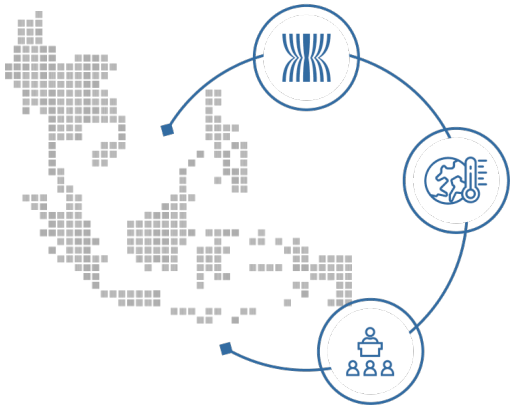
Policy Brief
No. 02 / January 2022

ASEAN Centre for Energy
One Community for Sustainable Energy

ASEAN's Transition Pathway to Realise a Resilient and Net-zero Community: Core Findings from the ASEAN State of Climate Change Report



Yosuke Arino[a] and Prabhakar S.V.R.K.[a]

For policy-makers at the regional, national and subnational levels (Sections 2, 3 and 4)

- The ASEAN State of Climate Change Report (ASCCR) presented ASEAN's mitigation goal: i) Achieve net-zero greenhouse gas (GHG) emissions as early as possible in the latter half of the 21st century; and ii) Cap peak GHG emissions as soon as possible after 2030 to ensure the net-zero GHG emission goal is met on schedule.
- However, the updated Nationally Determined Contributions (NDCs) targets and the most aspirational scenario shown in the 6th ASEAN Energy Outlook are inconsistent with the above-mentioned goal, implying the need for a transformation of energy and land-use systems to achieve increased climate ambition and meet the goals of the Paris Agreement (PA).
- Recognising these gaps, the ASCCR also prioritised specific adaptation and mitigation-related actions, numbering 29 and 30 respectively, by 2030 and up to 2050, and which serve as the basis for ASEAN's transition pathway to reach its climate goal. ASEAN's broader climate goal is comprised of more specific goals for development, adaptation, mitigation, and synergies between adaptation and mitigation. Together, they constitute ASEAN's climate vision toward 2050, and provide a pathway for its achievement by ASEAN Member States (AMS).
- Key actions to transform energy and land-use systems in line with the ASEAN climate vision 2050 include:
  - Raising ambition further after duly achieving the near-term milestone of the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025 renewable energy (RE) target
  - Formulating a transition strategy toward achieving sustainable and net-zero systems of energy and land-use
  - Promoting multiple co-benefits through a clean energy transition
  - Tracking and fixing the inverse relationship between energy and emission intensity reductions
  - Maximising the synergies between mitigation and adaptation actions that involve land-use change

For policy-makers in the ASEAN Community (Section 5)

Specific recommendations for the ASEAN Community to implement the ASEAN climate vision 2050 are summarised as follows:

- Co-creating a long-term master plan and roadmap to implement the ASEAN climate vision 2050
  - Creating long-term climate mitigation roadmaps to inform national and subnational policy-making and promote policy implementation to achieve ASEAN's goal of achieving net-zero emissions after 2050.
  - Initiating dialogues to develop a master plan for the ASEAN Community which integrates and promotes just transition, green and resilient recovery from the COVID-19 pandemic, finance, technology development and diffusion, and capacity development, in order to transform future markets, citizens, and the entire ASEAN Community (e.g. an ASEAN version of the Green Deal).

a Institute for Global Environmental Strategies (IGES), Hayama, Kanagawa, Japan. Note that authors are the lead authors of the ASEAN State of Climate Change Report and the contents of this policy brief are in line with the report.

- Promoting cross-pillar, cross-sectoral and cross-country coordination
  - Incorporating prioritised actions for achieving the climate goal into different development and adaptation plans as well as various sectoral policies on energy, industry, transport, cities, rural development and forestry.
  - Enhancing relevant strategic measures stipulated in the ASEAN Economic Community (AEC) Blueprint 2025 and the ASEAN Socio-Cultural (ASC) Community Blueprint 2025 in line with the ASEAN climate vision 2050, and newly designing or redesigning strategic measures in the next ASEAN Community Blueprints for the period after 2025, such as 2026–2035.
  - Strengthening seven key areas of the APAEC 2016-2025 (Phase II) in line with the ASEAN climate vision 2050, and newly designing or redesigning key areas and relevant measures, with an explicit target of achieving net-zero GHG emissions as soon as possible in the latter half of the 21st century.
- Enhancing institutional arrangements and capacity development
  - Promoting cross-pillar and cross-sectoral coordination to mainstream climate actions in all relevant sectors by enhancing science-policy integration and multi-stakeholder engagement across sectors.
  - Strengthening actions for scientific capacity development, including long-term projections, downscaling of climate risk assessment and vulnerability assessments, and monitoring & evaluation (M&E) systems based on robust and flexible data management.
  - Enhancing collaboration among the ASEAN Centre for Energy, the ASEAN Centre for Climate Change (which will be newly established in Brunei Darussalam [1]), and the ASEAN Centre for Biodiversity to implement the ASEAN climate vision 2050.
  - Introducing a long-term net-zero scenario assessment in the 7th ASEAN Energy Outlook to present a more detailed roadmap for the energy sector to achieve net-zero GHG emissions.

1. Introduction

The ASEAN State of Climate Change Report (ASCCR) [2] was launched during an official meeting organised by the ASEAN Secretariat on 7 October 2021. The ASCCR is the outcome of a two-year project coordinated by the ASEAN Secretariat (Environment Division) and Institute for Global Environmental Strategies (IGES)[1]. The project involved multi-stakeholders, including 15 national think tanks, 10 national focal points (NFPs) from each ASEAN Member State (AMS), and ASEAN dialogues and development partners including international and regional organisations outside of the ASEAN region.

The ASCCR was developed as a synthesis report that was officially endorsed by the NFPs of the ASEAN Working Group on Climate Change (AWGCC) and the Meeting of ASEAN Senior Officials of the Environment (ASOEN). The Regional Consultation Meetings during the process for developing the ASCCR took note that it would serve as a guiding document to inform policy-making in ASEAN and among AMS. Thus, the ASCCR's findings and prioritised actions are expected to be translated into regional and national policy, from the AWGCC Action Plan on Climate Change to sectoral and cross-sectoral action plans.

This policy brief aims to convey the ASCCR's key messages with a focus on recommended and prioritised actions related to the energy sector. Its intention is to help enhance cross-pillar (i.e. cross-Community) coordination, especially between the ASEAN Economic Community (AEC) and the ASEAN Socio-Cultural Community (ASCC), and cross-sectoral coordination among various ASEAN Secretariat Divisions and ASEAN Sectoral Bodies, among them the ASEAN Centre for Energy (ACE)[2]. This is because climate change interventions consisting of adaptation and mitigation are diverse and relate to a broad range of policies in various sectors at regional (ASEAN) and national levels. In order to proceed to the "implementation" phase and translate the recommended actions into practice, effective coordination involving multiple stakeholders across various sectors and AMS is vital, as stressed in various ASEAN official documents[3].

1 The project was funded by the Japan-ASEAN Integration Fund (JAIF).

2 Implementation of the recommendations in the ASCCR needs to be led by the ASEAN Secretariat Divisions and Sectoral Bodies under the AEC as well as those under the ASCC, since prioritized mitigation and adaptation actions fall into the sectors of agriculture and forestry, industry and transport. ACE is undoubtedly the key player to inform and coordinate energy policy in consideration of the climate vision shown in the ASCCR.

3 This point, including comprehensive and coherent responses such as multi-stakeholder and multi-sectoral approaches, is stipulated in the ASCC Blueprint 2025 (ASEAN, 2016, page 12, C.3.ii.) and ACE's policy brief states that "COP26 is an important climate action milestone and needs to be coordinated and integrated with many sectors, including that of energy." [10]

2. Climate Goals in the ASEAN climate vision 2050

The ASCCR presented the ASEAN climate vision 2050, which consists of the long-term goals of development, adaptation and mitigation as well as the pathway (prioritised actions for adaptation and mitigation, amounting to 29 and 30 actions, respectively) to reach the regional goals. The ASEAN's goals and pathway to achieve them were discussed and agreed upon through a series of consultation processes and these are expected to be translated into specific actions hereafter. Notably, the ASEAN climate vision 2050 is in line with the long-term goals stipulated in the Paris Agreement (PA), which calls for stabilising the climate to a 2°C or 1.5°C above pre-industrial levels and enhancing resilience to climate change impacts. The mitigation goal is very closely related to the energy sector.

ASEAN's mitigation goal is as follows:

- Realise net-zero greenhouse gas (GHG) emissions as early as possible in the latter half of the 21st century, and
- Realise peak GHG emissions as soon as possible after 2030 to ensure the net-zero GHG emission goal is met on schedule.

This mitigation goal is based on novel scientific knowledge on the GHG emission pathways to stabilise the climate to 1.5°C above pre-industrial levels rather than a 2°C. These GHG emission pathways were derived by four Integrated Assessment Models (IAMs) which are managed in the CD-LINKS Scenario Explorer [3], an open-access database[4]. As Figure 1 shows, the global 1.5°C target requires ASEAN to achieve net-zero GHG emissions in 2065 on average across the models, while ASEAN needs to achieve net-zero CO2 emissions in 2050 on average.

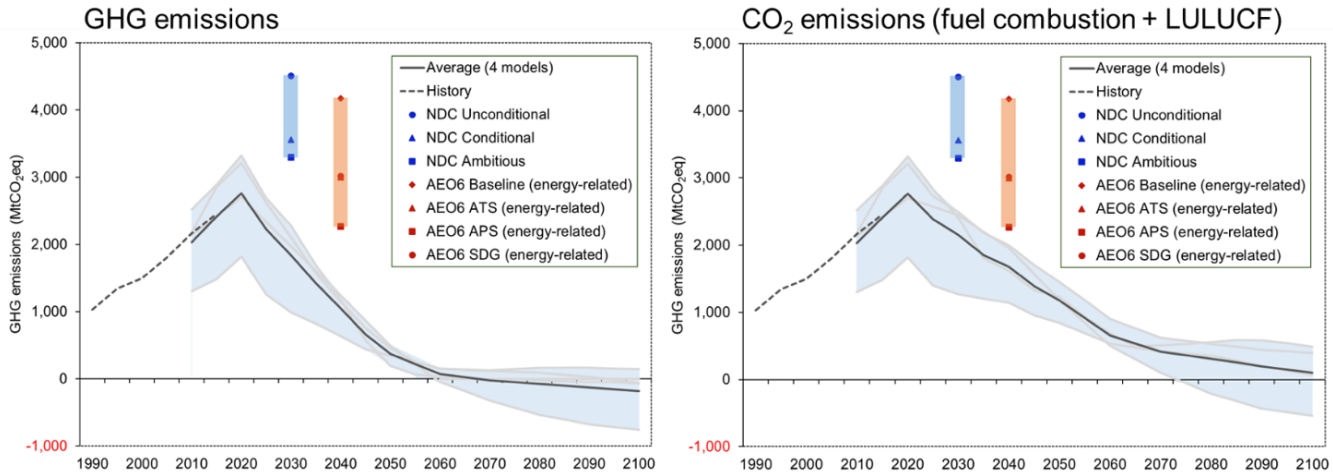


Figure 1. ASEAN's GHG emission pathways to achieve the 1.5 °C target

Source: Figure 16 of ASCCR [2]. Note: Historical and future GHG and CO2 emissions pathways in ASEAN to meet the 1.5°C target on a global scale. CO2 emissions include emissions from fuel combustion, industrial processes, and LULUCF. Four models whose simulation results shown are AIM/CGE 2.1, MESSAGEix-GLOBIOM 1.0, REMIND-MAgPIE 1.7-3.0, and WITCH-GLOBIOM 4.4.

The updated NDC targets (as of 30 August 2021) and aspirational scenarios (i.e. the APAEC Target Scenario: APS) shown in the 6th ASEAN Energy Outlook (AEO6) [4] are inconsistent with the pathways to achieve the 1.5°C or 2°C targets. Even the most ambitious GHG emissions level of updated NDC targets in 2030 is estimated to be at 3,294 MtCO2eq, and the emissions (energy-related GHG only) under the APS in 2040 are at 2,264 MtCO2eq. In sum, novel scientific knowledge on mitigation reveals how ASEAN needs to seek more stringent emissions reductions than the currently estimated best-effort case (i.e. APS) shown in the AEO6 [4]. This means that ASEAN must change the course of its development path to keep the PA temperature goals within reach.

4 For the details for calculating the ASEAN's GHG emission pathways, please see pages 31-32 of the ASCCR [2].

ASEAN's long-term goals (Figure 2) also announce that development and adaptation transition pathways should be synergised, wherever possible, with the mitigation transition pathway toward net-zero emissions to be reached after 2050. Regarding the nexus between adaptation and mitigation, achieving the mitigation goal does not only focus on the energy and mitigation sectors, but will also capture mitigation benefits accrued in priority adaptation sectors. Maximising the benefits of adaptation on the mitigation transition pathway is also essential. The adaptation goal and mitigation goal should support development goals, which means that actions to achieve the target of net-zero GHG emissions should promote socio-economic development rather than becoming a constraint for economic development. For this, systematic change of society is required in multiple dimensions such as the economy, politics, governance, technology, finance and human development.

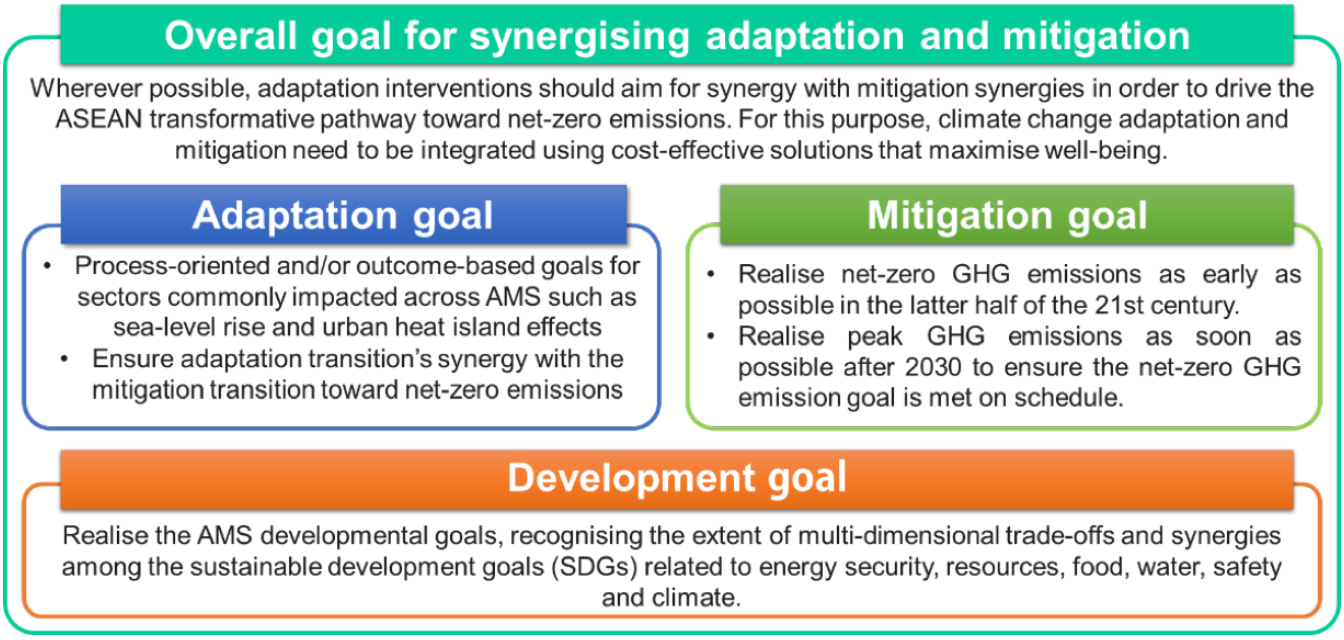


Figure 2. Goals in the ASEAN climate vision 2050

Source: [5]

3. Transition Pathways in the ASEAN climate vision 2050

Table 1 presents a summary of the top three actions[5] for each group of adaptation and mitigation actions in the ASEAN climate vision 2050, which comprise ASEAN's transition pathway to reach the goal outlined above in Figure 2. Diverse actions are classified into four groups: Acquaint, Integrate, Involve, and Motivate (referred to as the AIIM groups of actions). A total of 29 adaptation actions and 30 mitigation actions were prioritised using a questionnaire survey during the process for developing the ASCCR, with responses from the NFPs of the AWGCC. They are particularly focused on the time period until 2030, though actions during 2030-2050 are also specified (see Tables 24 and 26 in the ASCCR [2]). In this way, the ASCCR showed transition pathways comprising strategic actions for both adaptation and mitigation until 2050.

5 A set of actions for adaptation and mitigation were separately prioritised (ranked) by the NFPs from each country through a questionnaire survey conducted during the process for developing the ASCCR. Then, the scores for ranking of each country were averaged and listed in a descending order. Table 1 shows the three actions for each group that received the highest scores.

Table 1. Prioritised climate actions (adaptation and mitigation) in the ASEAN climate vision 2050

Actions to promote transparency or transformation	AIIM groups of actions	Adaptation	Mitigation
Transparency of climate action	Acquaint	1. Promote risk and vulnerability assessment as a basis for adaptation planning	1. Strengthen the scientific information base
		2. Develop best practice guidelines and roadmap for diffusion of adaptation technologies	2. Enhance collaboration on co-benefits research and actions
		3. Strengthen the scientific information base	3. Establish a knowledge centre hub on MRV for ASEAN and AMS
Transformation to achieve increased climate ambition	Integrate	1. Mainstream adaptation into sectoral and development planning	1. Adopt an interdisciplinary approach for combating air pollution
		2. Promote adaptation and mitigation co-benefits	2. Accelerate regional power interconnectivity to promote RE in the region
		3. Develop regional, national and local adaptation plans	3. Promote green recovery from the COVID-19 pandemic
	Involve	1. Sustain actions through public-private-people partnerships (PPPP)	1. Establish networks, groups of scientists, and communities of practice for mitigation
		2. Promote multi-stakeholder processes	2. Promote regional cooperation on mitigation through specific regional activities/frameworks
		3. Promote regional cooperation on adaptation	3. Promote education and awareness raising for clean technology diffusion at all levels
	Motivate	1. Set adaptation goals	1. Set long-term mitigation goals/targets and roadmaps at regional, national and local levels
		2. Develop climate risk transfer system	2. Facilitate mitigation planning including addressing sectoral challenges
		3. Enhance technology diffusion on adaptation	3. Enhance access to international mitigation finance

Note: This table only shows the top three actions for each group of AIIM (Acquaint–Integrate–Involve–Motivate) actions. The other prioritised actions for each group are shown in Table 23 and Table 25 of the ASCCR [2].
Source: Table 27 of the ASCCR [2]

Definition of four groups of prioritised actions

The Acquaint group of actions refers to those that enhance climate "transparency". Here, transparency points to the biennial reporting requirements under the "Enhanced Transparency Framework" enshrined in the PA. The ETF calls for all countries to submit their "Biennial Transparency Report (BTR)" to the UNFCCC after 2023, and this requirement is applied to all countries, developed or developing, and will provide the chance to periodically take stock of national climate change interventions. This action is, ultimately speaking, associated with the level of science and availability of information and knowledge of respective countries. For example, in BTR, reporting the methodology to estimate GHG emission and mitigation projections became a mandatory

reporting item. This requires advancement of modelling techniques. Importantly, enhanced transparency can be the basis for good governance and rational or more targeted actions, can increase efficiency and effectiveness of a system, institution or policy actions, and can also be a prerequisite for multiple-level transformation, which is essential to achieve increased climate ambition, i.e. net-zero emission targets in terms of mitigation or more broadly the PA temperature goal. The other three groups of actions (Integrate, Involve and Motivate) are primarily related to promoting "transformation" of entire systems, e.g. socio-economic, energy and land-use. Transformation is assumed to be vital in raising climate ambition and achieving increased climate targets. The Integrate group of actions aims to integrate systems and institutions such as science-policy integration and overarching system integration. The Involve group of actions is mainly relevant to multi-stakeholder engagement. Finally, the Motivate group of actions aims to provide various kinds of incentives such as finance, technology and institutional capacity building. Policy provisions or redesigning policy that can enable stakeholders to act or leapfrog are the fundamental component of this group.

Interlinkages between the ASEAN climate vision 2050 and the ASEAN Plan of Action for Energy Cooperation (APAEC) 2016-2025

In terms of the energy sector, the Integrate, Involve and Motivate groups of mitigation actions are closely related to, for example, the seven key areas of the APAEC 2016–2025 [6][7] (See the actions highlighted in green in Table 1). Two actions coloured in dark green (Integrate: 3. Promote green recovery from the COVID-19 pandemic; and Motivate: 1. Set long-term mitigation goals/targets and roadmaps at regional, national and local levels) are critical actions which require cross-sector collaboration or policy integration ranging over multiple divisions and sectors relevant to both the energy and climate/environment areas. Importantly, three adaptation actions coloured in light blue (and more) are also interlinked with energy policy, since a long-term clean energy transition also needs to consider enhancing resilience and adaptation to climate change, and vice versa, as stated in the goals of the ASEAN climate vision 2050 (Figure 2). The adaptation action coloured in dark blue (2. Promote adaptation and mitigation co-benefits) requires broader and more effective policy integration across the adaptation and mitigation areas. Enhancing and redesigning policy frameworks through stronger energy-climate dialogues will be the key to making the transition to a sustainable energy system in the ASEAN Community.

4. Energy and Land-use Transition in line with the ASEAN climate vision 2050

As population and economies continue to grow over the next few decades, an overall direction for energy transition in line with the ASEAN climate vision 2050 is to curb the rate of energy demand increase and accelerate decarbonisation of energy systems from both the demand and supply sides. Here, requisites in the medium- to long-term for energy and land-use transition are summarised as five key points from the ASCCR's findings. In 2018, around three-fifths of the ASEAN's GHG emissions was from fossil fuel combustion while the other two-fifths came from the Land use, and Land-Use Change and Forestry (LULUCF) sector [2], and thus the energy-land nexus will be an essential aspect.

Raising ambition further after duly achieving the near-term milestone of the APAEC 2016-2025's renewable energy target

In the energy sector, there is an ASEAN near-term energy target for renewable energy (RE) expansion, i.e. the ASEAN Plan of Action for Energy Cooperation (APAEC)'s RE target of 23% in total primary energy supply by 2025 and an energy intensity reduction of 32% by 2025. However, after that, the future course of actions projected to be taken by AMS is not necessarily informed by the PA goals, but is more based on current policy trends according to AEO6 [4]. An ASEAN-wide collective and long-term master plan may encourage AMS to explore more ambitious and effective emission reduction measures by leapfrogging through upgraded policy frameworks such as effective carbon pricing and RE trading via the ASEAN regional power grid.

Formulating a transition strategy toward achieving sustainable net-zero systems of energy and land-use

In planning the transition to net-zero energy and land systems, ASEAN and AMS need to focus on sustainable systems over the long-term, including the period after achieving net-zero emissions. For this, "transient" technologies that will be diminished or ultimately phased out should be distinguished from technologies like RE that will keep playing a central role in achieving net-zero emissions, taking into account national circumstances (ASCCR, page XV) [2]. Various sectoral technology options for decarbonisation include, but are not limited to, RE power (solar, wind, hydropower, geothermal, etc.) with battery and enhanced grid systems, highly energy efficient appliances, bioenergy (waste and primary resources), decarbonising technologies for industry, electric or hydrogen-related mobility (land, aviation, and shipping), materials with lower lifecycle GHG emissions, carbon capture, utilisation and storage (CCUS), hydrogen, sustainable forest management, and afforestation and reforestation. For more precise net-zero compatible technologies, please see Table 16 of the ASCCR (page 72) [2]. In formulating strategic measures for the period after 2030, it will be important to consider various factors such as trends in the global and regional markets of low- and zero-carbon technologies, cost reduction trends, and multiple co-benefits that contribute to

the long-term sustainable development of the ASEAN region (ASCCR, page XV) [2]. One of the reasons behind this is that dramatic cost reductions of distributed RE and battery technologies are expected to sustain, given their growing market shares and continuous technological advancement (ASCCR, page 73) [2]. Moreover, RE power can be a rational choice if social costs of carbon (SCC), e.g., CO2 emission and air pollution that would be implicit in a market without carbon pricing, have been properly taken into account and internalised in the market (ASCCR, page 83) [2].

Promoting multiple co-benefits through a clean energy transition

A clean energy transition is not only essential for achieving net-zero emissions but also produces multiple co-benefits that serve as powerful drivers for sustaining the transition. The ASCCR states that "climate change mitigation through switching to renewable/low-carbon energy produces multiple co-benefits including improving access to electricity, enhancing energy security, providing local green jobs, reducing indoor and outdoor air pollution, and improving development potential. Actions to pursue co-benefits, such as combatting local air pollution, will expand the possibilities for substantial climate actions in the short and long run" (ASCCR, page XV) [2].

Tracking and fixing the inverse relationship between energy and emission intensity reductions

Regarding energy transition, the inverse relationship between energy intensity reduction and emission intensity reduction needs to be recognised and reflected in ASEAN's energy and climate strategies. As shown in Figure 3, from 1990-2018, energy intensity in the ASEAN region and AMS dropped due to steady economic growth and respective increased efficiency of the economic system, while emission intensity rose over the same period largely due to expanded coal-fired power plant and oil-based fuels. This shows a clear inverse relationship between energy intensity and emission intensity improvements. In order to fix this relationship, the national energy policy of each AMS needs to be planned to diligently reduce both energy and emissions intensity simultaneously, with a special focus on emission intensity reduction by

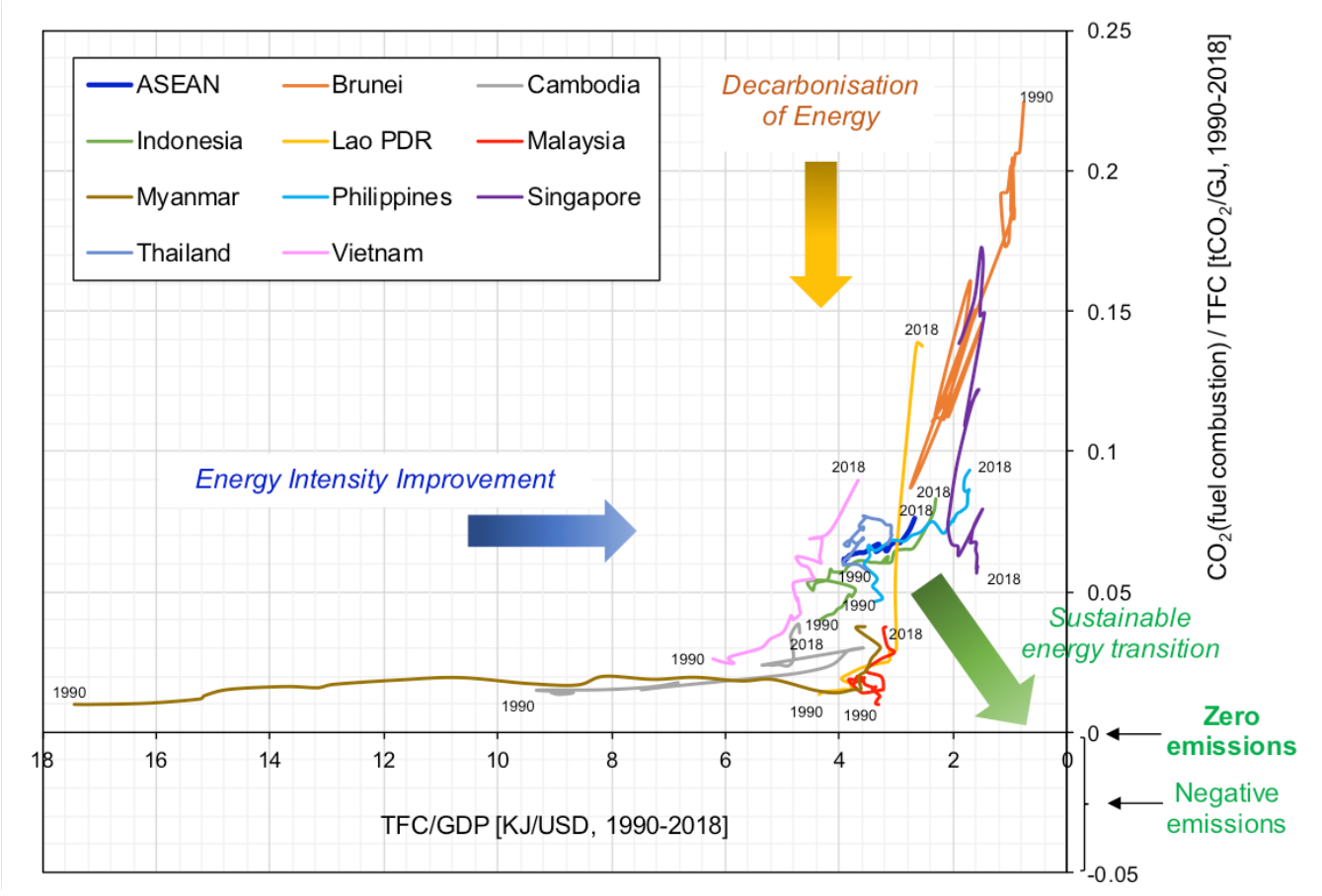


Figure 3. Relationship between energy intensity and CO2 emissions intensity in the ASEAN region and AMS during the period from 1990 to 2018 (2000-2018 for Lao PDR and ASEAN, and 1995-2018 for Cambodia).

Source: Figure 12 of the ASCCR [2]

decarbonising power systems and all other priority sectors such as transport, industry, and waste. Enhancement or reshaping of national RE policies and implementation is also necessary, and hence the APAEC's RE target of 23% in total primary energy supply by 2025, which will be one of the greatest near-term milestones, is critical for the transition through 2030 and on to 2050. In addition, energy supply and demand and GHG emissions need to be tracked (including, but not limited to, on a per-capita basis) to steadily plan and implement mitigation actions in the context of different levels of economic development among the AMS.

Maximising the synergies between mitigation and adaptation actions that involve land-use change

Decarbonisation of the energy sector through biofuel expansion needs to pay attention to possible negative impacts on conserving forests. This is because emission reductions achieved by preventing deforestation and enhancing carbon stocks in forestland will be an essential mitigation option in the Agriculture, Forestry and Other Land Uses (AFOLU) / Land use, and Land-Use Change and Forestry (LULUCF) sector, as well as an effective adaptation option as part of ecosystem-based adaptation (EbA). National and regional policies in the energy and AFOLU/LULUCF sector need to be harmonised or integrated in the medium to long run. In the land transport sector, for example, the trend that cost reductions of biofuels will not be as large as that of battery technologies, which can be applied to electric vehicles (EVs), also needs to be taken into account (ASCCR, page 73 [2]). In this way, the long-term energy transition needs to synergise forest conservation and EbA.

5. Realising the ASEAN climate vision 2050 through cross-cutting coordination

In order to smoothly and effectively implement the recommended actions in the ASEAN climate vision 2050, it will be vital to promote cross-pillar, cross-sectoral and/or cross-country policy coordination, surpassing a mere information sharing. System integration and science-policy integration will lay the foundation for such effective coordination, as shown in the prioritised climate actions (the Integrate and Involve groups) in Table 1. The following two overarching policy responses stated in the Executive Summary of the ASCCR [2] will only be implemented through effective institutional arrangements within the ASEAN Community and national systems of each AMS.

- "As for overarching responses, adaptation and mitigation actions should be synergised wherever possible, especially at the level of implementation of practices on the ground. This will help to ensure that solutions are cost-effective as well as enhance societal well-being. Examples include climate-smart agriculture and nature-based solutions (NbS), including ecosystems-based adaptation, such as agroforestry, protecting mangrove forests, and strengthening forest management through certification and "reducing emissions from deforestation and forest degradation"1 (REDD+) that contributes to enhancing forest carbon stocks. Appropriate hydropower reservoir management will also protect local communities from riverine floods and other extreme events, while contributing to climate change mitigation. Furthermore, 'climate-proofed' energy infrastructures such as electricity generators, power grids and associated buildings that have incorporated adequate mitigation and adaptation measures need to be located or relocated in places which are less exposed to climate change to sustain their mitigation and adaptation synergies" (ASCCR, page viii) [2].
- In response to the climate crisis and COVID-19 pandemic, "financial flows need to support a green and resilient recovery. Fiscal spending can also help to leverage private finance while utilisation of regional/international funds is also essential. Finance will be the key to achieving a recovery compatible with the pathway to the PA goals for adaptation and mitigation, by providing enough funding for technology development and diffusion as well as human capacity building for development and climate change intervention. In order to secure and mobilise public and private funding, ASEAN programmes for sustainable and resilient recovery from COVID-19 (e.g. the ASEAN Comprehensive Recovery Framework) need to integrate strategies for green recovery and just transition which involve specific programmes to reskill the workforce and assist in smooth reemployment in industries related to clean energy, climate smart agriculture and sustainable forest management" (ASCCR, page xiv) [2].

The following points are specific policy recommendations for deepening energy-climate system integration in the ASEAN Community and realising the ASEAN climate vision 2050[6]:

(1) Co-creating a long-term master plan and roadmap to implement the ASEAN climate vision 2050

- The ASEAN Community needs to develop more specific long-term roadmaps to inform national and subnational policy-making and promote policy implementation.
- The ASEAN Community needs to initiate dialogues to develop an ASEAN Community master plan which integrates and promotes just transition, green and resilient recovery from the COVID-19 pandemic, finance,

6 Notably, a few counties announced net-zero emission targets before and after the publication of the ASCCR. For example, Malaysia announced a 2050 net-zero emission target in September 2021 and Vietnam also announced a net-zero emission target with the same timeline in November 2021.

technology development and diffusion, and capacity development, in order to transform future markets, citizens, and the entire ASEAN Community (e.g. an ASEAN version of the Green Deal).

(2) Promoting cross-pillar, cross-sectoral and cross-country coordination

- The climate goals and pathways to achieve them stipulated in the ASCCR need to be incorporated into different development and adaptation plans as well as various sectoral policies. Specific actions relevant to clean energy transition, climate smart agriculture, and sustainable forest management, which involve the energy, industry, transport, city, rural development and forestry sectors, among others, include:
  - Enhancing relevant strategic measures stipulated in the ASEAN Economic Community Blueprint 2025 [8] and the ASEAN Socio-Cultural Community Blueprint 2025 [9] in line with the ASEAN climate vision 2050, and newly designing or redesigning strategic measures in the next ASEAN Community Blueprints for the period after 2025 such as 2026–2035; and
  - Strengthening seven key areas of the APAEC 2016–2025 (Phase II) [7] in line with the ASEAN climate vision 2050, and newly designing or redesigning key areas and relevant measures in the planned APAEC 2026–2035, with an explicit target of achieving net-zero GHG emissions as soon as possible in the latter half of the 21st century.

(3) Enhancing institutional arrangements and capacity development

- Promoting cross-pillar and cross-sectoral coordination to mainstream climate actions in all relevant sectors requires sufficient institutional capacity and institutional arrangements, including the enhancement of science-policy integration and multi-stakeholder engagement across sectors.
- Actions for scientific capacity development include, among others, long-term projections, downscaling of climate risk and vulnerability assessments, and enhancing monitoring & evaluation (M&E) systems based on robust and flexible data management. Specific recommendations for the ASEAN Centre for Energy include:
  - Enhancing collaboration among the ASEAN Centre for Energy, the ASEAN Centre for Climate Change which will be newly established in Brunei Darussalam [1], and the ASEAN Centre for Biodiversity to implement the ASEAN climate vision 2050; and
  - Introducing a long-term net-zero scenario assessment in the 7th ASEAN Energy Outlook to present a more detailed roadmap for the energy sector to achieve net-zero GHG emissions.

References

[1] ASEAN, Chairman's Statement of the 38th and 39th ASEAN Summits, 2021. https://asean.org/wp-content/uploads/2021/10/FINAL-Chairmans-Statement-of-the-38th-and-39th-ASEAN-Summits-26-Oct....pdf.

[2] ASEAN, ASEAN State of Climate Change Report, ASEAN Secretariat, Jakartat, 2021. https://asean.org/book/asean-state-of-climate-change-report/https://asean.org/book/asean-state-of-climate-change-report/.

[3] IIASA, CD-LINKS Scenario Explorer, (2020). https://data.ene.iiasa.ac.at/cd-links/.

[4] ASEAN Centre for Energy, The 6th ASEAN Energy Outlook 2017-2040, 2020. https://aseanenergy.org/the-6th-asean-energy-outlook/.

[5] IGES, Transitions toward a resilient and net-zero ASEAN Community: Insights from the ASEAN State of Climate Change Report, (2021). https://www.iges.or.jp/en/news/20211111.

[6] ASEAN Centre for Energy, ASEAN Plan of Action for Energy Cooperation (APAEC) Phase I: 2016 - 2020, 2009. https://aseanenergy.org/2016-2025-asean-plan-of-action-for-energy-cooperation-apaec/.

[7] ASEAN Centre for Energy, ASEAN Plan of Action for Energy Cooperation (APAEC) Phase II: 2021 - 2025, 2021. https://aseanenergy.org/asean-plan-of-action-and-energy-cooperation-apaec-phase-ii-2021-2025/.

[8] ASEAN, ASEAN Economic Community Blueprint 2025, 2015. https://asean.org/book/asean-economic-community-blueprint-2025/.

[9] ASEAN, ASEAN Socio-Cultural Community Blueprint 2025, 2016. https://asean.org/book/asean-socio-cultural-community-blueprint-2025/.

[10] Z. Yurnaidia, M. Merdekawatia, B. Suryadia, H.F. Sagbakkenb, I. Overlandb, R. Vakulchuk, ASEAN Climate Action : A Review of Nationally Determined Contributions Updated in 2020, (2021) 1–8. https://aseanenergy.org/asean-climate-action-a-review-of-nationally-determined-contributions-ndcs-updated-in-2020/.

This policy brief is produced by **Institute for Global Environmental Strategies (IGES).** ACE or ACCEPT is not responsible for the content.

ACCEPT is funded by the Norwegian Government under the Norwegian-ASEAN Regional Integration Programme (NARIP) and is jointly implemented by the ASEAN Centre for Energy (ACE) and the Norwegian Institute of International Affairs (NUPI). The project includes the active involvement of key ASEAN stakeholders, and helps enhance modelling, analytical and regional policy planning capacities within ASEAN.

ACE is an intergovernmental organisation within ASEAN structure that represents the 10 ASEAN Member States' (AMS) interests in the energy sector.

NUPI carries out research on international issues of importance to Norway and the world.

accept.aseanenergy.org @ASEAN_EnergyCC @asean_energycc

ACCEPT ASEAN Climate Change and Energy Project

Implemented by: ASEAN Centre for Energy One Community for Sustainable Energy; Norwegian Institute of International Affairs

Supported by: Norwegian Ministry of Foreign Affairs

ASEAN Centre for Energy
Soemantri Brodjonegoro II Building
Jl. H.R. Rasuna Said Block X-02, Kav. 07-08,
RT.10/RW.4, Kuningan Timur, Kecamatan
Setiabudi, Daerah Khusus Ibukota Jakarta 12950

+62 21 527 9332

aseanenergy.org