

Thailand's 2nd Updated Nationally Determined Contribution

1. Introduction

As a developing country highly vulnerable to the impacts of climate change, Thailand attaches great importance to the global efforts to address this common and pressing challenge. Thailand enhanced its first Nationally Determined Contribution (NDC) at the 26th Conference of the Parties (COP26) to fulfill the long-term temperature goal set in Article 2 of the Paris Agreement. Pursuant to decision 1/CP.21 and decision 1/CMA.3, Thailand hereby communicates its updated NDC and the relevant information, described in the annex of the decision 4/CMA.1, as applicable.

2. Mitigation Component

Thailand intends to reduce its greenhouse gas emissions by 30 percent from the projected business-as-usual (BAU) level by 2030. The level of contribution could increase up to 40 percent, subject to adequate and enhanced access to technology development and transfer, financial resources and capacity building support. Furthermore, Thailand will continue vigorous efforts in its challenge to meet the long-term goal of carbon neutrality by 2050 and net-zero greenhouse gas emission by 2065.

2.1 Information to facilitate clarity, transparency and understanding of NDC

Baseline	Business-as-usual projection from reference year 2005 in the absence of major climate change policies (BAU2030: approx. 555 MtCO _{2e})
Time frame	2021 – 2030
Scope and coverage	Target: Emission reduction relative to a Business-as-Usual baseline Sectors: Economy-wide (excluding land use, land-use change, and forestry) Gases: <ul style="list-style-type: none">- Carbon dioxide (CO₂)- Methane (CH₄)- Nitrous oxide (N₂O)- Hydrofluorocarbons (HFCs)- Perfluorocarbons (PFCs)- Sulphur hexafluoride (SF₆)
Planning processes	To ensure that the NDC is realistic and achievable, its preparation was fundamentally based on the linkage between climate action and national development priorities, including social and economic development and poverty eradication. Integration of the NDC into country strategies, long-term economic and social development plans, sectoral plans, and local plans is essential to secure successful implementation and contribution. NDC Preparation: Thailand's NDC was developed through a participatory

process. Stakeholder consultations were conducted through the establishment of an inter-ministerial working group and steering committee comprising representatives from relevant sectoral agencies, academia, and the private sector. The NDC was formulated based on the following plans:

- 13th National Economic and Social Development Plan 2023-2027
- National Energy Plan Framework 2022
- Climate Change Master Plan B.E. 2558–2593 (2015-2050)
- Power Development Plan B.E. 2561–2580 (2018-2037)
- Thailand Smart Grid Development Master Plan B.E. 2558-2579 (2015-2036)
- Energy Efficiency Plan B.E. 2561–2580 (2018-2037)
- Alternative Energy Development Plan B.E. 2561–2580 (2018-2037)
- Master Plan for Sustainable Transport System and Mitigation of Climate Change Impacts (2013-2030)
- National Industrial Development Master Plan B.E. 2555–2574 (2012-2031)
- Waste Management Roadmap

Implementation Plans:

Thailand's NDC target has been integrated into the National Strategy. It will be implemented through the NDC Sectoral Action Plan which will be carried out with a wide range of stakeholder consultation and public participation processes at the national and local levels. The NDC Sectoral Action Plan will identify emission reduction measures, targets and responsibilities of relevant agencies in energy, transport, industry, waste and agriculture sectors.

Assumptions and methodological approaches

Metric:

- Global warming potential on a 100-year timescale in accordance with the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report
- National statistics, including sector activity and socioeconomic forecasts

GHG Inventory:

Thailand's GHG inventory based on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories

International market-based cooperation

Thailand intends to achieve the unconditional mitigation target under this NDC through domestic efforts, while recognizing the important role of international market-based cooperation in contributing to the mitigation of greenhouse gas emissions and promoting sustainable

development. Thailand welcomes discussion to explore international market-based cooperation in the context of Article 6 of the Paris Agreement, that promotes development and transfer of advanced technologies and innovation and provides access to financial resources that support Thailand's achievement of NDC and LT-LEDS.

2.2 Consideration on fairness and ambition in light of national circumstances

2.2.1 Thailand's national circumstances

Thailand is a developing country highly vulnerable to the impacts of climate change and is ranked the 9th country in the "extreme risk" category that is most vulnerable to future climate change impacts over the next thirty years. Thailand's GHG emissions represent less than 1% of global emissions and are lower than the world average. In terms of emission profile, the energy sector has been the largest contributor to Thailand's GHG emission, accounting for 69.06% of total emission in 2018, as reflected in the country's 4th National Communication.

2.2.2 Thailand's efforts

Thailand places high priority on climate change as one of the key challenges affecting communities' livelihood, economic growth and the achievement of sustainable development. Thailand has incorporated climate change into its national economic and social development plans since 2007. Climate change is currently addressed at the highest policy level under the National Strategy (2018-2037) to ensure a long-term continuity of the issue alongside other economic and social considerations, including poverty eradication. The Climate Change Master Plan 2015-2050 reflects on climate change mitigation, adaptation, capacity building and cross-cutting issues. Ambitious energy targets are put forward in the Power Development Plan (PDP), the Alternative Energy Development Plan (AEDP) and the Energy Efficiency Plan (EEP). The Environmentally Sustainable Transport System Plan promotes a road-to-rail modal shift for both freight and passenger transport. A vehicle tax scheme based on CO₂ emission was introduced in 2016 to promote low carbon vehicles. The Waste Management Roadmap promotes waste-to-energy technologies and also actively implements the 3Rs principle. The National Forest Policy is adopted to ensure a sustainable management of forest in Thailand. The commitment to increase forest cover of the country to achieve 55% of the total country area by 2037 has been setup under the 20-Year National Strategy. Although the NDC target in 2030 excludes the land use, land-use change, and forestry sector as part of its implementation, the protection and conservation of forest has been implemented continuously to be a good basis for future actions. There are a number of regulations in place in Thailand related to the management and maintenance of the national forest estate. A range of projects and programs have been implemented to solve issues surrounding forest loss, including activities related to Reducing Emissions from Deforestation and Forest Degradation in Developing countries and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries (REDD+). However, Thailand also needs sufficient support to overcome its challenges for enhancing and maintaining the carbon sink in its long-term mitigation goal.

Thailand has several continuous success stories in its ongoing efforts to achieve its greenhouse gas reduction goals. Thailand's NAMAs target to reduce GHG emission by 7-20% by 2020 below business-as-usual (BAU) includes measures in energy and transport sectors. Under NAMAs, we have achieved a GHG emission reduction of 15.4% in 2020 which lays a solid foundation for our post-2020 efforts. In 2022, public-private partnerships have enabled further progress in collaboration between government, cement industry and

relevant agencies to encourage all sectors to use hydraulic cement in all types of construction projects. As a result of the Memorandum of Understanding (MOU) signed in 2020, the cement sector was able to achieve its greenhouse gas reduction targets earlier than expected. The cement industry also expressed its intention of a more ambitious target to be achieved by 2023 that will support the government's policy on carbon neutrality and net zero greenhouse gas emissions in 2050 and 2065, respectively. Moreover, Thailand held the first national climate conference to awaken efforts towards achieving the country's goal of reaching net zero emissions after COP26. The conference was attended by all stakeholders including public and private sectors, provincial governments, academics, international partners and organizations to build strong engagement on climate actions to ensure a whole-of-government and whole-of-society approach to address the climate crisis and meet the national targets.

In addition to mitigation efforts, Thailand has treated adaptation as equally important. Thailand has developed our first National Adaptation Plan to provide a framework towards a climate-resilient society with the focus on water management, agriculture and food security, tourism, health, natural resource management, and human settlement and security. The NAP aims to minimize risks and vulnerability as well as to improve resilience of the country in accordance with a sustainable development pathway. Thailand has integrated climate change adaptation into key sectoral policies and plans such as the draft Action Plan for Climate Change in Agriculture (2023 – 2027), the Climate Change Adaptation Plan on Public Health (2018 – 2030), the 20-year Water Resource Management Master Plan, and the Spatial Plans.

2.2.3 Thailand's challenges and limitations

It is important to incorporate concerns that several of the proposed measures and actions in these ambitious plans are subject to very high investment and operating costs, particularly costs of technologies and infrastructures which can become an important barrier to successful implementation of the plans.

Some of the key barriers for the energy sector include, for instance, limitation of grid connection due to inadequate capacity of transmission lines, lack of support by financial institutions for energy efficiency and renewable energy investments, lack of domestic technological and technical resources and negative public perception particularly against waste-to-energy and biomass power plants. Several measures require a high level of technical capacity and effective coordination across different sectoral agencies, whereas such technical capacity and effective coordination in a developing country like Thailand is currently lacking. For renewable energy development in particular, the International Energy Agency also cited some of the above-mentioned barriers as common barriers for renewable energy deployment in developing countries. Domestically, Thailand has launched several support mechanisms such as feed-in tariffs, tax incentives and access to investment grants and venture capital to promote renewable energy. However, to achieve ambitious and more rapid renewable energy deployment, incentives have to be created for technology developers to cooperate and share technology knowledge to enable technology transfer on a larger scale. International financial support mechanisms such as technical assistance and technology transfer funds for purchasing intellectual property rights for a free distribution of clean energy technologies would be very valuable to accelerate diffusion of renewable energy technologies for developing countries.

Furthermore, efforts are needed to inform the public, through lessons-learned and experience sharing from other countries, as well as showcasing success stories from pilot or demonstration projects. It is therefore crucial that international cooperation through the UNFCCC focuses on these cooperative attempts to unlock the potential of developing countries in their contributions towards the global solutions to climate change by addressing these important identified barriers, making technological solutions more affordable for

developing countries and strengthening the capacity of developing countries to implement these solutions more effectively and more sustainably. Successful implementation of these ambitious mitigation plans in Thailand, in addition to our domestic efforts, will be subject to adequate and predictable access to enhanced means of implementation agreed under the UNFCCC.

3. Adaptation Component

Thailand has developed the National Adaptation Plan (NAP) with the aim to build adaptive capacity and enhance climate resilience in 6 priority sectors including water resources management, agriculture and food security, tourism, public health, natural resources management, and human settlements and security.

National adaptation priorities	<ul style="list-style-type: none">- Water resources management sector aims to increase water security and reduce loss and damage from water-related disasters by developing mechanisms and approaches for integrated water resources management and building adaptive capacity and climate resilience to manage climate risks in water resources management.- Agriculture and food security sector aims to maintain productivity and food security by increasing the ability to respond and manage climate risks in the agricultural sector.- Tourism sector aims to strengthen the capacity of the tourism sector towards climate resilience and sustainable growth by enhancing disaster management and climate risk reduction.- Public health sector aims to enhance the capacity of the public health system to manage health risks and reduce health impacts from climate change by developing health impact surveillance and prevention mechanisms and enhancing access to good quality public health services.- Natural resources management sector aims to sustainably manage natural resources and biodiversity to respond to climate change impacts by enhancing the conservation, rehabilitation, and sustainable use of natural resources and biodiversity and strengthening public participation.- Human settlements and security sector aims to enhance the capacity of individuals, communities, and cities, to adapt to climate change impacts in accordance with the local context by developing mechanisms to manage climate risks and impacts.
---------------------------------------	--

Planning Processes	Thailand's NAP was developed through a participatory process of extensive stakeholder consultations with involvement by representatives from relevant government agencies, technical experts, academia, civil society, international organizations and private sectors as well as vulnerable groups to identify climate impacts,
---------------------------	--

	<p>vulnerability and adaptation gaps and needs; analyze current climate and future climate change projection, assess climate risks, and identify adaptation measures in 6 sectors.</p> <p>The main principles taken into account in formulating Thailand's NAP include Sufficient Economy Philosophy, local wisdom, sustainable development, Ecosystem-based Adaptation (EbA), Community-based adaptation (CbA), proactive principle, resource efficiency, good governance, public participation, human rights and gender responsiveness.</p>
Timeframe	<p>2020 – 2037</p> <p>(Thailand will periodically monitor and evaluate the progress of NAP implementation and will revise and update it, as appropriate.)</p>
Adaptation action's contribution to other international frameworks and/or conventions	<p>Thailand's NAP has taken into account the linkages between climate change adaptation under UNFCCC and other Conventions and agreements, such as the United Nations Convention to Combat Desertification (UNCCD), the Convention on Biological Diversity (CBD), Sustainable Development Goals (SDGs), Sendai Framework for Disaster Risk Reduction 2015 - 2030 (SFDRR) and the Convention on Wetland (Ramsar Convention).</p>

4. Support Needs

Climate change adaptation and mitigation are becoming more deeply embedded in governmental structures in line with the increasing profile of climate actions in national agendas. Thailand has established the inter-ministerial committees to oversee climate policy development and implementation and comprehensive national systems to monitor, evaluate and report on progress. However, there are still gaps in individual and institutional capacities in all relevant agencies, including governmental agencies, private sectors, and general public. The provision of support and cooperation on climate actions are important to achieving mitigation and adaptation objectives and increasing ambition.

Various challenges were identified during NDC and NAP preparation such as uncertainties of climate change and its impacts, lack of data and research on coping capacities and vulnerabilities in sectors and local area, lack of tools and methods to support implementation, and a lot of institutional barriers to encompass sectoral and political boundaries. Moreover, the global outbreak of novel coronavirus (COVID-19) has dramatically threatened the way people conduct their daily life. The so-called "New Normal" that emerges after the pandemic will reshape many economic and social activities. As Thailand plans its recovery from this pandemic, we aim to use this opportunity to build back better an ecosystem and economy that promotes climate-resilient and sustainable development, including through the implementation of the NDC. To meet this transition, support, namely financial, technology development and transfer, and capacity building, in the following areas is crucial to drive effective and realistic implementation of Thailand's NDC.

4.1 Policy Implementation

- Support to develop the subsequent NDC, especially on the assessment of mitigation potentials, cost-benefit analysis, and gender sensitivity.
- Technical support to apply the top-down analysis for GHG emission reduction approaches for policy makers to identify the specific/sectoral targets.
- Capacity building of sectoral and subnational agencies to integrate adaptation and mitigation measures into their respective planning processes.
- Support for sectoral agencies to develop climate resilient index in 6 sectors under NAP, namely, water resources management, agriculture and food security, tourism, public health, natural resources management, and human settlements and security to provide updated information and climate resilient evaluation for both policy makers and the general public.
- Support to promote, develop and implement formal and non-formal education and training programs as well as to strengthen teachers and educators focusing on climate change at all levels.
- Awareness-raising for relevant stakeholders and the general public on climate change and NDC.

4.2 Technology Development and Transfer

Enhancement of access; development and transfer at different stages of the technology cycle; promotion of innovation and implementation of prioritized technologies, including in the following areas:

(1) Mitigation

- Development of Energy efficiency and renewable energy technologies, including innovative and cost-effective technologies and approaches in advanced energy storage systems and demand-side management.
- Exploration of the potential of offshore renewable power generation systems to provide an alternative energy source.
- Deployment of smart generation and dispatch, smart transmission, smart consumers, smart grid, electricity grid industry and the establishment of a smart grid environment.
- Enhancement of electrification of transport, and technical support for battery charging technologies.
- Promotion of waste-to-energy technologies.
- Improvement of waste management technology and system at subnational and local levels
- Research development and deployment of advanced technologies such as carbon capture and storage (CCS), carbon capture, utilization and storage (CCUS), Bio-energy with CCS, direct air capture (DAC), and hydrogen.
- Technologies, innovations and capacity building to support the practices for sustainable climate smart agriculture, such as precision farming, low-methane rice production, manure management and site-specific nutrient management, are needed to enhance efficient and low carbon emissions production, including to create value added for products and residues, and to support digitalization throughout the production chain.

(2) Adaptation

- Application of Integrated Water Resources Management (IWRM) and Ecosystem-based Adaptation (EbA) practices.
- Technology to improve crop/livestock varieties and management systems.

- Tools for Climate Change Vulnerability Assessment in 6 sectors under NAP

4.3 Mechanisms and Instruments

- Development of the national monitoring and evaluation system of climate finance-related policies.
- Exchange of knowledge and experiences on the integration of climate change activities into the national budget system.
- Assistance to the UNFCCC National Focal Point to develop financial instruments, mechanisms and approaches to engage private sectors in the NDC implementation.
- Capacity-building of national and subnational actors to develop financial proposals for funding access to implement measures under the NDC.
- Exchange of knowledge and best practices on legislative framework and modalities to support NDC implementation.
- Technical support to promote community participation in the preservation and conservation of natural resources, ecosystems, and biodiversity

4.4 Climate Information and M&E Systems

- Capacity-building of responsible agencies to develop climate information services for facilitating climate-smart decision in 6 sectors under NAP
- Support to UNFCCC National Focal Point to develop a reporting, monitoring, and evaluation system of NAP
- Capacity-building of responsible agencies to enhance early warning systems for disaster management in human settlement and security, agriculture, tourism, and health sectors.