

MALAYSIA'S UPDATE OF ITS FIRST NATIONALLY DETERMINED CONTRIBUTION

In accordance with paragraph 2(b) of decision 1/CP.19, Malaysia submitted its Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC) Secretariat on 27th November 2015. The submitted INDC was registered as Malaysia's Nationally Determined Contribution (NDC), following Malaysia's ratification of the Paris Agreement on 16th November 2016. Malaysia hereby communicates its updated NDC in accordance with paragraph 24 of decision 1/CP.21 to contribute to the implementation and achievement of the goals of the Paris Agreement.

Malaysia intends to reduce its economy-wide carbon intensity¹ (against GDP) of 45% in 2030 compared to 2005 level. The updated NDC includes the following increased ambition:

- (a) The 45% of carbon intensity reduction is unconditional;
- (b) This target is an increase of 10% from the earlier submission; and
- (c) The GHG coverage is expanded to seven (7) greenhouse gasses (GHG): Carbon dioxide (CO₂), Methane (CH₄), Nitrous oxide (N₂O), Hydrofluorocarbons (HFCs), Perfluorocarbon (PFCs), Sulphur hexafluoride (SF₆) and Nitrogen trifluoride (NF₃).

Malaysia's accounting approach will strive for transparency, accuracy, consistency, comparability, and completeness (TACCC), and promotes environmental integrity. Continuous improvement will be undertaken to achieve these requirements.

The information for clarity, transparency, and understanding are outlined below and the accompanying information on adaptation is outlined in Annex 1 to this submission.

Further information necessary for clarity, transparency, and understanding (ICTU) of Malaysia's NDC

1. Quantified information on the reference point, including, as appropriate, a base year	
a. Reference year(s), base year(s), reference period(s) or other starting point(s);	Base year: 2005
b. Quantifiable information on the reference indicators, their values in the reference year(s), base year(s), reference period(s) or other starting point(s), and, as applicable, in the target year;	Quantification of the reference indicator will be based on national GHG inventory reported in the NC and BTR submissions and may be updated due to the improvements in the GHG inventory.

¹ Carbon intensity throughout the document refers to GHG intensity from all the seven GHGs.

c. For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or policies and measures as components of NDCs where paragraph 1(b) above is not applicable, Parties to provide other relevant information;	n/a
d. Target relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction;	Economy-wide carbon intensity reduction (against GDP) of 45% in 2030 compared to 2005 level.
e. Information on sources of data used in quantifying the reference point(s);	The reference indicator will be quantified based on national GHG emissions and removals, and GDP in 2005.
f. Information on the circumstances under which the Party may update the values of the reference indicators.	The national GHG emissions and removals in 2005 may be updated and recalculated due to continuous improvements of the GHG inventory. The GDP for the year 2005 would be re-based to the current constant price year available. Information on these updates, if any, will be included in the BTR.

2. Time frames and/or periods for implementation

a. Time frame and/or period for implementation, including start and end date, consistent with any further relevant decision adopted by the CMA;	1 st January 2021 – 31 st December 2030
b. Whether it is a single-year or multi-year target, as applicable.	Single year target in 2030

3. Scope and coverage

a. General description of the target;	Economy-wide carbon intensity (against GDP) reduction of 45% in 2030 compared to 2005 level.
b. Sectors, gases, categories and pools covered by the nationally determined contribution, including, as applicable, consistent with IPCC guidelines;	<u>Sectors:</u> Energy Industrial Processes and Product Use Waste

	<p>Agriculture LULUCF.</p> <p>(The accounting contribution of LULUCF to Malaysia's target is determined as described in 5(e)).</p> <p><u>GHGs:</u></p> <p>Carbon dioxide (CO₂) Methane (CH₄) Nitrous oxide (N₂O) Hydrofluorocarbons (HFCs) Perfluorocarbon (PFCs) Sulphur hexafluoride (SF₆) Nitrogen trifluoride (NF₃)</p>
c. How the Party has taken into consideration paragraphs 31(c) and (d) of decision 1/CP.21;	Malaysia's NDC is economy-wide and will strive to include all key categories of anthropogenic emissions and removals.
d. Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans, including description of specific projects, measures and initiatives of Parties' adaptation actions and/or economic diversification plans.	n/a

4. Planning process

a. Information on the planning processes that the Party undertook to prepare its NDC and, if available, on the Party's implementation plans, including, as appropriate: <ul style="list-style-type: none"> i. Domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner; 	The NDC was developed through 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.
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<p>ii. Contextual matters, including, inter alia, as appropriate:</p> <p>a. National circumstances, such as geography, climate, economy, sustainable development and poverty eradication;</p> <p>b. Best practices and experience related to the preparation of the nationally determined contribution;</p> <p>c. Other contextual aspirations and priorities acknowledged when joining the Paris Agreement;</p>	<p>The national circumstances of Malaysia had been reported through its National Communication and Biennial Update Report submissions.</p> <p>Stakeholder consultation is important in formulating an ambitious NDC.</p> <p>As a developing country, Malaysia needs to ensure a balance between its socio-economic development and low carbon agenda.</p>
<p>b. Specific information applicable to Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement, including the Parties that agreed to act jointly and the terms of the agreement, in accordance with Article 4, paragraphs 16–18, of the Paris Agreement;</p>	<p>n/a</p>
<p>c. How the Party's preparation of its NDC has been informed by the outcomes of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement;</p>	<p>n/a</p>

<p>d. Each Party with an NDC under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on:</p> <p>i. How the economic and social consequences of response measures have been considered in developing the NDC;</p> <p>ii. Specific projects, measures and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also yield mitigation co-benefits, which may cover, but are not limited to, key sectors, such as energy, resources, water resources, coastal resources, human settlements and urban planning, agriculture and forestry; and economic diversification actions, which may cover, but are not limited to, sectors such as manufacturing and industry, energy and mining, transport and communication, construction, tourism, real estate, agriculture and fisheries.</p>	<p>n/a</p>
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<p>5. Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals:</p>	
<p>a. Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's NDC, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA;</p>	<p>In accounting for the NDC, the estimates of economy-wide emissions and removals will be reported in the inventory, and consistent with the inventory guidance contained in the Annex to decision 18/CMA.1. The methodologies and metrics used are reflected in 5 (d).</p>

b. Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the NDC;	n/a
c. If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in accordance with Article 4, paragraph 14, of the Paris Agreement, as appropriate;	See (d)-(e) below.
d. IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals;	<p><u>IPCC Methodologies:</u></p> <p>Malaysia uses the 2006 IPCC Guidelines for National GHG Inventories to estimate anthropogenic GHG emissions and removals, IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories, and the 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands.</p> <p><u>Metrics:</u></p> <p>The 100-year time horizon GWP values from the IPCC's Fifth Assessment Report or any future updates will be used to calculate the CO₂ equivalent emissions and removals in accordance with Decision 18/CMA.1.</p>
e. Sector-, category- or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable:	<p>Information provided in sections 5(e) and 5(f) are based on current policies and knowledge. Malaysia reserves the right to update the information as appropriate.</p> <p>Malaysia will apply the net-net accounting approach for the LULUCF sector.</p>
i. Approach to addressing emissions and subsequent removals from natural disturbances on managed lands;	Currently, natural disturbances on managed lands are due to periodic incidence of forest fires. Emissions from natural disturbances that exceed the average emissions between 2001 to

	2020 caused by natural disturbances will not be accounted.
ii. Approach used to account for emissions and removals from harvested wood products;	Malaysia is undertaking a study to consider the relevant approach to account emissions and removals from harvested wood products.
iii. Approach used to address the effects of age-class structure in forests;	Activity data and emission factors would take into consideration the management type of forest land remaining forest land.
f. Other assumptions and methodological approaches used for understanding the NDC and, if applicable, estimating corresponding emissions and removals, including:	<p>Malaysia will continue to improve its methodologies to account for historical emissions. Adopting future improvements may affect historical emissions, including 2005 emissions.</p> <p>For the LULUCF sector, the activity based methodology is applied.</p>
i. How the reference indicators, baseline(s) and/or reference level(s), including, where applicable, sector-, category- or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources and models used;	<p>Malaysia will follow the guidance in accordance with the 2006 IPCC Guidelines for National GHG Inventories consistent with decision 18/CMA.1 as appropriate. When information is not available, flexibility is to be applied.</p> <p>Malaysia will continue to improve its methodologies to account for historical emissions. Adopting future improvements may affect historical emissions, including 2005 emissions.</p>
ii. For Parties with NDCs that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable;	n/a
iii. For climate forcers included in NDCs not covered by IPCC guidelines, information on how the climate forcers are estimated;	n/a

<p>iv. Further technical information, as necessary;</p>	<p><u>LULUCF Categories:</u> Forest land Cropland Grassland Wetland Settlement (Emissions and removals from grassland and wetland will be accounted subject to the activities undertaken). <u>LULUCF pools:</u> Above ground Below ground Soil organic carbon (drained peatlands)</p>
<p>g. The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable.</p>	<p>Malaysia does not intend to use voluntary cooperation under Article 6 of the Paris Agreement to achieve its NDC.</p>

<p>6. How the Party considers that its NDC is fair and ambitious in light of its national circumstances</p>	
<p>a. How the Party considers that its NDC is fair and ambitious in the light of its national circumstances;</p>	<p>The oil and gas industry is an important sector of Malaysia's economy. The NDC will be achieved through domestic measures. In view of these, Malaysia's updated NDC is fair and ambitious.</p>
<p>b. Fairness considerations, including reflecting on equity;</p>	<p>Malaysia regards its NDC to represent its fair share of the efforts to achieve the global long-term goal of the Paris Agreement in view of its national circumstances and capabilities.</p>
<p>c. How the Party has addressed Article 4, paragraph 3, of the Paris Agreement;</p>	<p>Malaysia's updated NDC is unconditional and has increased its carbon intensity (against GDP) reduction by an additional 10%. Malaysia regards this target as progressive and reflects its highest possible ambition given that the mitigation actions will be undertaken domestically.</p>

d. How the Party has addressed Article 4, paragraph 4, of the Paris Agreement;	Malaysia's NDC involves economy-wide carbon intensity reduction target.
e. How the Party has addressed Article 4, paragraph 6, of the Paris Agreement.	n/a

7. How the NDC contributes towards achieving the objectives of the Convention as set out in its Article 2	
a. How the NDC contributes towards achieving the objective of the Convention as set out in its Article 2;	Malaysia's updated NDC takes into consideration the long-term global goal of the Paris Agreement and Article 2 of the Convention.
b. How the NDC contributes towards Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.	Malaysia is formulating its Long-term Low GHG Emission Development Strategies (LT-LEDS) which will contribute towards achieving Article 2, paragraph 1(a), and Article 4, paragraph 1, of the Paris Agreement.

ACCOMPANYING INFORMATION ON MALAYSIA'S ADAPTATION STRATEGIES

1. 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. Based on the downscaled IPCC AR5 scenarios, projections of the future changes indicate that the rise of the average annual surface temperature will range from 1.9 to 2.1°C by the end of the century. The magnitude of change of average annual precipitation is expected to range from 14% to 25%, while the sea levels are projected to continue rising about 0.73 meter by the end of the 21st century.
2. In the Eleventh Malaysia Plan (2016-2020), RM7.24 billion was allocated for implementation to enhance climate-resilience and adaptation measures, and continuous support will be emphasised in the Twelfth Malaysia Plan (2021-2025). Malaysia is also developing the National Adaptation Plan (NAP) to ensure that climate change adaptation is mainstreamed into its development plan.

Management of Water Resources and Security

3. The climate change phenomenon poses challenges to Malaysia's water resources management and security. In this regard the Ministry of Environment and Water is responsible to ensure the sustainability of water resource management in Malaysia.
4. The Integrated Water Resources Management is strengthened with the implementation of the Integrated River Basin Management and Integrated Flood Management to ensure efficient water management. Emphasis will be given through gazettment of more forest water catchments to secure adequate and safe water supply.
5. Minimizing flood impacts by incorporating climate change factors into flood risk assessment and protection projects are important for Malaysia. In this regard, weather-flood forecasting and early warning system based on future climate conditions will be improved.
6. Malaysia continues to ensure water security against the impact of prolonged dry spell by increasing water supply reserve margin with the reduction of non-revenue water and implementation of the off-river storage structural forms. Malaysia plans to increase diversification and exploration of alternative water sources such as urban scale rainwater harvesting system, groundwater, recycled and reclaimed water for conjunctive use. Prioritisation of water demand management to reduce stress on water supply is high on the agenda.
7. These strategies are incorporated in the development of the Water Sector Transformation 2040. In the transformation, finance and technology are part of the strategies and implementation.

Protecting Coastal Resources

8. Sea level rise (SLR) poses threat to Malaysia's coastal resources. SLR and storm surge projections will be mainstreamed into the Integrated Shoreline Management Plan and for the planning of coastal protection and development projects.
9. Malaysia utilises the Coastal Vulnerability Index associated with SLR, as an essential indicator to evaluate the vulnerability and risk levels of shoreline. This will be embedded in mapping out vulnerability assessment of different socio-economic segments. Efforts will be focused on intensification of developing coastline SLR-based inundation maps.
10. Malaysia focuses on increasing coastal resilience against the impacts of SLR and management of storm surge impacted areas through rehabilitation and protection programs. Adoption of nature-based solutions and green-gray infrastructures will be continuously promoted.

Securing Agriculture and Food Security in Malaysia

11. The changing of climate patterns also pose risks to the agriculture and food security. Strategies will be implemented to increase the resilience and productivity of climate-vulnerable crops. Crops resilience to climate change will also be intensified through risk mapping and strategic pests and disease control management.
12. Research will be carried out to increase climate-tolerant species and varieties. These include augmenting the development of food crop types that can accommodate the demands posed by climate change.
13. The conservation of more major granary areas and expansion of future inland and coastal flood risk assessments on agricultural lands will be implemented to ensure the efficiency of food productivity and raise the self-sufficiency levels. Good and efficient agricultural practices will be further implemented in order to secure continuous agriculture and food supply. These can be achieved through the promotion of smart farming technologies and the implementation of diversification and integrated management.

Increasing Resilience for Infrastructure and Cities

14. In managing future risks and potential loss from climate change, Malaysia is mainstreaming climate resilience into urban planning and development of infrastructures. This will include emphasising infrastructure integrity assessments and revisions of the existing manuals and guidelines.
15. Future planning for waste and wastewater infrastructures will take into account its sustainability, efficiency and effectiveness whilst avoiding areas that are environmentally sensitive, flood-prone and categorised as water catchments. Adopting nature-based solutions such as constructed wetlands in facilitating wastewater treatments will be a priority.

16. Malaysia also aims to identify, implement and expand innovative and nature-based infrastructure design. Resilient and green city concept will be adopted to ensure future climate risks are managed efficiently.

Improving Public Health Resilience

17. Malaysia will expand public health management of future climate risks by adopting evidence-based decision making and improve the projection models in addressing the complex causal relation pathway of climate change and health. Disease management will adopt new models that utilises climatic data to predict changes and impacts of climate-sensitive diseases.
18. In addition, efforts are undertaken to strengthen surveillance and early warning systems to improve public health preparedness in predicting the future disease impacts. This will be implemented by incorporating weather forecasts into risk maps of climate-sensitive disease.
19. Critical healthcare facilities' adaptive capacity will be increased through improving resilience strategies, whilst sustaining essential functions and structures of the public health systems.

Enhancing Adaptation for Forestry and Biodiversity

20. Increasing forest catchment capacity and enhancing management are needed to accommodate expected increase runoff volume and peak flood flow due to higher projected rainfall. It is also crucial to gazette more forest water catchment area in order to maintain and sustain fundamental ecological functions, especially with respect to infiltration rate and soil-water storage capacity.
21. Preservation of vulnerable terrestrial and marine ecosystem and expanding protected areas, including fisheries zones within the marine and coastal protection corridors will be given priority. The ability to manage terrestrial ecosystem is essential and can be enhanced by increasing riparian area management units and reserving larger buffer areas around wetlands, peat swamps and mangroves. Moreover, efforts in establishing reserve to protect ecosystem diversity through enhancing structural and species varieties are also needed.

Cross Sectoral Efforts: Managing Disaster Risk

22. Malaysia has ratified the Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030 on 18 March 2015 to reduce disaster risks and loss and damage for better management of socio-economic and environmental impacts. Malaysia will continue the efforts to strengthen the capacity and mechanism in disaster risk management. The integration of climate change adaptation and disaster risk reduction will be given the focus in the national development plan. Furthermore, Malaysia will continue to be more inclusive and mainstream gender, youth and vulnerable groups in adaptation and disaster risk reduction programs.

Cross Sectoral Efforts: Climate Financing Support, Technology Transfer and Capacity Building

23. Malaysia will continue the efforts to explore and optimise the financing mechanism, technology needs assessment and capacity development for climate change impacted sectors to enhance adaptive capacity. Successful implementation of adaptation activities will increase investment and funds from various sources including private sector.

Cross Sectoral Efforts: Establishment of Monitoring and Evaluation Mechanism

24. The Paris Agreement requires each Party to monitor, evaluate and learn from adaptation planning, policies, programs, and actions. Currently, there is no monitoring and evaluation (M&E) mechanism or framework established for adaptation. During the development of the National Adaptation Plan, the M&E mechanism will be incorporated and established to ensure successful implementation.