Philippines submitted its updated Nationally Determined Contribution (NDC), and made a commitment on projected GHG emissions reduction and avoidance by 75%, of which 2.71% is unconditional and 72.29% is conditional, from 2020 to 2030 [22]. The commitment is referenced against a projected BAU cumulative economy-wide emissions of 3,340.3 $MtCO_2e$ for the same period.

In February 2020, the Committee on Climate Change of the Philippine House of Representatives conditionally approved the 'Low Carbon Economy Act' House Bill No. 2184, which includes provisions for a domestic cap-and-trade system [23]. To date, it has not proceeded further. The bill would establish a cap-and-trade system for the industrial and commercial sectors, administered by the Philippine Department of Environment and Natural Resources (DENR) and the Department of Trade and Industry. An entity that exceeds its GHG emissions allowance during any calendar year would pay double the market price for excess emissions, with the proceeds going into a "Climate Reinvestment Fund" for activities exclusively addressing global warming [24].

The Department of Finance (DOF) has been leading a Technical Working Group on the analysis of CPI options [25]. The initial analysis has proposed the introduction of an ETS in the power sector with a possible future extension to major industrial facilities and is now entering a process of stake-holder engagement.

Additionally, the Tax Reform for Acceleration and Inclusion (TRAIN) Act of 2017 marked a major change in taxation policy with reductions in personal income taxes and increases in consumption taxes and duties [26]. While the excise duties on fossil fuels imposed under the TRAIN Act are not a carbon tax and are not specifically directed at reducing GHG emissions, the excise duties on gasoline and diesel fuels could be translated into an equivalent carbon tax of PHP10/litre (USD100/tCO_2) and PHP6/litre (USD50/tCO_2) in 2020. The new excise duty on coal and coke of PHP150/tonnes in 2020 could be translated into a far lower equivalent carbon tax of USD7/tCO_2.

Singapore

Singapore was the first AMS country to impose a carbon tax, which came into force on 1 January 2019 [27]. Under the Carbon Pricing Act, the responsibility rests with any industrial facility that emits direct GHG emissions equal to or above $2ktCO_2e$ annually to register as a reportable facility and to submit an Emissions Report annually. Since the announcement on a carbon tax rate in the 2018 budget, Singapore has enhanced its 2030 NDCs and submitted its 2050 Long-term Low Emissions Development Strategy under Paris Agreement in March 2020. Moreover, the country has plans to revise its carbon tax rate from 2024, as the current carbon tax is considered too low [28]. The Singaporean government is

[22] Republic of the Philippines. (2021). *Nationally Determined Contribution Communicated to the UNFCCC on 15 April 2021.* https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Philippines%20First/Philippines%20-%20NDC.pdf

[23] House of Representatives. (2020. August 18). *House Bill No. 2184--Low Carbon Economy Act.* https://climate.gov.ph/public/ckfinder/userfiles/files/Knowledge/HOUSE%20BILL%202184.pdf

[24] Ibid.

[25] Partnership for Market Readiness. (2019). *2019 Philippines PMR Project Implementation Status Report.* https://www.thepmr.org/system/files/documents/2019%20Philippines%20PMR%20Project%20Implementation%20Status%20Report.pdf

[26] Department of Finance. (2017, December 27). *The Tax Reform for Acceleration and Inclusion (TRAIN) Act.* https://www.dof.gov.ph/ra-10963-train-law-and-veto-message-of-the-president/

[27] Ministry of Sustainability and the Environment, Singapore. (n.d.). *Carbon Pricing Act.* https://www.mse.gov.sg/policies/climate-change/cpa

[28] Ho, G. (2021, October 15). S'pore's revised carbon tax rate for 2024 to be announced in Budget 2022: Lawrence Wong. *The Strait Times.* https://www.straitstimes.com/singapore/politics/revised-carbon-tax-rate-for-2024-what-to-expect-till-2030-to-be-announced-in

carrying out a review to decide on an appropriate level and trajectory for its carbon tax, which would reflect the growing national and global ambition. The current carbon tax rate is set at SGD5/tCO_2e in the first instance from 2019 to 2023. It applies to direct emissions from facilities emitting 25 ktCO_2e or more in a year, covering carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons. This covers around 80% of Singapore's total emissions. The carbon tax does not apply to land transport fuels, for which there already are excise duties to encourage a reduction in their use [29].

Thailand

In October 2020, Thailand submitted its updated NDC and made an unconditional commitment of a 20% reduction in total GHG emissions from BAU levels by 2030 and a conditional commitment of a 25% reduction from BAU by 2030 with international support [30]. In August 2021, the National Energy Policy Council approved the concept of Thailand's Carbon Neutrality by 2065–2070, and assigned the Ministry of Energy to conduct an immediate study on the neutral-carbon economy which will be submitted for approval by 2022.

Additionally, Thailand's 12th National Economic and Social Development Plan (2017 - 2021) calls for several climate change mitigation measures, including the development of a domestic carbon market. The National Climate Change Master Plan (2015 - 2050) refers to carbon markets as a potential mechanism to reduce GHG emissions in the private sector. Furthermore, the National Reform Plan (2018) mandates the Thai government to develop an economic instrument, such as a cap-and-trade system, to incentivise the private sector to reduce emissions. The specific instrument will be considered as part of the policy and legislative process following the formulation of the framework Climate Change Act, which is expected to be proposed for Cabinet consideration in 2021.

Meanwhile, Thailand Greenhouse Gas Management Organization (TGO), in collaboration with the Eastern Economic Corridor Initiative (Department of Industrial Promotion, Industrial Estate Authority of Thailand), is developing a strategic plan for ETS implementation in Thailand's Eastern Economic Corridor (EEC) region. Under this plan, a pilot ETS will be implemented, including key ETS features and a trading platform [31].

Although Thailand is in the process of introducing explicit carbon pricing, the country has implemented implicit carbon prices. For example, excise tax reductions on four different types of vehicles are available [32]. Hybrid passenger vehicles and battery-electric passenger vehicles will be subject to half of the tax, compared to vehicles that are less environmentally-friendly. The tax rate for double cab pickup trucks using hybrid-powered engines and passenger pickup vehicles using hybrid-powered engines will be reduced from 10% to 2%.

[29] National Climate Change Secretariat. (n.d.). *Carbon Tax.* https://www.nccs.gov.sg/singapores-climate-action/carbon-tax/

[30] Office of Natural Resources and Environmental Policy and Planning. (2020). *Thailand's Updated Nationally Determined Contribution.* https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Thailand%20First/Thailand%20Updated%20NDC.pdf

[31] Thailand Greenhouse Gas Management Organization. (2020). *TGO ขยายผลเพื่อทดสอบและปรับปรุง "ระบบซื้อขายสิทธิในการปล่อยก๊าซเรือนกระจกภาคสมัครใจของประเทศไทย" มุ่งสู่ระบบเศรษฐกิจและสังคมคาร์บอนต่ำในภาคอุตสาหกรรม.* http://www.tgo.or.th/2020/index.php/th/post/tgo-ขยายผลเพื่อทดสอบและปรับปรุง-ระบบซื้อขายสิทธิในการปล่อยก๊าซเรือนกระจก

[32] Tunmuntong, S. (2017). New auto tax rewards greener cars. *Thailand Development Research Institute Insight.* https://tdri.or.th/en/2017/07/new-auto-tax-rewards-greener-cars/

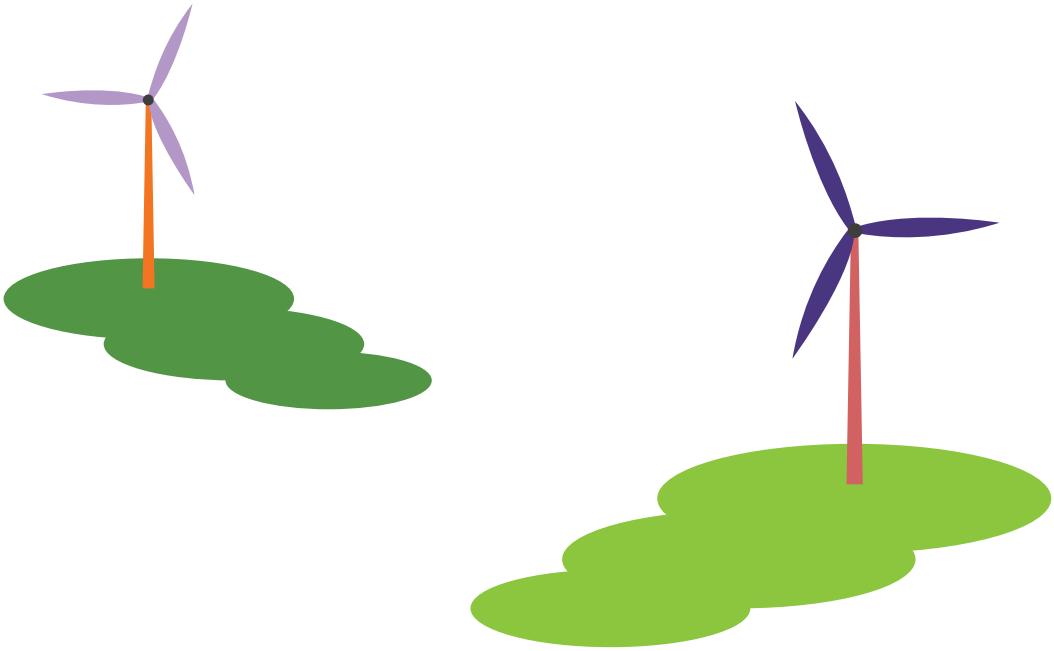
Viet Nam

In July 2020, Viet Nam submitted its updated NDC, and made an unconditional commitment of a 9% reduction in total GHG emissions from BAU levels by 2030 and a conditional commitment of a 27% reduction from BAU by 2030 with international support [33].

In November 2020, the National Assembly of Viet Nam approved the revised Law on Environmental Protection (LEP 2020), which will come into effect on 1 January 2022. The LEP 2020 gives a legal mandate for the Ministry of Natural Resources and Environment (MONRE) to design a domestic ETS and a carbon crediting mechanism as well as take part in the international trading of carbon credits [34].

Additionally, the forest sector is seeking to put a price on carbon in line with the Forestry Law 2017. The proposed programme, called Carbon Payments for Environmental Services (C-PFES), requires large emitters such as coal-fired power plants and cement manufacturers to compensate for their emissions by making payments to forest owners to plan or maintain healthy forests [35].

Lastly, the Law on Environment Protection Tax (LEPT), enacted in 2012, applies to the production and import of goods detrimental to the environment, especially gasoline, oil, petroleum and coal. The environmental protection tax (EPT) varies considerably on different fossil fuels. If converted into equivalent carbon emissions, the EPT is as high as USD58/tCO_2e on petroleum and is as low as USD0.2/tCO_2e on coal.



[33] The Socialist Republic of Viet Nam. (2021). *Updated Nationally Determined Contribution.* https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Viet%20Nam%20First/Viet%20Nam_NDC_2020_Eng.pdf

[34] Lin, J., Hsiu-Hau, O., Nhan, P., & Thao, T. (2021, February 23). Vietnam's new Law on Environmental Protection partially in force from 1 February 2021. *Allen & Gledhill.* https://www.allenandgledhill.com/vn/perspectives/articles/17794/vnkh-vietnams-new-law-on-environmentalprotection-partially-in-force-from-1-february-2021

[35] Nam, P. (2018). *Carbon payment for forest environmental services (C-PFES): A feasibility study identifying opportunities, challenges, and proposed next steps for application of C-PFES in Viet Nam.* USAID Green Annamites Project. file:///C:/Users/DELL/Downloads/USAIDCarbonPFESStudy-EN_Final.pdf

3

Assessment of Private Sector Perspectives

3-1. Profile of respondents

To get private sector perspectives on CPIs, IGES designed a questionnaire and prioritised the energy, cement, iron and steel, petrochemical, automotive, palm oil and waste sectors. Details of the questionnaire and the procedure for prioritising sectors are attached as Annex I. The questionnaire was sent out to 86 recipients, and IGES received a total of 31 responses, which included 18 responses from Viet Nam, six responses from Thailand, three responses from Singapore, two responses from the Philippines, and one response each from Indonesia and Malaysia. Sector-wise, the energy sector submitted a total of 11 responses, followed by the cement sector with eight responses, the palm oil and waste sectors with four responses, the steel sector with two responses, and the petrochemical and automotive sectors with one response each. Overall, the response rate was about 30%. Table 1 summarises the distribution of the respondents according to their country and sector.

Table 1. Distribution of respondents according to country and sector

	Viet Nam	Thailand	Singapore	Philippines	Indonesia	Malaysia	Total
Energy	8	2	0	0	1	0	11
Cement	6	1	0	1	0	0	8
Steel	0	0	1	1	0	0	2
Petrochemical	0	1	0	0	0	0	1
Auto	0	1	0	0	0	0	1
Palm oil	0	1	2	0	0	1	4
Waste	4	0	0	0	0	0	4
Total	18	6	3	2	1	1	31

It is noteworthy that responses from the energy, cement, steel and palm oil sectors were received from multiple countries, while responses from the petrochemical, automotive and waste sectors received responses from only one country. In the assessment, the cement, steel, petrochemical and automotive sectors were grouped as one industry sector. Moreover, the Singaporean respondents representing the palm oil sector follow the development of the entire industry. One palm oil representative is based in Malaysia, but has plants in Indonesia as well.

Several of the respondents are dedicated sustainability officers or personnel in charge of environmental safety in their companies. It seems that large companies which are leaders in their industry tend to have resources for a dedicated team or person in charge of sustainability-related issues. Although some respondents were newly appointed as sustainability officers, their companies have a history of incorporating sustainability into their business. Additionally, these companies usually attain buy-in from the top executive level, as the position of sustainability officers in several cases sits at the executive commission level.

Additionally, about half of the respondents are technical officers, who are in charge of the technology department or the operation and the production of their companies. A small number of the respondents belong to the legal or auditing department of their companies, while several respondents are department heads leading quality assurance or research in their companies.

Since IGES only sent one reminder, did not call the recipients, and did not reach out to other contacts requesting help for follow-up if no responses had been received, the willingness to take part in the CPI survey was based on a purely voluntary basis. It seems that multinational companies—headquartered in an industrialised country, based in one AMS while expanding their business to other AMS, or being export-oriented—were more responsive to the CPI survey than SMEs. Likewise, publicly-listed companies, which are leaders in their countries, tended to demonstrate leadership on climate change and were generally responsive to the CPI survey. However, this observation of corporate attributes may not be applicable in the Vietnamese context, as the local consultant made phone calls to some of the recipients who she knew better, and asked other contacts to help follow up if she did not hear from the recipients who received the questionnaire from IGES in the first place.

3-2. Private sector experience and knowledge of CPIs

Respondents did not show sectoral differences in terms of their experience with regard to climate change and their knowledge of CPIs. Indeed, the majority of the respondents gave positive answers to the questions in Section I of the questionnaire.

Q1. Has your company incorporated any climate change-related practices into its business?

All respondents mentioned that their companies have adopted practices to reduce GHG emissions and carbon footprint. The main factors that have driven the companies to incorporate climate change-related practices include: (1) cost reduction, (2) compliance with government regulations, (3) social responsibility, and (4) long-term vision and mindset. Figure 4 maps corporate mitigation measures according to the driving factors.

Figure 4. Map of corporate mitigation measures

Specifically, several respondents stressed the adoption of measures related to energy-efficiency, such as carrying out energy audits, replacing outdated equipment, and utilising EE appliances and lighting to reduce energy costs.

The respondents also mentioned that their companies follow the 3R principle to reduce water consumption, utilise scrap to replace raw materials (i.e. each tonne of recycled steel reduces CO_2 emissions by 1.5 tonnes compared to steel produced from iron ore), and apply co-processing technologies to recycle, recover or treat waste.

Several respondents highlighted that their companies have improved production procedures through the application of best available technologies, for example, to replace emission-intensive components with low-carbon materials without affecting product quality or even improving product quality in certain cases. One respondent highlighted that the company has a strategy to locate production facilities close to end-users to reduce transportation fuel.

Additionally, a large number of the respondents have had experience in deploying renewable energy in their operation, driven either by government incentives, the need to comply with government regulations, or due to corporate social responsibilities. Several respondents shared that their companies generate electricity from solar panels and methane capture facilities. Some respondents noticed the use of biomass and municipal and industrial waste as sources for alternative fuels to replace traditional fossil fuels. Several respondents highlighted that their companies have contracts with clean energy providers only, and use electric vehicles and biofuels for transportation.

If an industry involves extraction, several respondents mentioned that their companies have paid close attention to biodiversity and have implemented nature-based solutions near the mines.

At the corporate strategy level, several respondents mentioned that their companies have a corporate-wide or group-wide GHG reduction target in 2030, or are in the process of considering becoming carbon neutral or achieving net zero around mid-century. Several respondents shared that their companies have joined the Science-Based Targets initiative (SBTi), and have followed SBTi's procedures to set up GHG emissions reduction targets. Some respondents also mentioned that their companies are looking into adopting more stringent targets, for example, converting from the current practice of an intensity-based reduction target to an absolute reduction target.

Q2. Did your company participate in any carbon crediting schemes, carbon offsetting, carbon trading, and/or mitigation-related initiatives (i.e., RE/EE Certificate, NAMA, etc.)?

Close to 60% of the respondents have had carbon market-related experience, while 13 of the respondents (about 40%) have not participated in any market mechanisms (Figure 5). The majority of the respondents who have been involved in carbon markets have had more crediting experience than offsetting experience. However, one respondent shared that his company purchased carbon credits as a way to offset emissions from organising events.

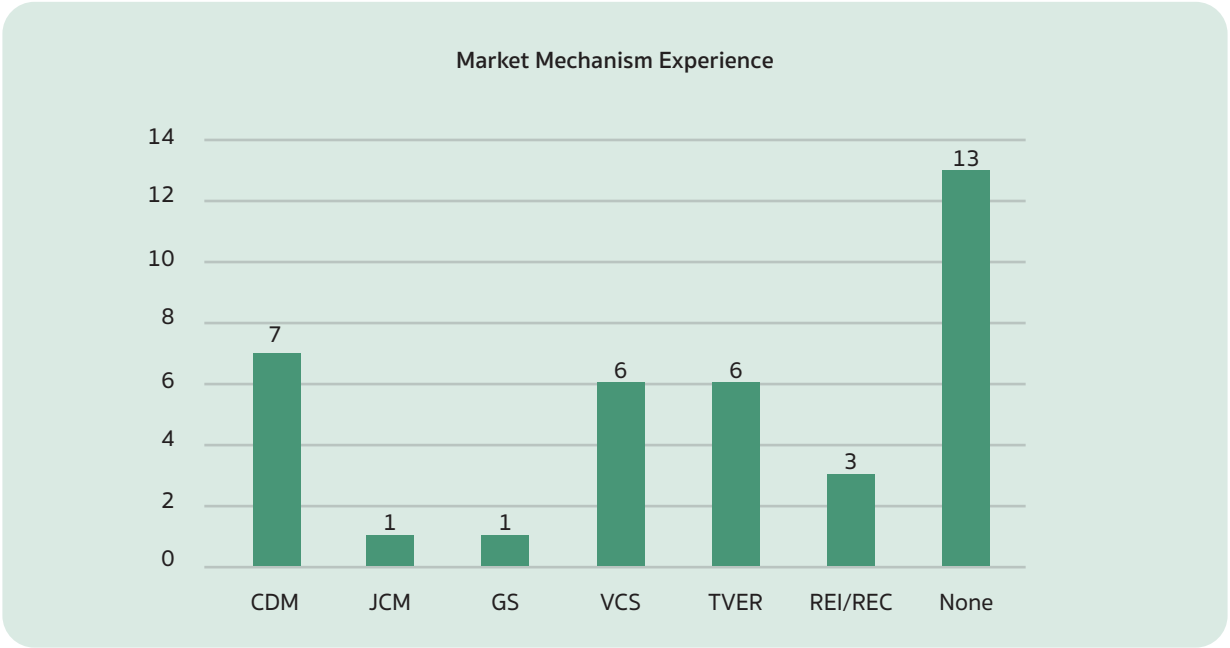


Figure 5. No. of respondents by experience of participation in market mechanisms

The respondents with CDM experience shared that their projects have become dormant after the price of CERs dropped drastically. One respondent mentioned participation in JCM under an ASEAN-Japan industry-wide initiative, one respondent had a project with Gold Standard (GS), and six respondents had registered projects under Verra's Verified Carbon Standard (VCS) initiative.

Regarding participation in domestic initiatives, one respondent mentioned engagement in a renewable energy investment initiative in Indonesia. Moreover, all the Thai respondents joined the Thailand Voluntary Emission Reduction (T-VER) programme, and two Thai respondents participated in Thailand's Renewable Energy Certificate (REC) initiative.

Q3. Does your company have concerns about disclosing GHG-related data?

Respondents from all countries apart from Viet Nam stated that they did not have any concerns about data disclosure. Some respondents mentioned that they have been reporting GHG data for 20 years, while other respondents mentioned that they were their industry's front-runners in GHG reporting. Among the Vietnamese respondents, half of them did not have data disclosure concerns, while the other half expressed some concerns (Figure 6).

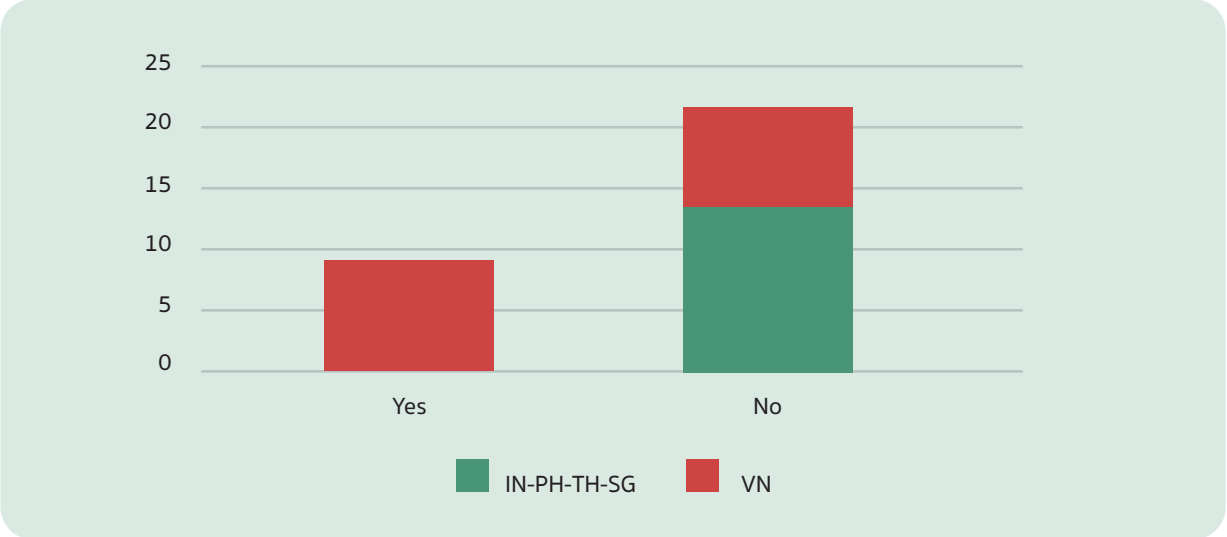


Figure 6. No. of respondents by concerns of data disclosure

Specifically, several respondents are members of internationally-recognised, industry-wide certification schemes that have environmental and social requirements, including carbon footprint disclosure. For example, the palm oil industry holds a Roundtable on Sustainable Palm Oil, the steel sector participates in the Responsible Steel Standards and Certification Program initiated by the World Steel Association, and the cement sector comes under the Cement Sustainability Initiative under the World Business Council for Sustainable Development.

Additionally, some companies follow ISO standards, like ISO14064-2, to assess GHG reduction efforts. The majority of respondents also publish annual corporate sustainability reports, which include GHG-related data. The publicly-listed companies follow Securities and Exchange Commission's (SEC) requirements on data disclosure. For example, SEC Thailand requires listed companies to disclose their environmental policy, environmental performance, GHG emissions and the policy direction reflecting their business intentions towards reducing negative impact on the environment and management of GHG emissions as part of 56-1 One Report. The requirement also extends to assurance and verification of GHG emissions by Thailand Greenhouse Gas Management Organisation [36].

However, half of the Vietnamese respondents expressed concerns about data disclosure. The reasons include: concern that data disclosure may affect the company's image, reputation and competitiveness; the lack of guidelines for GHG reporting; the lack of organisational, financial and human capacity; the lack of available data; and the lack of data disclosure from competitors.

Q4. Has your company established a system to collect data that is relevant to calculating GHG emissions? Q5. Has your company established a monitoring system for GHG emissions?

About two thirds of the respondents mentioned that their companies have established GHG data collection systems and report GHG emissions regularly (Figure 7). Two respondents mentioned that the Indonesian and Singaporean governments have developed an online portal, where companies are required to upload relevant data and complete their GHG reporting. The majority of companies have established a corporate-wide data collection system by following industry standards such as the Cement CO_2 and Energy Protocol for accounting and reporting. However, two companies have not systematised the data collection procedure; rather, they collect data manually on a regular basis.

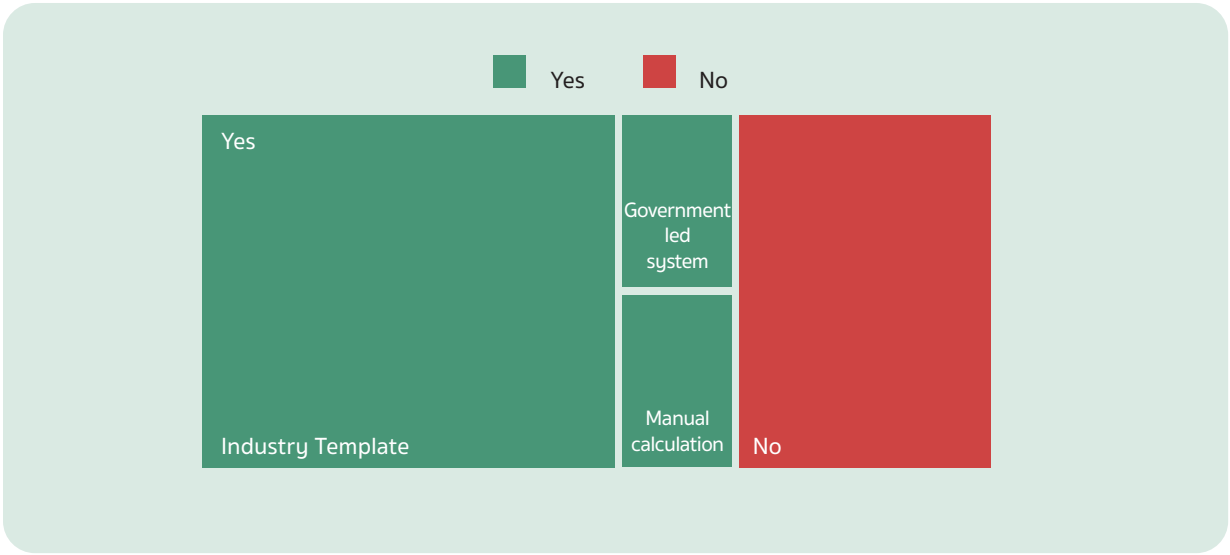


Figure 7. System to collect GHG-related data

[36] Securities and Exchange Commission. (2021). *One Report และการเปิดเผยข้อมูลด้านความยั่งยืน.* http://www.setsustainability.com/libraries/1038/item/-one-report

On the other hand, one third of the responding companies have not regularly reported GHG data and do not have a data collection system.

Regarding GHG monitoring systems, some respondents mentioned that their companies have installed some equipment to control pollutants and monitor emissions. However, over 70% of the Vietnamese respondents mentioned that their companies lack a GHG monitoring system.

Q6. Has your company hired a third party to verify any GHG reports?

About half of the respondents have had their corporate GHG inventory reports externally reviewed and verified, while half have not (Figure 8). Among those who have had external verification experience, 12 respondents stressed that their companies hire a third party for verification. For example, they mentioned that their companies hire the same external auditors who review corporate reports, including the annual sustainability reports and GHG reports. One Singaporean respondent shared that the government provides taxable facilities with a list of accredited verifiers for carbon tax.

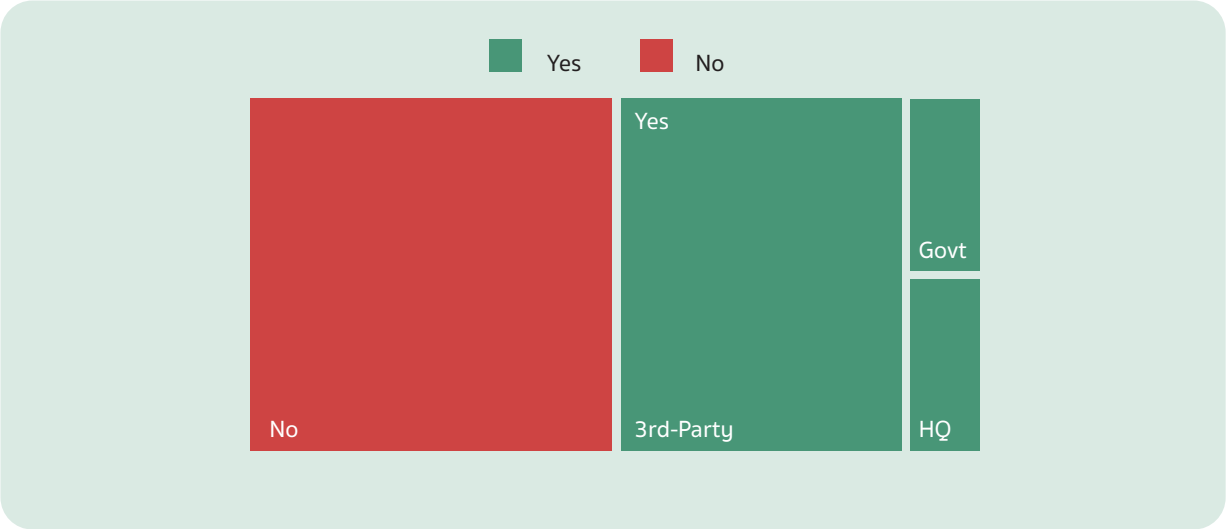


Figure 8. External verification of GHG reports

Additionally, two respondents stressed that they rely on government review and verification. For example, the Ministry of Energy and Mineral Resources, Indonesia verifies the GHG reports submitted by power companies. One Vietnamese respondent mentioned that the company submits GHG reports online for review by the Ministry of Natural Resources and Environment, and the Vietnamese government uses GHG reports as a basis for taxation.

One respondent shared that the company's GHG reports are reviewed at the group level. After GHG inventory reports are prepared by country offices, the reports are submitted to the headquarters to be reviewed at the group level.

At the project level, respondents mentioned that not all domestic initiatives require third-party verification of emission reductions, and that some initiatives fully rely on power purchasing agreements. The newer programmes, such as Thailand's I-REC, require third party verification.

3-3. Private sector perspectives on CPIs

Perspectives on CPIs reflect sectoral differences, with views being synthesised according to sectors.

Q7-Q8. Do you think CPIs are attractive market mechanisms that would encourage the private sector to take climate action and support achievement of the NDC? What impact would the introduction of CPIs have on your business?

Energy

The respondents representing the power sector consider that carbon pricing is a double-edged sword as it provides opportunities but imposes obligations at the same time. Although some power companies aim to decarbonise around mid-century, they have to take a phased move towards the goal of carbon neutrality. At the moment, thermal power plants still represent the lion's share of their portfolio, which indicates that fixing a cap and putting a price on the emissions allowance will bring up production costs. It is noteworthy that the electricity market in ASEAN is not liberalised, rather it is centrally regulated by authorities. This implies that power companies are unable to freely adjust electricity tariffs to reflect the allowance price.

On the other hand, carbon pricing can drive power companies to accelerate investment in renewables and hasten the retirement of coal-fired power plants. The price signal embedded in ETS encourages a switch to low-carbon alternatives, stepping up the transition to a decarbonised society.

It is noteworthy that over 80% of respondents agree with the cost effectiveness of CPI as an economic instrument as well as its usefulness as an informational instrument for giving long-term price signals. However, fewer than 20% of the respondents representing the power sector indicated that the application of CPIs is a mandatory requirement enforced by their governments, and they do not think of CPIs as an attractive market instrument.

In addition to the power companies, one oil company shared that the driving force behind the company's green transformation is the highly fluctuating price of oil, which brings with it uncontrollable systematic risks. However, companies in the oil industry do not have as many mitigation opportunities as other sectors. Moreover, the oil industry is very eager to find financially competitive technologies that can enable the decarbonisation paradigm shift. At the moment, this particular oil company uses internal carbon pricing to inform investment decisions.

Industries (Cement, Petrochemical, Steel and Automotive)

As the Vietnamese respondents account for half of the industrial representatives and the views of the Vietnamese respondents are similar to some extent, it is noteworthy to highlight these views and bring attention to the different perspectives held by Viet Nam and those held by other AMS.

All the Vietnamese respondents commented that CPIs have still not become an effective instrument, as the country is only in the initial stages of developing MRV guidelines, building corporate capacities and providing supportive mechanisms, all of which are prerequisites for the private sector to use CPIs to reduce emissions. Against this backdrop, five of the six respondents states that CPIs were "not attractive", although all of them mentioned that they would use CPIs in the context of NDC if participation was mandatory. One respondent answered positively, agreeing that CPI is an attractive mechanism, but commented on the urgency to enhance readiness for adopting CPI.

On the other hand, almost all the non-Vietnamese respondents representing industries gave positive answers regarding the effectiveness of CPIs for several reasons. First, although industry leaders have made remarkable efforts to reduce GHG emissions, current actions are mainly taken at the corporate level and are individual corporate initiatives. The introduction of CPIs can scale up climate actions at the industry level and give a clear price signal to those who have not transformed from conventional business activities

towards decarbonisation approaches. Second, a sector-wide CPI calls for concerted climate actions, which provides a fair-play environment and is crucial for maintaining a level playing field. While recognising the overall usefulness of CPIs to drive low-carbon investments, one respondent commented that judgement should be made at the proper time when the country has a clearer picture of established policies and supportive mechanisms.

Some respondents mentioned that their companies are using a corporate carbon price, internally determined, to factor climate-related risks into investment decisions. For example, one respondent stated that his company, based on Singapore's carbon tax and carbon price in Europe and other places in the world, established a shadow price, which is higher than the current government levels. The internal carbon pricing is used in corporate investment feasibility studies to assess the viability of investments, and serves as an important risk-mitigation tool that allows companies to prioritise low-carbon investments. Additionally, one respondent mentioned that the company could use the carbon price in countries where the technology originated as a benchmark for technology transfer. If the intended equipment/technology to be imported is outdated according to the standards of originating countries, the company would not consider importing it as it will only transfer emissions from one country to another, and does not help achieve overall global mitigation.

Palm Oil

Representatives from the palm oil sector generally see the carbon market as an opportunity, as the palm oil sector has untapped opportunities and can sell offset credits to buyers who have a growing interest in nature-based solutions (NbS). A carbon price can give land owners a sense of future revenue streams and will help them to decide on what and how to plant their land after receiving a land concession. If the carbon price is high enough, more companies are likely to enter the market and tap into NbS opportunities in the form of conservation, restoration and regeneration. The competition for food security is another area that has still not been considered.

So far, palm oil producers have gained benefits mainly from their capacity to generate electricity from biomass and methane capture, or to produce biodiesel. However, with diminishing feed-in tariffs on renewables and more intense competition, there are marginal financial benefits from RE generation.

On the other hand, there is a growing international and regional interest in the generation and sale of carbon credits from NbS [37]. For example, Singapore aims to become an international hub for carbon trading and services, with an emphasis on trading carbon credits generated by NbS. DBS Bank, Singapore Exchange, Standard Chartered, and Temasek have announced the launch of Climate Impact X (CIX), a Singapore-based global exchange and marketplace for high-quality carbon credits from NbS. Specifically, CIX intends to connect corporate buyers with NbS needs by way of its Project Marketplace platform.

Waste

Three quarters of the respondents representing the waste sector agreed on the usefulness of CPIs, commenting that CPIs will enable their companies to make contributions to GHG emissions reduction and environmental protection while earning extra revenue by selling carbon credits. They also mentioned that CPIs will boost company reputation and credibility. The remaining respondents, based on their CDM experience, do not consider CPIs as being attractive.

Q9. What are the advantages and disadvantages of a levy on carbon emissions compared to ETS?

Energy

The respondents in the power sector stressed that ETS is more suitable for the power sector than a carbon tax. The key reason is that ETS changes the production cost of electricity generation. Therefore, the cost of coal-fired generation will rise relative to the cost of electricity generated by natural gas and renewables. The relative price changes would impact the dispatch order, which is the order in which the power system calls on generating units to meet electricity demand. A change in the

[37] Singapore Institute of International Affairs. (2021). *Haze Outlook 2021*. http://www.siiaonline.org/wp-content/uploads/2021/06/Haze-Outlook-2021.pdf

dispatch order would result in a shift from coal generation to natural gas in the short run and eventually to renewables in the long run.

Regarding the administrative complexity of ETS compared to carbon tax, the respondents articulated that they do not feel that ETS is administratively burdensome. For example, the Indonesian government has developed a GHG reporting portal, thus they feel confident in managing ETS-related MRV activities. Additionally, they have been familiarised with the ETS concept under the World Bank's Partnership for Market Readiness programme over the past several years.

Industries (Cement, Petrochemical, Steel, Automotive)

Responses can be categorised into four groups: (1) preference for ETS; (2) willingness to pay carbon tax; (3) no judgement, due to insufficient understanding of the topic; and (4) no preference.

Group 1: Preference for ETS

The industrial respondents in this group asserted their preference for ETS rather than a carbon tax for several reasons. First, since industry products such as cement are primary commodities, producers cannot easily pass the increase in production costs associated with a carbon price to product prices. Industries therefore need to adjust their input mix and make processes more efficient to respond to higher energy prices. Without cost-passthrough at the consumer end, industries are responsive to marginal costs resulting from carbon price on the production side, although the sensitivity to carbon price may vary among industries.

Second, ETS encourages mitigation efforts, as it provides incentives to reduce emissions per unit of output, but also charges a price for every additional tonne of GHG emissions. In this way, the penalty for increased emissions is applied in an equitable manner. Conversely, carbon tax places the same tax rate across the industry regardless of corporate performance, which gives no incentives.

Third, increasing fuel duties as a lever to reduce GHG emissions is highly inflationary. In countries like the Philippines and Singapore, excise duties on diesel and gasoline could be translated into an equivalent carbon tax of USD 50/tCO_2-USD 100/tCO_2. In addition to fuel duties, Viet Nam exercises high taxes on natural resources (limestone, claystone). Given the various types of excise duties, a carbon tax within the range of USD 10/tCO_2 is not noticeable.

Group 2: Preference for/willingness to pay carbon tax

Respondents preferring carbon tax highlighted the ease of implementation and scalability of carbon tax. While they acknowledged the pros and cons of both carbon tax and ETS, they stressed that both of these leave room for lobbying to evade tax or corruption in distributing allowable emissions.

In the case of Singapore, the respondents mentioned that they are willing to pay carbon tax to share the costly burden on the country. Additionally, they mentioned that they have faith in their country's government and trust that the government will redistribute carbon tax revenues in a proper manner.

Group 3 & 4

Additionally, some respondents said that they are not able to make a judgement as their understanding of the topic is insufficient. Other respondents said that they do not have a preference, as the effectiveness of CPIs is subject to policy design and implementation.

Palm Oil & Waste

Respondents representing the palm oil and waste sectors had a preference for ETS, as it provides information for future price points. Developers of NbS projects need 10-15 years for plantations to be established and also require a long timeframe to manage the projects before generating carbon credits. ETS as an informational instrument, in addition to being an economic mechanism, is critical for project developers who require a long timeframe for project development, maintenance and implementation. On the other hand, carbon tax as a punitive instrument does not provide a long-term price signal. Additionally, they also mentioned that ETS may create demand for offsetting credits.

Q10. Would your company be interested in trading carbon credits internationally?
Q11. Would your company be interested in buying offset credits from other sectors (i.e. NbS, waste)?

Energy
About 70% of the respondents are interested in trading carbon credits with other countries. However, they mentioned that a number of uncertainties around Article 6 of the Paris Agreement need to be resolved, specifically the approaches to making corresponding adjustments if the sold credits cannot be claimed towards the host country's NDC. Some of the respondents stressed that their interest in international trading is driven by the opportunities to access a larger market and new technologies. Some of the respondents also highlighted harmonisation of standards to allow easy alignment.

Regarding trading carbon credits with other sectors, half of the respondents mentioned that they are not aware of the availability of NbS credits and are not clear about the rules of inter-sector trading. At the moment, as abundant credits are available in the power sector, they will consider prioritising intra-sector trading as the power sector allows the trading of not only offset credits but also allowance. The other half of the respondents said that their companies are paying forest environmental service fees and are interested in supporting forestry programmes.

Industries (Cement, Petrochemical, Steel, Automotive)
Respondents from these industries are interested in international trading of carbon credits, because it will allow them to tap a larger market with better liquidity. However, the respondents are concerned about carbon leakage. Since exporting to Europe only accounts for a tiny fraction of their portfolio, the EU's introduction of the carbon border adjustment mechanism (CBAM) has not been a major concern up to now. On the other hand, respondents are wary that imports are vulnerable, and that there could be potential impacts resulting from the lack of carbon pricing in other countries.

The respondents also have concerns about international demand for credits. As they foresee themselves to be credit suppliers in the short- and medium-term, they were questioning whether the international demand for carbon credits can match the sale of available credits. Meanwhile, they acknowledged that carbon neutrality is a challenging goal, and their companies may need to buy offset credits if they adopt a carbon neutral target.

Palm Oil
The respondents from the palm oil sector mentioned that very few palm oil producers in Indonesia have ecosystem restoration concession licences, a legal status required for a NbS project to generate carbon credits. However, the majority of licence holders do not intend to sell carbon credits on the open market, but would like to use credits to offset emissions from their own operations.

Additionally, the respondents highlighted the impact of the EU's CBAM and the ban on palm oil for biofuels. As palm oil is one of the key commodities that Indonesia exports to the EU, one plausible reason for Indonesia's plan to introduce carbon tax, on top of its plan for an ETS, could be to prepare the country for CBAM.

Moreover, the respondents stressed the need for harmonised certification standards in the region. Since Singapore's aim to become a carbon trading hub synergises with Indonesia's interest to promote CPIs, the development of a mutually-recognised carbon certification scheme could be one area for collaboration and alignment between national governments.

Waste
All respondents in the waste sector are interested in international trading of carbon credits mainly so that they can access a larger market.

Q12. What incentives do you expect to receive from the government to provide support for your company to participate in CPIs?

Energy

Respondents from the energy sector are looking forward to tax incentives that encourage GHG reduction, as well as incentive measures to mitigate COVID-19 impacts. For example, the Thailand Board of Investment (BOI) approved a series of measures that encourage the power sector to reduce GHG emissions, including a new promotion category for natural gas separation plants to be granted 8-year corporate income tax exemptions if they are implementing Carbon Capture Utilization and Storage (CCUS) technologies. The respondents also suggested that tax incentives should be applicable for offsetting projects, as some industries have higher abatement costs and offsetting is a more economically viable option.

Respondents also called for low interest rates on low-carbon investment. They also mentioned that third-party verification costs are financially burdensome and requested the government to provide subsidies.

Industries (Cement, Steel, Petrochemical, Automotive)

Likewise, respondents from these industries are looking forward to financial incentives. Examples of incentive measures include: tax exemptions on low-carbon related investments, funding to support green investment, and promotion of low-carbon products in government procurement and publicly funded infrastructure projects.

Additionally, they stressed the importance of regulation, for example, the need for mandatory requirements on the inclusion of low-carbon products in building projects. Taxing waste landfill as a punitive approach will encourage waste recycling and recovery. In Thailand, respondents mentioned they would prefer the government to enforce regulations with a clear direction rather than rely on voluntary adoption.

As there are many standards available on the market, many companies feel that the government should select only one standard because it is burdensome for companies to invest and hire third-party evaluators for each standard.

Moreover, they highlighted the importance of protecting the competitiveness of industries facing high competition against imports and the need to apply the same regulation on imported products from other countries where no CPIs exist.

Several respondents called for a reasonable timeframe for the introduction of CPIs in a way which allows industries to adjust their input mix, adopt new technologies and ensure processes are more efficient.

Palm Oil

Respondents noticed that the insufficient protection of land use rights is one of the key barriers to NbS projects. Countries in the region still have high political risks and lack a transparent bureaucratic system. The enhancement of land registration and ownership systems is crucial to drive carbon pricing.

Additionally, respondents shared that getting an ecosystem restoration concession (ERC) license in Indonesia is difficult. From 2000 to 2016, only 15 ERC licences were issued [38]. The majority of ERC licence holders are focused on aims such as biodiversity and wildlife conservation, and do not intend to enter the carbon market. Therefore, facilitating the issuance of new ERC licences or allowing plantation companies to generate and sell carbon credits from forest conservation areas within their existing concessions are some ways to motivate new players to enter the carbon market.

Waste

On top of financial incentives as mentioned in other sectors, respondents in the waste sector called for clearer guidance on credit trading, including the procedures, tax implications and transaction costs.

[38] Ibid.

3-4. Support needed to engage private sector actors in CPIs

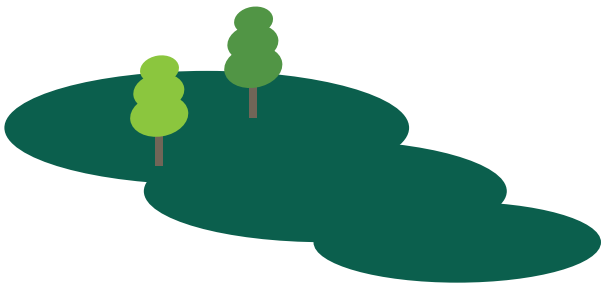
All the respondents confirmed that they need capacity building (CB). A large number of the respondents selected all the options proposed in the questionnaire and requested CB in every aspect. CB needs can be grouped into three areas: (1) the concept of CPIs, (2) CPI-related MRV activities, and (3) the infrastructure for carbon trading. Specifically, respondents requested CB for a better understanding of the link between CPIs and their country's NDC as well as the systems/mechanisms to be put in place that allow companies to make contributions to their country's NDC.

3-4-1 Concept of CPIs

Although almost all respondents are familiar with the concept of CPIs, they stressed that their colleagues, specifically the personnel in charge of accounting and investment, need a better understanding of such tools. According to the respondents, very few have received formal training on the topic, although some of them were invited to consultation workshops relevant to CPIs.

Specifically, capacity is required:

- to understand how CPIs function;
- to understand how international trading of carbon credits functions;
- to analyse texts of CPIs-related legislation, regulations and policies;
- to make assessments of the consequences of introducing CPIs and make business decisions based on these assessments.



3-4-2 CPI-related MRV activities

A large number of industrial respondents requested CB at the facility level, including capacity:

- to figure out emission sources and emission streams at the facility level;
- to understand various emission quantification methods (i.e. calculation approach, material balance, direct measurement);
- to understand methods for estimating activity data and conversion factors.

Some respondents commented that they do not need CB at the facility level for Scope 1 and 2 emissions, but mentioned that CB is needed for Scope 3 emissions. Specifically, respondents from the palm oil sector highlighted the difficulty in Scope 3 reporting, as palm oil producers have a long and complex supply chain, including many smallholder farmers who do not have the capacity for GHG reporting.

Moreover, industrial respondents noted the need for capacity on monitoring and reporting of non-energy related emissions, in line with the GHGs covered by their country's NDCs.

Additionally, respondents stressed that capacity was required for QA/QC. Specifically, capacity is needed:

- to understand alternative approaches to treating missing data;
- to understand uncertainty assessment at various levels (i.e. parameter level, stream level, aggregated facility level);
- to establish quality management procedures, including the management of the third-party verification of GHG reports at the facility level.

3-4-3 Infrastructure for carbon trading

While several respondents have had limited carbon trading experience, the majority of them highlighted the need for CB to establish the infrastructure for carbon trading at the corporate level. This includes capacity:

- to establish and operate a registry account for emissions allowances, certified emission reductions, and/or carbon credits;
- to acquire and trade carbon units;
- to manage company tax and accounting implications resulting from CPIs.

3-5. Limitations

It is notable that the CPI survey has several limitations resulting from the survey methodology. For example, since IGES only received a limited number of responses from most participating countries, IGES was not able to make an assessment from a country perspective. Instead, IGES highlighted sectoral commonalities and differences in the assessment.

Moreover, as the number of Vietnamese respondents outnumbered those from other AMS, the aggregate assessment shows bias towards Vietnamese views. IGES counteracted this limitation by organising a private sector dialogue, in which all the recipients of the CPI survey—whether they had responded to the survey or not—were invited. The inputs received at this private sector dialogue were synthesised into the final version of the assessment. The dialogue report is attached as Annex II.

Specifically, several factors may have contributed to the unevenness of responses across countries and sectors.

First, IGES did not receive responses from those with whom we have not established relationships or to whom we were not introduced formally or informally. Since private sector actors perceive that the topic of CPIs is sensitive, an established relationship or some kind of introduction by a person they know will ensure private sector recipients are comfortable in responding to the survey. The high response rate in Viet Nam also demonstrates the importance of an established relationship, as the local consultant in Viet Nam has a long working record with private sector actors.

Second, some private sector recipients need approval from a higher-level person to respond to a questionnaire or undertake an interview. This approval process generally takes time, and has been complicated further by the COVID-19 pandemic in several cases, resulting in an extended approval period. Moreover, for this project, there was only a short window to complete the survey from mid-September to the end of October, and while a longer project period may have helped raise the response rate, it would not have dramatically increased it.

Third, private sector actors perceive the topic of CPIs as being quite technical. The questionnaire was not designed in a simple yes/no format, but included 15 open and multiple choice questions to solicit views, concerns and perspectives on CPIs. The comprehensiveness of the questionnaire may have intimidated certain recipients. Additionally, this comprehensiveness implies that the completion of the questionnaire may require a corporate-wide effort and need consolidated inputs from multiple persons in one company. The technicality of the topic of CPIs may have added a layer of difficulty in attracting recipients' interest.

Fourth, the topic of climate change is still alien to most private sector actors. Noticeably, IGES received very few responses from the steel sector compared to other sectors. One plausible explanation for the lack of steel representatives could be the lack of previous engagement by the steel sector in mitigation-related initiatives such as Nationally Appropriate Mitigation Actions (NAMAs). This is in contrast to Viet Nam's cement NAMA which successfully engaged several cement companies.

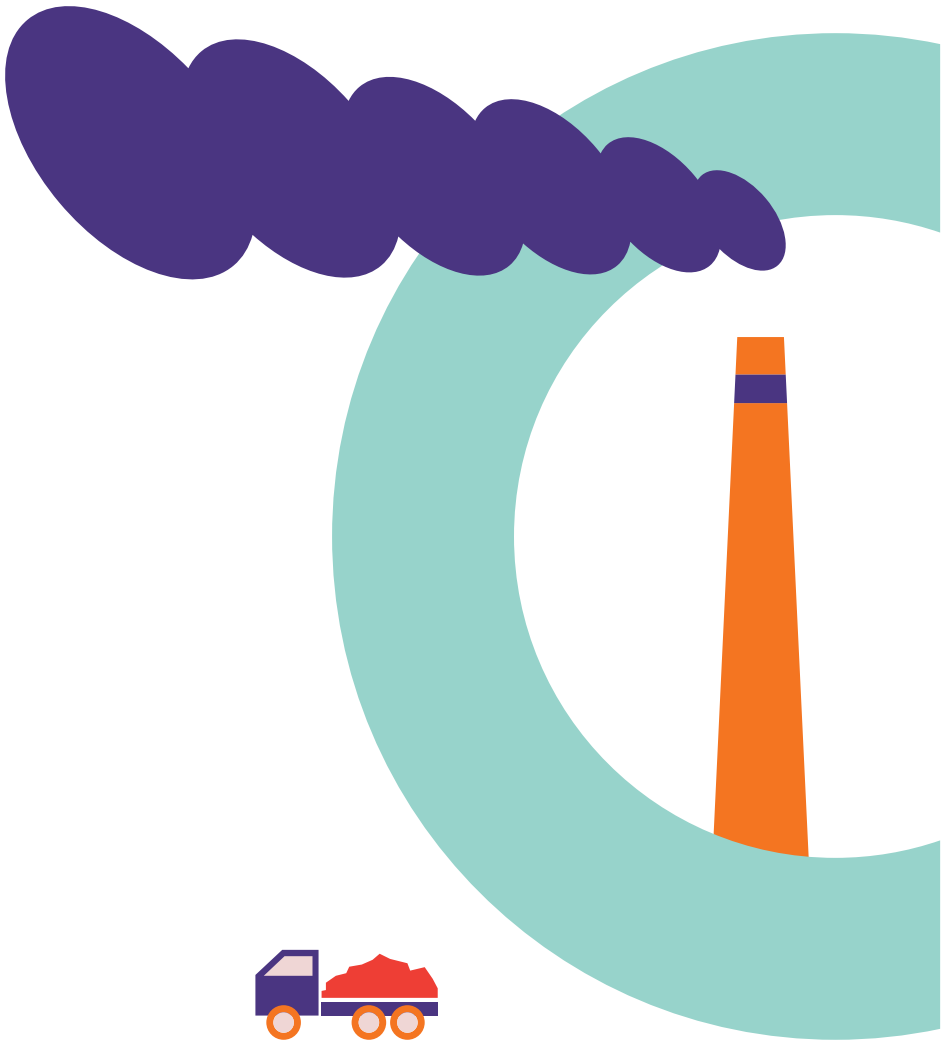
Additionally, it is noteworthy that AMS do not seem to be home to leading steel producers. Amongst AMS-6, only Viet Nam and Indonesia have domestic production of steel products outnumbers imported amounts. The remaining countries rely heavily on imported products to meet their steel consumption needs [39]. The lack of steel producers in ASEAN may also contribute to the sector's low response rate.

[39] Yean, T. & Jin, Y. (2020). *Chinese steel investments in ASEAN.* ISEAS-Yusof Ishak Institute. https://www.iseas.edu.sg/wp-content/uploads/2020/03/ISEAS_Perspective_2020_50.pdf

Lastly, language seemed to be a noticeable barrier, and the use of local languages was definitely helpful for raising the response rate. Specifically, IGES translated the questionnaire into Thai and Vietnamese, and conducted several interviews in local languages.

In addition to the limitations resulting from unevenly distributed responses, the assessment resulted in a bias in favour of perspectives from large companies since large and leading companies were more responsive to the CPI survey than SMEs. One approach to counteracting this limitation was the method of outreach used by the Vietnamese consultant to include a more diverse range of companies.

It should be noted that the assessment of private sector perspectives is a compilation based on responses received from the CPI survey as well as key insights shared at the private sector dialogue. Therefore, the assessment should not be considered as being representative of the entire private sector in ASEAN.



4

Conclusions and recommendations

The CPI survey indicates that the private sector in AMS-6 has taken extensive action related to GHG reductions and facility-level MRV. Actions have been driven by government inventions, corporate voluntary goals, and financial benefits of mitigation measures. Private sector awareness on the implications of the Paris Agreement is high. Companies have followed the discussions around Article 6 and recent developments in other regions such as EU's CBAM. Equally high is the sense of urgency in the private sector to decarbonise and make the transition to a zero carbon society.

CPI survey respondents generally have a favourable perspective on CPIs and prefer ETS to carbon tax. Several respondents expressed a preference for mandatory over voluntary adoption of CPIs. The majority of respondents are interested in international trading of carbon credits and have shown interest in carbon credits from NbS projects. Additionally, respondents show a strong willingness to get involved in CPI development and have called for substantial support for their preparedness of CPI introduction.

To enable and tap into the willingness expressed by the private sector, there are several recommendations as summarised below, for designing CPIs, which were synthesised based on respondents' input to Q13 and Q14 of the questionnaire as well as their insights shared at the private sector dialogue. Recommendations are grouped into two areas: Group 1 includes recommendations directly relevant to CPI development, and Group 2 are the recommendations that may lay the foundation for CPI development.

Group 1: CPI development

1. Provision of incentives

All respondents called for the provision of financial incentives. It is noteworthy that respondents do not need incentives to be mobilised to take climate action, but rather they need incentives to compensate the marginal abatement costs and maintain their competitiveness. The experiences detailed by the respondents on climate change and their knowledge of CPIs indicates that the private sector is aware of the urgency of the climate crisis and has demonstrated dedication to global efforts on climate change. Nevertheless, corporations are encountering various challenges, particularly those resulting from the COVID-19 pandemic, and thus they need financial support to sustain their business and scale up their efforts on climate change. Financial incentives can be provided in various forms, including tax exemptions/rebates, low-interest loans, subsidies for third party verification, and government procurement for low-carbon products.

Additionally, respondents highlighted the effectiveness of prestigious awards associated with the introduction of CPIs. For example, Indonesia introduced a pilot ETS under the Energy Efficiency category of the Subroto Award, which is the highest award given to companies in the energy and mining resources sector. Although the participation in the pilot ETS was voluntary, the possibility of receiving a Subroto Award became an important incentive that encouraged many power companies to take part.

Moreover, respondents called for increased access to donors and international funding and requested better access to internationally funded programmes.

2. Enforcement of regulatory measures

Several respondents commented on the need for mandatory regulatory measures. Specifically, they called for industry-wide measures to scale up climate action at the industry level. They also expressed a preference for mandatory measures in the context of CPI engagement, as regulation gives the private sector a clearer policy direction and helps businesses make long-term investment decisions.

Additionally, several respondents called for the protection of industries facing high competition from imports, and highlighted the need to apply CPI equivalent measures to imported products from countries where CPIs do not exist.

Furthermore, respondents voiced demands for a transparent bureaucratic system and emphasised the need to pay attention to policy interaction that may impact the functioning of a CPI. For example, land concession is a deciding factor for palm plantations to decide whether or not they will invest NbS projects and trade NbS credits as the lack of regulation precludes private sector participation in the carbon market. Political risks associated with the lack of a transparent government system also adds a layer of uncertainty for those who are interested in entering the carbon market.

3. Institutionalisation of capacity building

One recommendation is the establishment of a CPI Academy, hosted by a regional or global research institute/NGO. The courses offered by the CPI Academy could be linked with a staff career development programme and used by corporate employees to fulfil career development requirements at the corporate level.

Moreover, e-learning courses on the preparation of facility-level GHG inventory and mitigation assessment are still not available in the private sector. Businesses need access to frequently updated training programmes certified by a credible entity like the UNFCCC so they can build capacity for preparing facility-level MRV reports.

Group 2: CPI foundation

4. Linkage between corporate emissions and NDCs

The disaggregation of NDCs from national targets to lower level targets is an effective means of translating NDCs into on-the-ground action, and is crucial for CPIs to play a role in ratcheting up and achieving NDCs. Disaggregation can take place in two dimensions. First, key line ministries—industry, transport, housing, agriculture—should be assigned with departmental targets. Secondly, local governments and key emission-intensive enterprises should be assigned with local-level and enterprise-level GHG reductions targets.

Depending on each country's institutional arrangements, the responsibility for helping companies reduce barriers to climate mitigation and motivate them to actively pursue decarbonisation could be delegated to either local governments or line ministries. Allocating corporate targets could take a mix of bottom-up and top-down approaches. Specifically, companies could use their science-based targets as voluntary commitments, while responsible government agencies take into account mitigation potential, abatement costs, changes in product and income structure, and other factors to negotiate with the companies and adjust corporate targets to align with the NDC. Additionally, companies could sign responsibility contracts with local governments or administrative agencies, thereby institutionalising the entire process and ensuring that companies stick to their firm commitments.

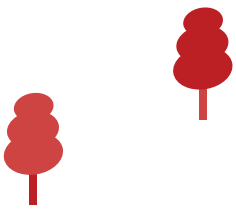
5. Harmonisation and cooperation

The need to harmonise MRV requirements is evident at both the national level and the ASEAN level. Domestically, respondents recommended governments to consider one set of MRV requirements and integrate GHG reporting requirements with existing corporate disclosure requirements. In this way, companies will be able to save on financial costs associated with third-party verification and reduce their administrative burden. Respondents also advised their governments to provide a list of accredited verifiers.

At the ASEAN level, the identification of appropriate emissions sources for harmonisation and the development of harmonised guidelines based on those in place in AMS will lay the foundation for carbon trading across borders and will allow market players to access a regional market with better liquidity.

Additionally, as the rules for Article 6 mechanisms have become clearer, AMS need to build consensus on the use of international credits in their national carbon markets. A consensus is crucial to ensure that CPI cooperation aligns with AMS requirements and can act as a lever to ramp up ASEAN's ambitions as a region.

Some activities that would enable cooperation in the near term include developing a linked roadmap and joint framework activities, as well as implementing pilot schemes for cross-border initiatives (i.e. transactions of NbS credits between Singapore and Indonesia, transactions of green electricity between two AMS).



Annex I:

Methodology

1. Questionnaire

An initial questionnaire containing approximately 15 open and multiple choice questions was developed at the onset of the project. The questionnaire was then contextualised according to the CPI development status in each country. After adding country specific questions, a set of six questionnaires was developed, all of which were converted into online Google forms for the convenience of collecting responses. The questionnaires for Thailand and Viet Nam were further translated into local languages.

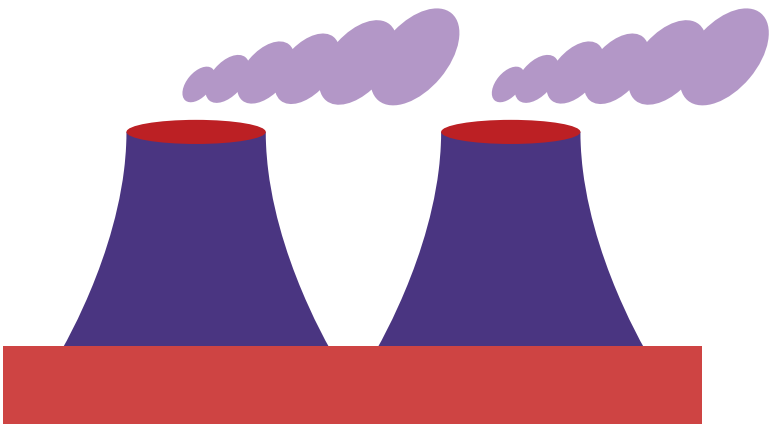
Specifically, questions were grouped into three sections:

- Section I: Private sector climate change-related experience and knowledge of CPIs;
- Section II: Private sector perspectives on the importance of CPIs in NDCs, views on the domestic development of CPIs, and interest in international trading of carbon credits;
- Section III: Support needed to help the private sector get prepared for the introduction of CPIs.

To ensure confidentiality, the questionnaire guidance section explained that responses would not be quoted by name and would be entirely anonymous.

2. Country prioritisation

The selection of AMS is based on the status of facility-level MRV (Figure Annex I-1), which is the foundation for CPIs. Since Brunei, Cambodia, Lao PDR, and Myanmar do not have plans to develop facility-level MRV systems, these four AMS are not included in this project. The other six AMS are implementing, developing, or planning facility-level MRV systems. These are referred to as AMS-6.



COUNTRY	STATUS OF FACILITY LEVEL MRV	EXPERIENCE WITH MARKET BASED MECHANISMS	OBSERVATION
Brunei Darussalam	Not Planned	No Experience	Facility-level MRV not currently planned but some international oil & gas companies report GHG emissions as part of intemal corporate processes
Cambodia	Not Planned	Limited	No facility-level MRV system exists, but the country has some experience on MRV at the project level with CDM and Gold Standard projects
Indonesia	Under Implementation	Significant	MRV at the facility level being developed for some sector and sub sectors. Significant experience with project-based MRV in the context of CDM
Lao PDR	Not Planned	Limited	No facility-level MRV system exists, but the country has some experience on MRV at the project level with activites under CDM
Myanmar	Not Planned	Limited	No facility-level MRV system in place, but some experience on the CDM exist, although still relatively limited due to the small number of registered activities
Philippines	Planned	Significant	No facility-level MRV system in place, but data is collected by the government at facility level from several sources
Singapore	Implemented	Limited	Facility-level MRV system developed to support introduction of carbon tax in January 2019; includes regulation and guidelines for the MRV of GHG emissions
Thailand	Under Implementation	Significant	Sector-specific guidelines for MRV at the facility level have been developed as part of the Thailand Voluntary Emissions Trading System (V-ETS) that is being piloted by the govemment
Vietnam	Under Implementation	Significant	Guidelines for facility-level MRV have been developed for the steel and current sectors.

Figure Annex I-1. AMS MRV status
Source: UNFCCC (2020), REdiCAP ASEAN Report

3. Sector prioritisation

A total of six sectors—energy, cement, steel, petrochemical, automotive, palm oil and waste—were selected based on the outcomes of the PaSTI-JAIF and CIACA initiatives.

PaSTI-JAIF Initiative

The PaSTI-JAIF initiative, implemented by OECC from September 2019 to July 2020, developed an implementation roadmap for the design of a facility-level M&R guideline as the basis for CPI development in ASEAN. OECC applied a two-step approach to prioritising sectors and subsectors. Under the first step, the following five criteria for sector prioritisation were applied to the 10 AMS:

- Criterion 1—Sectors covering more than 20% of individual country's total GHG emissions;
- Criterion 2—Country's preferred sector/sectors indicated during country visits;
- Criterion 3—Sectors with legal mandates to implement a monitoring and reporting (M&R) system for GHG emissions;
- Criterion 4—Sectors with existing M&R system for GHG emissions;
- Criterion 5—Sectors which have proposed or are developing an M&R system.

Under the first step, four main sectors—energy, agriculture, waste and IPPU—were considered. According to the sectoral assessment, the energy and IPPU sectors received the highest scores and were identified as prioritised sectors for the second step.

Under the second step, another five criteria were applied to the energy and IPPU sectors to prioritise subsectors in the 10 AMS:

- Criterion 1—Percentages of subsectors' emissions out of the individual country's total emissions;
- Criterion 2—Country preferred subsectors according to the order that individual country indicated;
- Criterion 3—Subsectors which have any legal mandate to implement an M&R system;
- Criterion 4—Subsectors with a M&R system;
- Criterion 5—Subsectors which have proposed or are developing an M&R system.

Under the second step, the energy subsectors, including energy industries, manufacturing industries and construction, transport and fugitive fuel emissions, as well as the IPPU subsectors, including mineral products, chemical industry and metal production, were considered. Based on the subsectoral assessment, three subsectors—energy industries, mineral products, and manufacturing industries and construction—received the highest scores and were recommended for the development of a facility-level M&R system. Although the PaSTI-JAIF initiative carried out a rigorous assessment and gave rough insights at the sector/subsector level, the categorisation of subsectors, for example manufacturing industries, did not give insightful conclusions on a granularity level suitable for the identification of potential interviewees.

CIACA Initiative

The CIACA Initiative, launched by UNFCCC at COP22, aims to respond to Parties' needs for exploring alternative market-based instruments to achieve their NDCs and foster cooperation. Based on the synthesis study on cooperative MRV as a foundation for a potential regional carbon market within ASEAN undertaken under CIACA Phase I, CIACA Phase II updated the development status of facility-level MRV as in Table Annex I-1. The green mark in this table indicates that the sectoral M&R guideline has been finalised, whereas the brown mark indicates that the guideline is under development or consideration. Additionally, the brown mark in brackets indicates that the guideline is being updated.

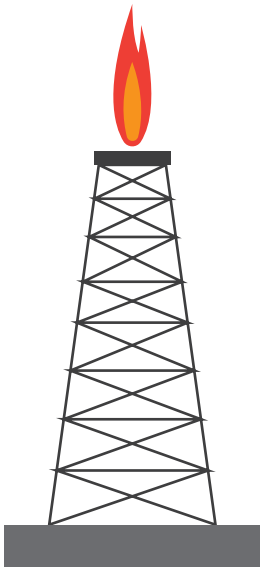


Table Annex I-1. Development status of facility-level MRV

Country	Power Generation	Cement	Industry					AFOLU
			Paper & Pulp	Steel & Iron	Fertilizer Production	Petro-chemicals	Others	
Indonesia	✓	✓	✓ (✓)		✓ (✓)	✓	✓	
The Philippines	✓	✓					**PaSTI (IPPU & Waste)**	
Singapore	✓			✓		✓		
Thailand		✓	✓	✓		✓	✓ (✓) **(PaSTI-Waste)**	
Viet Nam		✓		✓			PaSTI (Building & Con-struction	
Selected Countries // Private Sector Engagement	✓	✓					✓ (Mineral)	
Private Sector engagement in Voluntary Offsetting, Art.6, Carbon Finance								✓

Source: RCC Bangkok internal document

It is noteworthy that Indonesia and Thailand have taken important steps to improve their MRV systems. Indonesia, with the support of World Bank's Partnership for Market Readiness program, completed the MRV guideline for the power sector in May 2018, and developed and launched an online system in August 2018. Additionally, the Ministry of Industry built a web-based integrated system, called the Information System for National Industry (SIINAS). In addition to collecting non-GHG data, SIINAS has an online information monitoring system for GHG emissions (SIM Online) allowing industries to enter data directly into the system using a formal account.

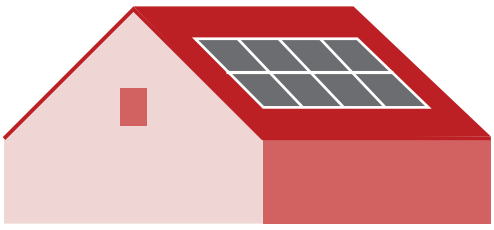
In Thailand, the Thailand Greenhouse Gas Management Organization (TGO) has been developing an MRV system and basic trading infrastructures under the Thailand Voluntary Emissions Trading Scheme (Thailand V-ETS) since 2013. The first pilot phase (2015-2017) of the V-ETS programme aimed at: (1) testing the MRV system for four GHG intensive industrial sectors (cement, pulp and paper, iron and steel, and petrochemical); (2) setting a cap for facilities' direct and energy-related indirect emissions; and (3) testing allocation methods by granting allowances to covered facilities. The second pilot phase (2018-2020) further tested the MRV

system as well as the registry and trading platform with five additional industrial sectors (petroleum refinery, glass, plastic, food and feed, and ceramics). Like in the first pilot phase, allocation was tested, with allowances granted to each sector according to their GHG reporting and target-setting results. Trading was also practiced on the demonstration-version of the trading platform. In 2020, MRV was developed for another three sectors (beverage and sugar, textiles and flat glass) and additional sector-specific guidelines were developed and improved. Furthermore, many capacity-building and outreach activities were held to introduce the ETS concept to various stakeholders.

Based on the review of the PaSTI and CIACA initiatives, IGES identified the energy, cement and steel sectors as being generic across AMS-6. Considering the significance of specific sectors to NDCs, IGES additionally identified several country-specific sectors. For example, the palm oil and forestry sectors are important for Indonesia's NDC; the automobile and palm oil sectors are critical for Thailand; and the solid waste management sector is significant for Viet Nam. IGES therefore has included these sectors for interviews.

In summary, the identified sectors for each country are summarised as follows:

- Thailand (6 sectors): Energy, cement, steel, petrochemical, palm oil and automotive;
- Indonesia, Malaysia, Singapore (5 sectors): Energy, cement, steel, petrochemical and palm oil;
- Viet Nam (4 sectors): Energy, cement, steel and solid waste management.
- The Philippines (4 sectors): Energy, cement, steel and petrochemical.



4. Recipients

Following the identification of sectors, IGES used the following sources to identify questionnaire recipients:

- Contacts in the CDM database that RCC Bangkok manages;
- Contacts shared by national focal points of AWGCC (i.e., the Philippines, Singapore);
- Members of Thailand Carbon Markets Club;
- Personal contacts, including informal introductions by IGES colleagues, former colleagues, and friends.

IGES sent the questionnaire to 86 recipients. After two to three weeks, IGES sent a reminder to the recipients who had not responded to IGES' inquiry. It is noteworthy that IGES hired a local consultant in Viet Nam to identify recipients and collect their responses, but not in the other countries. The reason IGES only had consultant in Vietnam was because the following up activities for this project focused on Vietnam Domestic Carbon Market. The follow-up approach that the Vietnamese consultant took was different from that of IGES: the consultant used other network channels to follow up and call her contacts, if she had not received responses from the recipients who received IGES' questionnaire in the first place.

Once the respondents affirmed their willingness to take part in the questionnaire, IGES followed up with a request for a virtual interview, which generally lasted for one hour. If the respondents were not available for an interview, IGES accepted their written responses.

5. Questionnaire questions

The Indonesian questionnaire was attached as a sample. The questionnaires for the other countries followed the same structure and included the same questions as the ones for Indonesia. The only difference among the questionnaires is the narrative of NDCs and the current status of CPI development in respective countries.

Sample Questionnaire

We work at the Institute for Global Environmental Strategies (IGES), an international research institution that conducts research on sustainable development in Asia and the Pacific. As part of our work on **promoting carbon pricing instruments (CPIs)** in ASEAN commissioned by UNEP, we are seeking to undertake interviews and gain your insights to the following aspects:

- Private sector actors' climate change-related experience and knowledge of CPIs;
- Views on **the significance of CPIs** in the implementation of Nationally Determined Contributions (NDCs);
- Views on **the domestic development of CPIs and international trading of carbon credits;**
- **Support needed** to enable the engagement of private sector actors in CPIs and possible areas of collaboration.

This project has an initial focus on Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam. We will interview stakeholders from the energy, cement, steel and iron, and petrochemical sectors as well as the sectors that are of importance to the NDCs of the aforementioned countries. To ensure good sectoral representation, virtual interviews will be carried out with multiple representatives from each identified sector.

To ensure confidentiality, your responses will NOT be quoted by name and will be entirely anonymous. Your inputs will be synthesized into a report, which will be shared with the governments to help shape the development of CPIs and encourage effective engagement with the private sector.

Please feel free to respond from your personal views and opinions, but you are also encouraged to respond on behalf of your company/association/sector wherever possible.

GUIDING QUESTIONS

Part I: Climate change and CPI-related practices

1. Has your company incorporated any of the following climate change-related practices into your business? If so, please explain the factors that have driven your company to incorporate such practices.

a) Energy efficiency (energy audits, replacement of old equipment, EE equipment and appliances, EE lighting, EE buildings, improving production procedures);
b) Renewable energy (solar panels/clean energy providers/small grid)
c) Resource efficiency (reducing raw materials, reducing water use, using waste heat/water/solid wastes)
d) Low carbon transportation (electric vehicles, biofuels)
e) Business planning (incorporating CC-impacts into business planning)
f) Other practices (please specify)

2. Did your company participate in any of the carbon crediting schemes and/or mitigation-related initiatives (i.e., NAMA, low carbon city, etc.)? If so, what were your experiences and lessons learned? In which way did the participation in such schemes/initiatives build your company's capacity for future carbon trading and climate action?

a. Clean Development Mechanism
b. Joint Crediting Mechanism
c. Gold Standard
d. Verified Carbon Standard
e. Indonesia Certified Emission Reduction (ICER)
f. The Katingan Mentaya Project (Forest)
g. Other mitigation-related initiatives (please specify)

3. Does your company have concerns of disclosing GHG-related data? If so, please elaborate your concerns and explain the reasons.

4. Has your company established a system to collect data that are relevant for calculating GHG emissions (i.e., emission sources and streams, energy supply and use, fuel type, production data, conversion factor, etc.)? If so, please elaborate your company's system for collecting GHG-related data. You can also send us relevant documents, if your company has.

5. Has your company established a monitoring system for GHG emissions? For example, whether your company can document the methods, steps, and procedures to measure and report all GHG emissions? If so, please elaborate your company's system for monitoring GHG emissions. You can also send us relevant documents, if your company has.

6. How does your company ensure data quality? Has your company hired a third party to verify any GHG reports? If your company has used third-party verification, what was the average cost for each verification? You can also send us relevant documents, if your company has.

Part II: Views on the introduction of CPIs

In July 2021, Indonesia submitted the updated Nationally Determined Contribution (NDC), and made an unconditional commitment of a 29% reduction in total GHG emissions from business-as-usual (BAU) levels by 2030 and a conditional commitment of a 41% reduction from BAU by 2030 with international support.

In 2017, Indonesia passed the Government Regulation (no.46/2017) on Environment Economic Instruments, which sets a mandate for an emissions and/or waste permit trading system to be implemented by 2024. A Presidential Regulation that will provide a national framework for carbon pricing instruments, including ETS, is progressing towards an advanced stage.

Indonesia launched a voluntary emissions trading trial for the power sector, running from March to August 2021. Eighty coal-fired power plants participated, of which 59 are owned by the state electricity company PLN. The voluntary program is considered a pilot and is focused on familiarizing stakeholders with the development of a national ETS, ETS compliance procedures, and offset mechanisms.

The Government of Indonesia is in the process of drafting a more progressive emissions reduction scheme under a draft Presidential Regulation on Instruments of Carbon Economic Value for NDC (Carbon Economic Value Bill). The proposed scheme would regulate carbon trade, provide payments based on performance in reducing greenhouse gas emissions, and impose a levy on carbon emissions. The Carbon Economic Value Bill is in the process of being finalized and is expected to be enacted in 2021.

7. In the context of Indonesia's NDC, will your company be interested in using CPIs to reduce emissions? Do you think CPIs are attractive market mechanisms for the private sector to take climate action and support the country to achieve the NDC? Please elaborate your reasons.

8. Will your company be interested in buying credits from forest projects? Please elaborate your interest/disinterest in forest projects.

9. In accordance with the Government Regulation (no.46/2017) on Environment Economic Instruments, what impacts may the introduction of ETS make on your business, taking into account company size, ownership, investment strategies, employment and other factors?

10. In accordance with the Presidential Regulation on Instruments of Carbon Economic Value for NDC (Carbon Economic Value Bill), what impacts may the introduction of a levy on carbon emissions make on your business, taking into account company size, ownership, investment strategies, employment and other factors?

11. Will your company be interested in trading carbon credits with other countries (i.e. ASEAN Member States)? If so, what benefits may international trading of carbon credits bring to your business?

12. What business strategies will your company formulate in response to Indonesia's CPI development?

13. What incentives do you expect to receive from the government to support your company to participate in CPIs (ETS, carbon tax, international trading of carbon credits)?

14. What factors can drive the private sector to engage in CPIs in Indonesia? What factors will deter the private sector from engaging in CPIs in Indonesia? What are your ideas of promoting CPIs in Indonesia?

15. What factors can drive Indonesian private sector actors to engage in international trading of carbon credits? What factors will deter Indonesian private sector actors to engage in international trading of carbon credits? What are your ideas of encouraging Indonesian private sector actors to participate in international trading of carbon credits?

Part III. Support needed

16. Which areas do you think that your company needs support for the preparedness of CPIs? Please select 5 or more areas and elaborate your capacity building (CB) needs.

A. Does your company need CB to understand how CPIs function?

B. Does your company need CB to understand how international trading of carbon credits functions?

C. Does your company need CB to analyze texts of CPIs-related legislations, regulations, and policies?

D. Does your company need CB to make assessments of the consequences of introducing CPIs and make business decisions based on these assessments?

E. Does your company need CB to figure out emission sources and emission streams at the facility level?
F. Does your company need CB to understand various emission quantification methods (i.e., calculation approach, material balance, direct measurement)?
G. Does your company need CB to understand methods for estimating activity data and conversion factors?
H. Does your company need CB to understand alternative approaches to treating missing data?
I. Does your company need CB to understand uncertainty assessment at various levels (i.e., parameter level, stream level, aggregated facility-level)?
J. Does your company need CB to establish quality management procedures, including the management of the third-party verifica tion of GHG reports at the facility level?
K. Does your company need CB to monitor and report non-CO_2 emissions, particularly the GHGs covered by Indonesia's NDC such as methane (CH_4) and nitrous oxide (N_2O) if applicable?
L. Does your company need CB to establish and operate a registry account for emissions allowances, certified emission reductions, and/or carbon credits?
M. Does your company need CB to acquire and trade carbon units?
N. Does your company need CB to manage company tax and accounting implications resulting from CPIs?
O. Other CB needs (please specify)

Annex II:

Private Sector Dialogue

Workshop Report
Private Sector Dialogue on Carbon Pricing Instruments
Tuesday, 23 November 2021
14:00-16:30 (ICT)
Zoom

Overview of the workshop

1. The dialogue was organized by Institute for Global Environmental Strategies and United Nations Environment Programme, and aimed to inform private sector participants about the current development of carbon pricing instruments in Southeast Asian region as well as the outcomes of COP26 on Article 6. Moreover, the workshop focused on the presentation of preliminary findings from the virtual surveys and interviews on private sector's perspective on carbon pricing instrument.

2. Around 35 representatives from private sector from Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam represent the energy, cement, steel, automotive, petrochemical, palm oil and waste sectors attended the workshop.

3. The workshop consisted of the following sessions;

(a) Opening Session

(b) Session 1: Scene Settings – Current Development of CPI in Southeast Asia, COP26 outcomes on Article 6 and preliminary findings from online surveys and interviews.

(c) Session 2: Views and ideas of utilising CPIs to reduce GHG emissions and achieve NDCs – private sectors from country priority sectors shared their experience, views, and ideas of utilising CPIs to reduce corporate GHG emissions.

Session 1: Scene Setting

4. Mr. Chatthep Chanyam, Climate Change Technical Officer from IGES, presented the current development of CPIs in ASEAN, including the outcomes of COP26 on Article 6 highlighted the results of Article 6.2 and Article 6.4 negotiations.

5. Dr. Ariel Yu, Deputy Director Regional Center in Bangkok, IGES presented the preliminary findings from the survey/interviews which was detailed in the report.

Session 2: Views and ideas of utilising CPIs to reduce GHG emissions and achieve NDCs

6. Stephanie Frogoso, Sustainability Manager, Holcim Philippines, presented on behalf of Cement Sector. She mentioned that Holcim is among the first companies worldwide to set 2050 net-zero targets validated by the Science Based Target Initiative (SBTi). With these goals, Holcim is establishing a new milestone for its industry as the first with 2030 and 2050 net-zero targets validated by SBTi and cutting across its operations and value chain including Scope 1, 2 and 3.

a. Scope 1: it includes all emissions released directly from Holcim operations. They account for 75 percent of carbon footprint and are at the core of Holcim's emissions reduction strategy. A number of factors are involved in bringing Scope 1 emissions to net zero include alternative sources of materials, clinker, waste fuels, carbon-efficient construction, and carbon capture technologies

b. Scope 2: its emissions account for 5 percent of the carbon footprint. They include indirect emissions from the generation of purchased electricity consumed in owned or controlled equipment.

c. Scope 3: the emissions account for 20 percent of carbon footprint. They include all other indirect emissions generated in supply chain, such as those from transportation. Holcim's scope 3 intermediate targets have also been verified by SBTi.

7. Dr. Shahrakbah Yacob, Vice President/Principal Agronomist, Sime Darby Plantation Berhad shared Sime Darby Plantation's experience on carbon footprint. He mentioned that SDP currently has a commitment to reduce its Scope 1 and 2 emissions intensity by 40 percent by 2030 against a 2009 baseline. Majority of SDP's operational emissions originate from methane emission from effluent treatment at the mills. Major efforts are put in place to reduce these emissions.

8. He added that there are 11 biogas plants completed to date, with an additional 23 more needed to meet SDP's 40 percent reduction target by 2030.

9. SDP could potentially also explore purchase of carbon credits to offsets SDP's gap in emissions. However, these credits would need to be purchased annually, and certain stakeholders do not recognise credits as a credible approach to meet net-zero commitments.

10. For net-zero commitment options, there are various scenarios for SDP to make Net-zero commitments, but these would incur significant Capital Expenditure commitment from SDP in the long term.

11. Nguyen Nhat Khanh, Technical Manager, Vietstar JSC Company represented Waste Sector. He shared experiences on utilising CPIs to reduce GHG emission at a waste treatment facility in Ho Chi Minh, Vietnam. Their project is called "Avoided methane emission through aerobic composting" which was registered as CDM project in 2012. From 2013 – 2020, the company was able to issue carbon credits up to 890,000 tCO_2e through 4 verifications. The company received additional revenue from selling CERs as well as improving reputation of company.

12. He also added that when company participated in carbon credit mechanism, the company had gained valuable experiences such as establishing a robust data collection and monitoring system to ensure data quality and transparency, having opportunities to work with different international validation and verification bodies, etc.

13. From company's perspective, they believe that carbon credit will help generating additional revenue, marketing benefits and standardizing data system whilst there is a need for attractive price for carbon credits and incentive provided by government. Moreover, he expected that there will be a positive transition from project-based to domestic CPIs, and capacity building activities on functions, legislations, and policies.

Recommendations

14. Based on preliminary findings and through dialogue with private sectors, IGES had come up with recommendations for ASEAN governments to help shape policies.

15. **The government should provide incentives for private sectors to shift towards low-emission business practices** such as financial incentives (tax rebates/exemptions, low-interest loans, subsidies for 3rd party verification), and increase access to international funding.

16. **There is a need for government to enforce their regulation.** For example, the measure should be industry-wide/economy-wide mandatory to provide a level playing field. Hence, the government should protect import-intensive industries and the application of same regulations on imported products from countries where CPI do not exist.

17. **Institutionalisation of capacity building is a key to achieve low-carbon practices.** At the moment, there is lack of certified CPI professionals in the region. The government should provide technical expertise/ trainings to private sectors to achieve climate action goals.

18. **It is recommended that the disaggregation of NDC from a national target to lower-level targets is an effective means of translating NDC into on-the-ground action.**

19. **ASEAN governments should harmonise and work together to agree on the use of international credits in national carbon markets and NDCs as well as developing a joint framework/roadmap for CPI development in ASEAN.**

20. There were no further comments from the floor on recommendations.

Private Sector Dialogue on Carbon Pricing Instruments Programme

Time (ICT)	Session	Presenter
Opening session		
14:00-14:05	Opening remarks	**Sudhir Sharma** GEF Task Manager, Climate Change Mitigation Programme Management Officer, Energy and Climate, UNEP Asia Pacific Office
14:05-14:15	Self-introduction	Participants
Session 1: Scene setting		
14:15-14:30	The current development of CPIs in ASEAN, including the outcomes of COP26 on Article 6	**Chatthep Chanyam** Climate Change Technical Officer, IGES
14:30-14:50	Preliminary findings from the survey/ interviews	**Ariel Yu** Deputy Director, Regional Center in Bangkok, IGES
14:50-15:10	Q&A	
Session 2: Views and ideas of utilising CPIs to reduce GHG emissions and achieve NDCs		
15:10-16:20	[40 minutes] Private sector representatives share their experience, views, and ideas of utilising CPIs to reduce corporate GHG emissions for 10 minutes each: • Cement: Stephanie Frogoso, Sustainability Manager, Holcim Philippines. • Palm oil: Dr. Shahrakbah Yacob, Vice President/Principal Agronomist, Sime Darby Plantation Berhad • Waste: Nguyen Nhat Khanh, Technical Manager, Vietstar JSC Company [30 minutes] Open discussion on "Recommendations for designing CPIs"	Moderator: **Ariel Yu** Deputy Director, Regional Center in Bangkok, IGES
16:20-16:30	Closing remarks	**Sudhir Sharma** GEF Task Manager, Climate Change Mitigation Programme Management Officer, Energy and Climate, UNEP Asia Pacific Office