



Climate Change & Southeast Asia

# **An Assessment of the Nationally Determined Contributions (NDCs) of the States of Southeast Asia**

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**HEINRICH BÖLL STIFTUNG**  
**SOUTHEAST ASIA**



## An Assessment of the Nationally Determined Contributions (NDCs) of the States of Southeast Asia

Researched and compiled by Matthew Baird, Rocky Guzman and Jesper Nepomuceno, Asian Research Institute for Environmental Law (ARIEL) supported by Heinrich Böll Stiftung Southeast Asia Regional Office, 01 November 2021.



### INTRODUCTION

In November 2015, 196 countries negotiated the Paris Climate Agreement, a landmark international treaty on climate change mitigation, adaptation, and financing, which set the long-term goal of limiting global warming to well below 2, preferably to 1.5 degrees Celsius compared to pre-industrial levels. As a result, 191 states and the European Union as signatories expressed their commitment to reach global peaking of greenhouse gas emissions as soon as possible and achieve a 'climate-neutral' world by 2050.

The Paris Agreement works through a five (5)-year cycle of increasingly ambitious climate action negotiated and signified by member-states. As part of this cycle, Article 4, Paragraph 2 of the Agreement requires each party to prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve. These NDCs embody the commitments and undertakings of all countries to combat and address climate change issues and reduction of greenhouse gas emissions (GHG), including but not limited to baseline scenarios per country, current and planned policy framework initiatives, climate financing initiatives, plans, and measures, and overall updates with regards to the realization of climate targets.

All 11 states in Southeast Asia have signed and ratified the Paris Agreement and ten of them have submitted their NDCs for the 5-year cycle. It was not possible to review Myanmar's NDC due to the on-going political situation. The Association of Southeast Asian Nations (ASEAN), which covers all states in Southeast Asia except Timor-Leste, has also issued a statement of support to the Paris Agreement. Ahead of the 26th Conference of Parties (COP26) of the United Nations Framework Convention on Climate Change, the ASEAN has released its first integrated report on climate change, the "[ASEAN State of Climate Change Report \(ASCCR\): Current status and outlook of the ASEAN region Toward the ASEAN climate vision 2050](https://asean.org/wp-content/uploads/2021/10/ASCCR-e-publication-Final-12-Oct-2021.pdf)", which outlines the goal of the region to achieve net-zero GHG emissions as early as possible. The report reiterates ASEAN's position in contributing towards the global trends of a 'decarbonizing revolution' to pursue net-zero emissions as soon as possible in the latter half of the 21st century.<sup>1</sup>

This assessment aims to present a brief analysis of the NDCs of each state in Southeast Asia and provides insight into how a future 'decarbonized' region might look like.

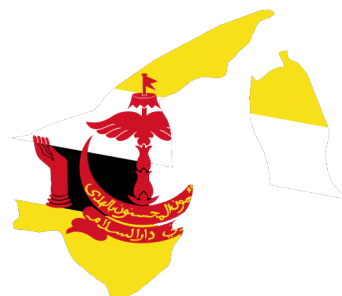
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<sup>1</sup> <https://asean.org/wp-content/uploads/2021/10/ASCCR-e-publication-Final-12-Oct-2021.pdf>



## Brunei Darussalam

Brunei Darussalam submitted their Nationally Determined Contributions on the 30th of December 2020, highlighting the “challenges posed by restrictions related to the COVID-19 pandemic” in the preparation of the said document. Using their 2015 emission level of 11.6MtCO<sub>2</sub>e as the baseline year, the country committed to reducing their greenhouse gas emissions by 20% relative to Business-as-Usual levels by 2030 (29.5MtCO<sub>2</sub>e).



Within a ten-year time-frame from 2021-2030, the said reduction of GHG emissions will be done through climate mitigation and adaptation measures in various sectors, illustrated below:

<i>Mitigation</i>	<i>Adaptation</i>
<ul style="list-style-type: none"> <li>● Industrial Emissions               <ul style="list-style-type: none"> <li>○ To reduce overall emissions in the Industrial Sector</li> </ul> </li> <li>● Forest Cover               <ul style="list-style-type: none"> <li>○ To increase carbon sink through afforestation and reforestation with a target of planting 500,000 new trees</li> </ul> </li> <li>● Electric Vehicles               <ul style="list-style-type: none"> <li>○ To increase the total share of electric vehicles (EV) to 60% of the total annual vehicle sales by 2035</li> </ul> </li> <li>● Renewable Energy               <ul style="list-style-type: none"> <li>○ To increase the total share of renewable energy to at least 30% of total capacity in the power generation mix by 2035</li> </ul> </li> <li>● Power Management               <ul style="list-style-type: none"> <li>○ To reduce GHG emissions by at least 10% through better supply and demand management of electricity consumption by 2035</li> </ul> </li> <li>● Carbon Pricing               <ul style="list-style-type: none"> <li>○ To impose a price on carbon emissions for the industrial sector</li> </ul> </li> <li>● Waste Management               <ul style="list-style-type: none"> <li>○ To reduce municipal waste to landfills to 1kg per person per day by 2035</li> </ul> </li> <li>● Carbon Inventory               <ul style="list-style-type: none"> <li>○ To impose mandatory monthly and annual reporting of carbon inventory</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● BNCCP Strategy 8 on Climate Resilience and Adaptation               <ul style="list-style-type: none"> <li>○ Enhancing and integrating climate science findings into policies</li> <li>○ Conducting climate impact assessments</li> <li>○ Consideration of nature-based solutions as an option to increase resilience.</li> </ul> </li> <li>● Current Climate Impacts Mitigation Projects               <ul style="list-style-type: none"> <li>○ Flood mitigation works along the coastal area</li> </ul> </li> <li>● Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR)               <ul style="list-style-type: none"> <li>○ National Disaster Management Centre                   <ul style="list-style-type: none"> <li>■ Community-based activities that aim to:                       <ul style="list-style-type: none"> <li>● strengthen institutional capacity and policy frameworks for effective implementation for CCA and DRR;</li> <li>● Establish an ASEAN youth leadership in CCA and DRR;</li> <li>● Increase replicable programmes and models of building community resilience; and</li> <li>● Strengthen awareness-building programs on a disaster resilient and climate change adaptive ASEAN</li> </ul> </li> </ul> </li> </ul> </li> </ul>

## Community.

These measures shall be planned, monitored, and evaluated by the pertinent government agencies within the climate change governance structure of the country, consisting of the Brunei Darussalam National Council on Climate Change, Executive Committee on Climate Change, Mitigation Working Group, Adaptation and Resilience Working Group, and Support Framework Working Group.

These working groups are in-charge of the implementation and monitoring of the National Development Plan: Wawasan Brunei 2035 (Brunei Vision 2035) and Brunei Darussalam National Climate Change Policy (BNCCP). Focusing on the BNCCP, provisions pertaining to awareness and education are also included in Strategy 10 of the same, with the BNCCP Operational Document Phase I to be implemented from 2021-2025.

Category	INDC	First NDC
GHG targets	40% reduction of CO <sub>2</sub> emissions from morning peak hour vehicle use by 2035 compared to BAU <sup>2</sup>	20% reduction of GHG emissions by 2030 relative to BAU
GHG coverage	CO <sub>2</sub>	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O
Time frame	2035 (target year)	1 January 2021 – 31 December 2030
Conditionality element	Unconditional NDC only	Unconditional NDC only
Targets by mitigation sector	<b>Energy:</b> (1) 63% reduction of total energy consumption by 2035 compared to BAU, (2) 10% RE share of total power generation by 2035, (3) 45% reduction in energy intensity, using 2005 base year <b>Transport:</b> 40% reduction of CO <sub>2</sub> emissions from morning peak hour vehicle use by 2035 compared to BAU <b>LULUCF:</b> 55% forest reserves of total land area, compared to the current level of 41%	<b>Energy:</b> (1) at least 30% RE share of power generation mix by 2035, (2) at least 10% GHG emissions in the power sector through energy efficiency and conservation on both the supply and demand sides, (3) impose carbon price on all industrial facilities by 2025 <b>Transport:</b> 60% EV share of total annual vehicle sales by 2035 <b>Industrial:</b> achieve zero-routine flaring and reducing other industrial emissions by adopting the 'As Low As Reasonable Possible' (ALARP) principle <b>Forestry:</b> increase forest reserves from 41% to 55% by increasing the carbon sink through reforestation with a target of planting 500,000 trees by 2035 <b>Waste:</b> reduce municipal waste to landfills to 1kg/person/day by 2035
Sector coverage	(1) Energy, (2) land transport, (3) forestry	(1) Energy, (2) IPPU, (3) Agriculture, (4) FOLU, (5) waste

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## Cambodia

Cambodia submitted their first NDC on 2 June 2017, with the subsequent update on 31 December 2021. The document highlights the Cambodian government's coordinated strategy to tackle climate change, focused on adaptation with a gradual








<sup>2</sup> <https://aseanenergy.org/asean-climate-action-a-review-of-nationally-determined-contribution-submissions-towards-cop26/>

increase in mitigation actions aligned with economic development goals. This is further explained in the country's development plans (1) the National Strategic Development Plan (NSDP) and (2) the Cambodia Climate Change Strategic Plan 2014 – 2023 (CCCSP, 2013)

The figure below provides for the summary of NDC implementation timeline and targets of Cambodia

Source: Cambodia's Updated Nationally Determined Contribution

*Summary of NDC implementation timeline and targets*

	By 2020	By 2025	By 2030
<b>Governance</b> 	Governance systems set up	NDC and climate change governance systems increasingly mainstreamed	NDC and other planning systems perfectly mainstreamed and used to report on NDC and SDGs
<b>Mitigation</b> 	Implementation of mitigation actions	Increased ambition, economy-wide mitigation targets and implementation	Real-time economy-wide mitigation targets and implementation
<b>Adaptation</b> 	NAP process ongoing and adaptation actions in NDC implemented	NDC linked to NAP process	NDC linked to NAP process and resilience improved
<b>Finance</b> 	Finance systems set up and concessional financing terms	Climate investment plan operational and increased sophistication of finance system	Middle-income level of financial sophistication achieved
<b>MRV/Transparency</b> 	Limited measurement of progress and development of transparency system	Transparency system partially operational	Transparency system upgraded and fully operational

The country's NDC features a cross-cutting approach to mitigation measures through the involvement of the following sectors:

- Gender, through the Ministry of Women's Affairs (MOWA) - Gender and Climate Change Committee and Neary Rattanak IV, the National Policy on Gender Equality and Women's Empowerment;
- Youth involvement, through the Ministry of Education, Youth, and Sports (MoEYS);
- Private sector engagement, through Public Private Partnerships (PPPs); and
- Indigenous People

The document further provides for the means of implementation of the aforementioned commitments. In terms of finance specifically, it is estimated that funding required for mitigation actions is over US\$5.8 billion and total funding required for adaptation actions is just over US\$2 billion. The document also mentions barriers and capacity needs, technology needs and availability, and transparency measures



Category	First NDC	Updated NDC
GHG targets	(1) 27% GHG reduction by 2030 compared to BAU or equivalent to 3.1 MtCO <sub>2</sub> e, (2) LULUCF contribution of 4.7 tCO <sub>2</sub> e/ha/year	GHG targets (1) 27% GHG reduction by 2030 compared to BAU or equivalent to 3.1 MtCO <sub>2</sub> e, (2) LULUCF contribution of 4.7 MtCO <sub>2</sub> e/ha/year 41.7% GHG reduction (of which 59.1% is from FOLU) by 2030 compared to BAU or equivalent to 64.6 MtCO <sub>2</sub> e
GHG coverage	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O
Time frame	2020 to 2030	2020 to 2030
Conditionality element	Conditional NDC only	Conditional NDC only
Targets by mitigation sector	<b>Energy Industries:</b> 16% GHG reduction by 2030 compared to BAU or equivalent to 1.8 MtCO <sub>2</sub> e <b>Manufacturing Industries:</b> 7% GHG reduction by 2030 compared to BAU or equivalent to 0.727 MtCO <sub>2</sub> e <b>Transport:</b> 3% GHG reduction by 2030 compared to BAU or equivalent to 0.39 MtCO <sub>2</sub> e <b>Other:</b> 1% GHG reduction by 2030 compared to BAU or equivalent to 0.155 MtCO <sub>2</sub> e <b>LULUCF:</b> 60% forest cover of total land area or equivalent to 4.7 tCO <sub>2</sub> e/ha/year	<b>Energy:</b> 21.3% GHG reduction by 2030 compared to BAU or equivalent to 38.1 MtCO <sub>2</sub> e <b>Industry (IPPU<sup>4</sup>):</b> 9.1% GHG reduction by 2030 compared to BAU or equivalent to 5.9 MtCO <sub>2</sub> e <b>Food and Land Use (FOLU):</b> 59.1% GHG reduction by 2030 compared to BAU or equivalent to 38.1 MtCO <sub>2</sub> e <b>Agriculture:</b> 9.6% GHG reduction by 2030 compared to BAU or equivalent to 6.2 MtCO <sub>2</sub> e <b>Waste:</b> 0.9% GHG reduction by 2030 compared to BAU or equivalent to 0.6 MtCO <sub>2</sub> e
Sector coverage	(1) Energy industries, (2) manufacturing industries, (3) transport, (4) other, (5) LULUCF	(1) Energy, (2) industry (IPPU), (3) transport, (4) building, (5) FOLU, (6) agriculture, (7) waste

### Comparison of Cambodia's First NDC and Updated NDC

Source: ASEAN Center for Energy<sup>3</sup>

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## Indonesia

Indonesia first submitted their NDC in November 2016, with the subsequent submission on 21 July 2021 and a corrected version on 12 August 2021. The country pledged to reduce emissions from 2020-2030 by 29% (unconditional) up to 41% (conditional) against the 2030 business-as-usual scenario, an increased unconditional commitment compared to the 2010 pledge of 26%. This is indicated in the National Medium-Term Development Plan (RPJMN) 2020-2024, Indonesia's four (4) foundational principles, and nine (9) programs for NDC implementation strategy

In terms of mitigation, the country set the following commitments, as follows:

- Forestry: 2030 in peatland restoration of 2 million ha and rehabilitation of degraded land of 12 million ha.

<sup>3</sup> <https://aseanenergy.org/asean-climate-action-a-review-of-nationally-determined-contribution-submissions-towards-cop26/>

- Energy: mixed energy use policy, development of clean energy sources as a national policy directive
  - Government Regulation No. 79/2014 on National Energy Policy
- A national mandatory biodiesel policy of B20
  - Enhance to B30 in 2020 — ten-years earlier than 1st NDC target.
- Waste
  - Presidential Decree Number 97/2017 on National Policy and Strategy on Solid Waste Management
  - Presidential Regulation Number 35/2018 on Acceleration of Construction of Thermal Generation Facilities for Converting Waste into Electricity Energy with Environmental Sound Technology.

In terms of adaptation, the following initiatives have been taken, as follows:

- National Action Plan on Climate Change Adaptation
- Development of nationwide climate vulnerability index data information system, built on the existing system known as SIDIK (Vulnerability Index Data Information System), which allows public access to the information in the online system, will be strengthened.
- Ministerial Regulation No. P.33/2016 on Guideline for Development of Adaptation Actions
- Focus on three areas of resilience: economic resilience, social and livelihood resilience, and ecosystem and landscape resilience.
- Commitments under Convention on Biological Diversity (CBD), Convention to Combat Land Degradation and Desertification (UNCCD), RAMSAR convention, and Sendai Framework on Disaster Risk Reduction (SFDRR), as well as Sustainable Development Goals (SDGs) were considered to have significant potential for synergy with NDC - adaptation.

The country pledged the following GHG emission reduction as part of their commitments:

<i>Unconditional</i>	<i>Conditional</i>
26% of its greenhouse gases against the business-as-usual scenario by the year 2020	41% reduction of emissions by 2030, subject to availability of international support for finance, technology transfer and development and capacity building
29% of its greenhouse gasses emissions against the business-as-usual scenario by the year of 2030	

The country will also utilize a National Registry System in the implementation of a transparency framework, with the following initiatives:

- Integrated National Transparency framework
  - National Registry System (Id. Sistem Registri Nasional/SRN)
  - National GHGs Inventory System (SIGN-SMART);
  - MRV system for mitigation including REDD+,
  - Safeguards Information System for REDD+ (SIS-REDD+); and
  - Information Systems on vulnerability (SIDIK) and joint adaptation and mitigation at the Village level (PROKLIM).
- Pursuance of a 'One GHGs Data Policy'.

Overall, Indonesia has spent a total of about USD 17.48 billion for climate change adaptation, mitigation and supporting activities: from 2015 to 2019, allocating a total of

USD 55.01 billion, and from 2015-2016, received support of USD 1,237.41million in the form of loan and grant through bilateral and multilateral channels

Green financing effort will be continued and promoted, particularly through green sukuk, green bond, and public-private partnership through SDGs-One Indonesia Platform. It is worth noting that in 2018, the Ministry of Finance recorded the issuance of 'green sukuk' in a total of USD 2.0 billion for a five-year period. Finally, in order to strengthen climate financing, Indonesia has established a national agency for environmental fund management (Id. Badan Pengelola Dana Lingkungan Hidup/BPDLH). A specific climate financing instrument 'Carbon Pricing' is also under preparation.

In terms of technology development and transfer, the following policies are in place:

- Law on National System for Science and Technology (UU No. 11/2019)
- Technology Needs Assessment (TNA)
  - 2010 focusing on mitigation
  - 2nd TNA in 2012 covering both mitigation and adaptation

The capacity building program on climate change will be aligned with Indonesia vision on education, focusing on:

- human resources development to build strong character;
- regulatory reform to increase effectiveness and efficiency of capacity building programs and activities;
- increase investment in human resource development, including revitalization of vocational education;
- creation of employment and business opportunities; and
- use of technology to increase efficiency in capacity building.

Also, two interrelated instruments of capacity building were highlighted to be used to support NDC implementation:

- First instrument (General Instrument) will focus on integrating climate change into the national system on education, training, and other forms of capacity building
- Second instrument (Technical Instrument) will focus on capacity building programs for various actors in mitigation and adaptation.

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## Laos

The Lao People's Democratic Republic submitted their first Intended Nationally Determined Contribution on 30 September 2015, with the subsequent update on 9 March 2021. The updated NDC outlines the country's three scenarios—baseline, unconditional, and conditional—in their mitigation and adaptation efforts in addressing climate change.

The NDC notes that the total emissions of greenhouse gases in Laos amounts to 50,742.91 ktCO<sub>2</sub>e in 2000, with Land Use Change & Forestry (LUCF) and Agriculture responsible for over 95% of the total. Under the baseline scenario, total GHG emissions levels in Lao PDR would be expected to reach around 82,000 ktCO<sub>2</sub>e in 2020 and 104,000 ktCO<sub>2</sub>e in 2030.





The country's NDC highlights the reduction of 34% in emissions from 2000-2020, relative to the baseline scenario. This was alongside a GDP per capita growth rate of 5.3% annually on average between 2000 and 2019, which indicates that emissions growth was decoupled from economic growth. The NDC also proposes an unconditional 60% GHG emission reduction compared to the baseline scenario (62,000 ktCO<sub>2</sub>e in absolute terms).

For the conditional scenario, the country proposes a target of net-zero emissions by 2020 through the following initiatives:

- Land Use Change and Forestry: Increased forest cover to 70% of land area (i.e., to 16.58 million hectares) through reduced emissions from deforestation and forest degradation, foster conservation, sustainable management of forests, buffer zones of national parks and other preserves, and enhancement of forest carbon stocks.
- Energy: Shift to solar, wind, and biomass resources, and a 30% Electric Vehicles penetration for 2-wheelers and passengers' cars in national vehicles mix, with biofuels to meet 10% of transport fuels
  - Energy efficiency: 10% reduction of final energy consumption compared to business-as-usual scenario
- Agriculture: 50,000 hectares adjusted water management practices in lowland rice cultivation
- Waste: Implementation of 500 tons/day sustainable municipal solid waste management project

It is worth noting that the NDC also takes into consideration the gaps in the climate plan, which is addressed through the development of the National Adaptation Plan (2021) and is implemented under the direction of the National Coordination Mechanism.

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## Malaysia



Malaysia submitted its first Intended Nationally Determined Contribution on 27 November 2015, proposing to reduce its greenhouse gas (GHG) emissions intensity of GDP by 45% by 2030, relative to 2005 levels, comprised of 35% on an unconditional basis and 10% conditional basis on receipt of climate finance, technology transfer and capacity building from developed countries.

Malaysia submitted its updated NDC on July 2021, expanding the greenhouse gases covered from 3 to 7 and expounding on the country's focus towards management of water resources, water security, coastal resources, agriculture and food supply, urban and infrastructure resilience, public health, forestry and biodiversity, and key adaptation across sectoral areas.

The updated NDC includes the following increased ambitions:

- The 45% of carbon intensity reduction is unconditional;
- This target is an increase of 10% from the earlier submission; and
- The GHG coverage is expanded to seven (7) greenhouse gasses (GHG): Carbon dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), Nitrous oxide (N<sub>2</sub>O), Hydrofluorocarbons (HFCs), Perfluorocarbon (PFCs), Sulphur hexafluoride (SF<sub>6</sub>) and Nitrogen trifluoride (NF<sub>3</sub>).

Using 2005 as the base year, the country aims for an economy-wide carbon intensity reduction (against GDP) of 45% in 2030 compared to 2005 level, within a ten-year timeframe from 2021-2030.

The NDC was developed through a participatory process through inter-ministerial / agencies / NGOs / private sector / academia working groups and consultations. It has been endorsed by the National Steering Committee on Climate Change and approved by the Malaysian Cabinet.

The implementation of climate change adaptation in Malaysia focuses on the management of water resources and security, coastal resources, agriculture and food supply, urban and infrastructure resilience, public health, forestry and biodiversity and key adaptation cross sectoral areas. In the Eleventh Malaysia Plan for 2016-2020, RM7.24 billion was allocated to enhance climate-resilience and adaptation measures. This will be continued for the Twelfth Malaysia Plan for 2021-2025, alongside the development of a National Adaptation Plan, which includes the following:

- Management of Water Resources and Security
  - Ministry of Environment and Water
  - Integrated Water Resources Management
  - Integrated River Basin Management
  - Integrated Flood Management
  - Water Sector Transformation 2040
- Protecting Coastal Resources
  - Coastal Vulnerability Index
- Securing Agriculture and Food Security in Malaysia
- Increasing Resilience for Infrastructure and Cities
- Improving Public Health Resilience
- Improving Public Health Resilience
- Cross Sectoral Efforts
  - Managing Disaster Risk
    - Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030
  - Climate Financing Support, Technology Transfer and Capacity Building
  - Establishment of Monitoring and Evaluation Mechanism

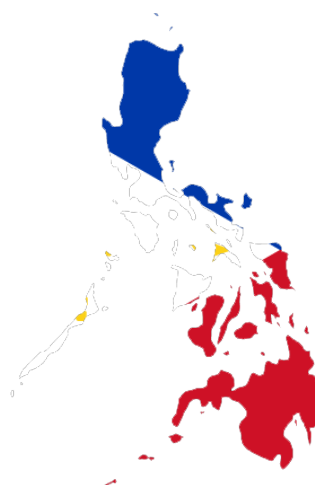
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## Philippines

The Philippines submitted its INDC last 15 April 2021. The said document highlights whole-of-government-and-society approach taken in its development and the current policy framework in place with regards to adaptation and mitigation, focusing on the following legislation:

- Republic Act No. 9729: Climate Change Act of 2009, as amended by Republic Act No. 10174
- National Framework Strategy on Climate Change 2010-2022
- National Climate Change Action Plan 2011-2028
- Philippine Development Plan 2017-2022
- Philippine Energy Plan 2018-2040
- Philippine National Security Policy 2017- 2022
- National Climate Risk Management Framework of 2019
- Sustainable Finance Policy Framework of 2020



Focusing on mitigation measures, the country commits to a projected GHG emissions reduction and avoidance of 75%, of which 2.71% is unconditional and 72.29% is conditional, representing the country's ambition for GHG mitigation for the period 2020 to

2030 for the sectors of agriculture, wastes, industry, transport, and energy, referenced against a projected business-as-usual cumulative economy-wide emission of 3,340.3 MtCO<sub>2</sub>e 12 for the same period. In terms of adaptation, the above-stated commitments are to be outlined in the National Climate Change Action Plan 2011 - 2028.

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## Singapore

The Republic of Singapore intends to peak emission at 65 MtCO<sub>2</sub>e around 2030; using 2005 as the base year, this translates to a 36% reduction in Emissions Intensity (EI) with a 10-year timeframe from 2021-2030.



The implementation of the NDC and climate change mitigation measures will be done through a whole-of-government approach, the development and implementation of which to be overseen by the Inter-Ministerial Committee on Climate Change (IMCCC), which comprises Ministers from relevant Ministries. In 2016, the country published its main climate change and NDC implementation plan "Singapore's Climate Action Plan: Take Action Today, for a Sustainable Future". This, together with the National Climate Change Strategy (2012), Sustainable Singapore Blueprint (2015), and Charting Singapore's Low-Carbon and Climate Resilient Future (2020), reflect the country's climate strategies.

The updated NDC reflects the following enhancements:

- An economy-wide absolute GHG emissions limitation target in place of the previous intensity target.
- A clear peaking level (i.e., 65 MtCO<sub>2</sub>e) around 2030.
- Inclusion of NF<sub>3</sub>.
- Methodological updates to Singapore's NDC.
- Updated information on implementation efforts.
- Application of ICTU guidance.

With regards to the consideration of the fairness and ambition of Singapore's NDC, the country highlights that (1) it has taken ambitious early actions, (2) it is disadvantaged in terms of alternative energy resources, (3) it has one of the highest population densities globally, (4) it is dependent on the global supply chain for food and energy security (5), it is one of the top performers for carbon intensity globally, (6) it is pushing ahead on solar deployment despite constraints, (7) it is undertaking concrete implementation efforts, (8) the country's climate vulnerabilities will require comprehensive adaptation efforts, and (9) it is working actively to support other developing countries in their efforts to build capacity for climate efforts

In addition to this, the country's NDC also highlights Singapore's investments in research, initiatives in protecting from sea level rise, water management and flood mitigation efforts, running of essential services, safety of buildings and infrastructure, strengthening resilience in public health, protecting Singapore's greenery and biodiversity, and ensuring a resilient food supply

Category	First NDC	Updated NDC
GHG targets	Reduce emissions intensity (EI) by 36% from 2005 levels by 2030	Peak emissions at 65 MtCO <sub>2</sub> e around 2030, to achieve a 36% reduction in EI from 2005 levels
GHG coverage	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O, (4) HFCs, (5) PFCs, (6) SF <sub>6</sub>	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O, (4) HFCs, (5) PFCs, (6) SF <sub>6</sub> , (7) NF <sub>3</sub>
Time frame	2021 to end of 2030	2021 to end of 2030
Conditionality element	Unconditional NDC only	Unconditional NDC only
Targets by mitigation sector	Increase renewable energy (RE) share up to 8% of peak electricity demand	<b>Energy:</b> Achieving 350 MWp in 2020 and at least 2 GWp by 2030 <b>Transport:</b> Imposing vehicle quota system to cap vehicle growth, setting zero-growth rate for cars and motorcycles
Sector coverage	(1) Energy, (2) industrial processes and product use, (3) agriculture, (4) land use, (5) land-use change and forestry, (6) waste	(1) Energy, (2) industrial processes and product use, (3) agriculture, (4) land use, (5) land-use change and forestry, (6) waste

Comparison of Singapore's First NDC and Updated NDC  
Source: ASEAN Center for Energy<sup>4</sup>

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## Thailand

Thailand submitted its updated NDC on 20 October 2020, outlining the country's commitments to reduce its greenhouse gas emissions by 20% from the projected business-as-usual level by 2030. The level of contribution could increase up to 25%, subject to adequate and enhanced access to technology development and transfer, financial resources, and capacity building support. Thailand is formulating its Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) which will guide Thailand towards a climate-resilient and low greenhouse gas emissions development and serve as a basis for enhancing its subsequent NDCs.

Thailand's NDC target has been integrated into the National Strategy.

It will be implemented through the NDC Roadmap on Mitigation 2021-2030, the NDC Sectoral Action Plans and the NDC Supportive Action Plan which were carried out with a wide range of stakeholders' consultation and public participation processes at the national and local levels. The NDC Roadmap identifies key measures and allocates emission reduction targets and responsibilities to relevant agencies in energy, transport, industry, and waste management sectors. The NDC Sectoral Action Plans further identify emission reduction targets in each measure. The NDC Supportive Action Plan highlights gaps and needs to enhance the enabling environment to support NDC implementation.

In terms of adaptation, the NDC highlights the National Adaptation Priorities, specifically on the following sectors: water resources management sector, agriculture and food security

<sup>4</sup> <https://aseanenergy.org/asean-climate-action-a-review-of-nationally-determined-contribution-submissions-towards-cop26/>

sector, tourism sector, public health sector, natural resources management sector, and human settlements and security sector. The document also highlights the areas where further support might be necessary, specifically on policy implementation, technology development and transfer, mechanisms and instruments, climate information, and M&E systems.

Category	First NDC	Updated NDC
GHG targets	20% (unconditional) up to 25% (conditional) GHG reduction by 2030 compared to BAU	20% (unconditional) up to 25% (conditional) GHG reduction by 2030 compared to BAU
GHG coverage	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O, (4) HFCs, (5) PFCs, (6) SF <sub>6</sub>	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O, (4) HFCs, (5) PFCs, (6) SF <sub>6</sub>
Time frame	2021-2030	2021-2030
Conditionality element	Unconditional and Conditional NDC	Unconditional and Conditional NDC
Targets by mitigation sector	<b>Energy:</b> (1) 20% RE share in power generation by 2036, (2) 30% RE share in end use energy by 2036, (3) 30% reduction of energy intensity (compared to 2010) by 2036	Climate change is addressed at the highest policy level under the National Strategy (2018-2037). Ambitious energy targets are put forward in the Power Development Plan (PDP), Alternative Energy Development Plan (AEDP), and Energy Efficiency Plan (EEP)
Sector coverage	Economy-wide (inclusion of LULUCF will be decided later)	Economy-wide (excluding LULUCF)

Comparison of Thailand's First NDC and Updated NDC

Source: ASEAN Center for Energy<sup>5</sup>

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## Timor-Leste

Timor-Leste submitted their first NDC in November 2016, indicating the country's pledged actions to address climate change. The document highlights Timor-Leste's challenges as a young developing country, thus justifying the lack of unconditional pledge to reduce emissions, and be dependent on the receipt of support in the form of technology transfer, finance and capacity building.



Using 2010 as the reference period, with a GHG profile of 1,483 Gg CO<sub>2</sub>e, the country's NDC shall be implemented within a six-year period from 2020-2025 through a whole-of-country approach.

Prior to the Paris Agreement, the country has already put in place the following institutional arrangements to manage its climate response:

- National Focal Point for the UNFCCC (2006);
- National Directorate for Climate Change;
- National Designated Authority for Clean Development Mechanism;
- National Focal Point for Green Climate Fund;
- Center for Climate Change and Biodiversity;
- Working group for climate change adaptation.

<sup>5</sup> <https://aseanenergy.org/asean-climate-action-a-review-of-nationally-determined-contribution-submissions-towards-cop26/>



The country has also pursued a policy framework to facilitate its climate response:

- Environmental Basic Law (2012)
- Environmental License Decree Law (2011)
- Operational Law of Clean Development Mechanism (2010)
- Decree Law on Export, Import, and Use of Ozone Depleting Substances (2012)
- Environmental Strategic Plan
- Decree Law on Protected Areas (2016)
- Proposed Decree law on Establishing a National Renewable Energy Systems
- Proposed Biodiversity Decree Law
- Climate Change Policy

The country's conditional pledges are as follows:

<i>Adaptation</i>	<i>Mitigation</i>
<p>Priority adaptation measures in key sectors include:</p> <ul style="list-style-type: none"> <li>● Food security: Reduce the vulnerability of the farmers and pastoralists to increased drought and flood events by improving their capacity to plan for and respond to future climate conditions and improve national food production</li> <li>● Water Resources: Promote integrated water resource management</li> <li>● Human health: Enhance capacity of the health sector to anticipate and respond to changes in distribution of endemic and epidemic climate sensitive diseases, and reduce vulnerability of the population to infection in areas at risk from expansion of climate-related diseases</li> <li>● Natural disasters: Improve institutional and staff capacity in the disaster sector in relation to climate change</li> <li>● Forests, Biodiversity and Coastal Ecosystem Resilience</li> <li>● Livestock production</li> <li>● Physical infrastructure: Improve regulations and standards for climate resilient infrastructure</li> <li>● Oil and gas production: Strengthen and protect valuable offshore oil and gas infrastructure against climate change impacts</li> </ul>	<p>Potential mitigation options cover the following sectors:</p> <p>Energy</p> <ul style="list-style-type: none"> <li>● Renewable and low carbon energy</li> <li>● Rural electrification</li> <li>● Energy efficient cook stoves</li> <li>● Energy efficiency</li> <li>● Energy efficiency in the transportation sector</li> <li>● Public transport</li> </ul> <p>Agriculture</p> <ul style="list-style-type: none"> <li>● Livestock management</li> <li>● Sustainable agriculture</li> </ul> <p>Forestry</p> <ul style="list-style-type: none"> <li>● Rehabilitation of degraded lands</li> <li>● Customary forestry</li> <li>● Mangrove plantations</li> <li>● REDD+</li> <li>● Protected areas</li> <li>● Afforestation and Reforestation</li> </ul> <p>Waste</p> <ul style="list-style-type: none"> <li>● Managed landfill and landfill gas</li> <li>● Composting resource recovery and recycling</li> <li>● Improve incineration technology</li> <li>● Hydro chlorofluorocarbon phase-out and management plan</li> </ul>

The implementation of the said NDC will be dependent upon the receipt of technology transfer, finance, and capacity building support. The NDCs highlight the crucial role of international support in enabling the implementation of further actions in both mitigation and adaptation at sectoral levels. The country has been a recipient of support from multilateral development banks, international agencies, and developed countries. Timor-Leste welcomes the ability to access finance through the Green Climate Fund and additional funding pledged by development partners.

The NDC highlights that Timor-Leste makes no attempt to set a target for reducing emissions, given that as a least developed country, its target serves may not contribute as much in the overall global emissions.

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## Viet Nam

Viet Nam submitted their first NDC on 3 November 2016, with the subsequent update on 11 September 2020. The document highlights the initial initiatives pursued by the country with regards to climate change even before the Paris Agreement, particularly the following:

- 2008: National Target Program to Respond to Climate Change (NTP-RCC)
- National Socio-Economic Development Strategy (2011-2020)
- Socio-Economic Development Plan (2011-2015)
- 2011: National Climate Change Strategy
- 2012: National Green Growth Strategy
- 2013: Law on Natural Disaster Prevention and Control
- 2014 Law on Environment



Viet Nam's INDC identifies the GHG reduction pathway in the 2021-2030 period, committing to an unconditional GHG emissions reduction of 8% by 2030 compared to the Business-as-Usual scenario (BAU), which could be increased up to 25% with international support. The document also highlights the current efforts pertaining to climate change, specifically the following:

- National Target Program on Energy Efficiency (2006)
- Law on "Economical and Efficient use of Energy" (2010)
- Reducing Emissions from Deforestation and Forest Degradation
- Nationally Appropriate Mitigation Actions (NAMAs)
- Verified Carbon Standard (VCS) and the Gold Standard (GS).

Conversely, the document also highlighted the difficulties and challenges faced by the country with regards to mitigation initiatives, specifically on the following issues:

- Establishment of a national GHG inventory system, and Measurement, Reporting and Verification (MRV) system at all levels;
- NAMA development and implementation;
- Application of technologies to reduce GHGs, especially in the agriculture sector;
- Access to national and foreign finance for mitigation activities.

Further, the NDC illustrates existing policy framework pertaining to climate change, including the legal documents and policies on climate change support to INDC implementation in Viet Nam:

- Law on Environment (6/2014);
- Law on Economical and Efficient use of Energy (6/2010);
- Resolution No. 24-NQ/TW on "Proactively responding to climate change, enhancing natural resource management and environmental protection" (6/2013);
- National Climate Change Strategy (12/2011);
- National Green Growth Strategy (9/2012);
- Decision 1775/QĐ-TTg on "Management of GHG emissions; management of carbon credit trading activities to the world market" (11/2012).

Measures necessary to achieve the GHG emissions mitigation targets of the INDC were also listed, as follows:

- Strengthen the leading role of the State in responding to climate change
- Improve effectiveness and efficiency of energy use; reducing energy consumption
- Change the fuel structure in industry and transportation

- Promote effective exploitation and increase the proportion of new and renewable energy sources in energy production and consumption
- Reduce GHG emissions through the development of sustainable agriculture; improve effectiveness and competitiveness of agricultural production
- Manage and develop sustainable forest, enhance carbon sequestration and environmental services; conservation of biodiversity associated with livelihood development and income generation for communities and forest-dependent people
- Waste management
- Communication and awareness raising
- Enhance international cooperation

Category	First NDC	Updated NDC
GHG targets	8% (unconditional) up to 25% (conditional) GHG reduction by 2030 compared to BAU	7.3% (unconditional) GHG reduction by 2025, 9% (unconditional) up to 27% (conditional) GHG reduction by 2030 compared to BAU
GHG coverage	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O, (4) HFCs, (5) PFCs, (6) SF <sub>6</sub>	(1) CO <sub>2</sub> , (2) CH <sub>4</sub> , (3) N <sub>2</sub> O, (4) HFCs
Time frame	1 January 2021 – 31 December 2030	1 January 2021 – 31 December 2030
Conditionality element	Unconditional and Conditional NDC	Unconditional and Conditional NDC
Targets by mitigation sector	<b>Forestry:</b> 45% forest cover by 2030	GHG reduction in five priority sectors are: <b>Energy:</b> 5.5% or 51.5 million tCO <sub>2</sub> e, <b>Agriculture:</b> 0.7% or 6.8 million tCO <sub>2</sub> e, <b>LULUCF<sup>b</sup>:</b> 1% or 9.3 million tCO <sub>2</sub> e, <b>Waste:</b> 1% or 9.1 million tCO <sub>2</sub> e, and <b>Industrial Process:</b> 0.8% or 7.2 million tCO <sub>2</sub> e
Sector coverage	(1) Energy, (2) agriculture, (3) LULUCF, (4) waste	(1) Energy, (2) agriculture, (3) LULUCF, (4) waste, (5) industrial process

Comparison of Viet Nam's First NDC and Updated NDC

Source: ASEAN Center for Energy<sup>6</sup>

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<sup>6</sup> <https://aseanenergy.org/asean-climate-action-a-review-of-nationally-determined-contribution-submissions-towards-cop26/>