MINISTRY OF
NATURAL RESOURCES
AND ENVIRONMENTAL
SUSTAINABILITY (NRES)

National Climate *Change* Policy 2.0

MINISTRY OF NATURAL RESOURCES AND ENVIRONMENTAL SUSTAINABILITY (NRES)

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National Climate *Change*

Policy 2.0

Foreword by the Prime Minister

Salam Malaysia MADANI,

The urgency of the climate crisis facing our world today cannot be overstated. The Intergovernmental Panel on Climate Change (IPCC) has sounded a code red for humanity, warning that global temperatures will rise by 2.5 degrees Celsius without significant, scaled-up intervention. At the heart of the Paris Agreement is the principle of "common but differentiated responsibilities," which emphasizes that every nation must contribute according to its capacity to ensure a safe and healthy environment for both present and future generations.

Malaysia is deeply committed to this principle as a developing nation and one of the world's 17 megadiverse countries. We remain steadfast in fulfilling our climate pledges and undertaking actions to combat climate change. Our first National Policy on Climate Change, published in 2009, was foundational in integrating climate action into our national agenda and fostering a holistic approach among all stakeholders.

Nearly 15 years later, the National Climate Change Policy 2.0 builds upon our achievements, reflecting a broadened understanding of the impacts of climate change on our economy, natural environment, and communities. This updated policy introduces a new framework for Malaysia's transition towards a low-carbon economy, reaffirming our commitment to achieving our climate pledges, including reaching net-zero greenhouse gas (GHG) emissions by 2050.

The policy addresses current and emerging challenges posed by climate change to our nation. It aligns with recent strategic initiatives, such as the National Energy Transition Roadmap (NETR), which promotes a just energy transition towards a green economy, and the New Industrial Master Plan (NIMP) 2019-2030, which drives technological innovations and investments for climate action. These efforts not only chart a path forward for the

development of cleaner energy sources and green technologies but also position climate action and sustainability as a new engine for economic growth, ensuring the well-being of all Malaysians.

Strategic policy interventions like NETR and NIMP align with our broader development plans, such as the Twelfth Malaysia Plan (2021-2025). These plans reinforce the development of a green economy and affirm sustainability as a core principle of the Malaysia MADANI framework. Here, sustainability involves promoting green growth for economic advancement, achieving high-income nation status, and conserving the ecosystem services from our natural heritage, which is vital to our people, culture, and nation.

The existing policies aim to enhance our resilience to climate change across regions, sectors, and society. As the frequency and intensity of climate impacts increase, we must adopt a comprehensive approach to build resilience and capacity at all levels, preparing for unforeseen challenges that may threaten our future development. Thus, the National Climate Change Policy 2.0 sets the stage for Malaysia's leadership in climate action as we prepare to take on the ASEAN chairmanship in 2025, reinforcing our commitment to pioneering regional efforts.

Ultimately, the National Climate Change Policy 2.0 is critical to our future governance. It seeks to strengthen our institutional capacity to address the escalating climate crisis. It reflects our collective ambition and inclusive approach for the future ensuring no one is left behind. I sincerely hope this policy will mark a significant step in Malaysia's climate commitments, embodying a renewed vision of change and collective action as we confront this global challenge head-on.

Anwar Ibrahim

Preface by the
Minister of Natural Resources and Environmental Sustainability (NRES)

Climate change is not a distant concern. It is here, right before our eyes, and it is real. It is one of the most urgent challenges the world faces today. From rising seas that threaten our coasts, to floods that wash away homes and lives, to droughts that parch our lands, climate change is not an abstract theory; it is a harsh reality for millions of families across the world. Like every nation on Earth, Malaysia is not being spared from the danger it brings. It is already impacting our environment, our economy, and the lives of our people.

Malaysia has taken decisive steps to meet the challenge of climate change. We are not and will not be passive observers of our own fate. We have developed the **National Climate Change Policy 2.0** to accelerate our path towards a greener, resilient future. The policy is more than just a document; it is a blueprint for a new era. It is our roadmap towards a low-carbon economy, towards resilience and towards hope in the face of crisis. It reflects our firm commitment to tackling the greatest environmental challenges of our time. And it builds on our legacy, on the steps Malaysia began taking in 2009, with an eye on the future.

This Policy reinforces Malaysia's commitment to combating climate change, anchored in the principle of common but differentiated responsibilities. Although our nation contributes only 0.8% to global greenhouse gas (GHG) emissions, we recognise that we are part of a global family and that all must contribute to its safety. Our ambition is clear: to reach net-zero GHG emissions by 2050. We are committed to our Nationally Determined Contributions (NDC) because we understand that the decisions we make today will shape the world our children and grandchildren inherit tomorrow.

This Policy brings together every corner of our nation, from ministries to the private sector, from think tanks to civil society, in a united effort. It is the first of its kind, an umbrella policy that ties together all our climate initiatives, including plans such as the NETR and NIMP 2030. Through key initiatives like the National Climate Change Act, NDC Action Plan and Roadmap, LT-LEDS, and the National Adaptation Plan, it provides a clear pathway for governance, low carbon development, adaptation, climate financing, and partnerships, aligning our aspirations with our actions.

However, let me be clear that this fight is not one the government can win on its own. The success of this Policy is a testament to the collective wisdom and dedication of every individual and organisation involved in its creation. For that, I extend my deepest gratitude.

At the same time, its successful execution will require the support of Malaysians from all walks of life, including civil society and the private sector. As with all of the Unity Government's efforts to reform Malaysia, I am determined to ensure the Policy will be implemented inclusively and thoroughly.

As we move forward, may the National Climate Change Policy 2.0 be our guiding star, energising our efforts to address the strategic challenges of climate change as well as putting Malaysia on the pathway to a sustainable, more equitable future for all its people.

Nik Nazmi Nik Ahmad

Contents

Executive Summary

Climate change is one of the most profound global challenges of our time, significantly impacting Malaysia's people, economy, infrastructure, and natural environment. The country faces spectrum of natural hazards that is intensified by climate change including extreme weather events, flooding, drought, sea-level rise, and increasing temperatures. The Intergovernmental Panel on Climate Change (IPCC) projects that, without strong intervention, global warming will exceed the 1.5°C threshold, leading to further climate risks. Malaysia's vulnerability to both transition and physical underscores the urgency for the nation to enhance its resilience. Malaysia's greenhouse gas emission has increased from 250 million tonnes of CO2eq in 2005 to 330.4 million tonnes of CO2eq in 2019, as reported in Malaysia's Fourth Biennial Update Report. Simultaneously, the country has suffered RM 7.9 billion in losses from floods alone since 2021 and require nearly RM 400 billion to fully adapt to climate change over the next 50 years.

The first National Policy on Climate Change, introduced in 2009, aimed to mainstream climate change in Malaysia's institutional and implementation capacity to ensure a climate-resilient development. This policy has effectively guided the country and established the initial framework for the nation's climate objectives, serving as a fundamental document for addressing climate change.

Over the past 15 years, significant changes have occurred both internationally and domestically, including the adoption of the landmark Paris Agreement in 2016, which Malaysia ratified in 2016. Since then, Malaysia has reviewed its Nationally Determined Contributions (NDC) and pledged to be a net-zero nation by 2050. Various transition risks associated with climate change have emerged, encompassing shifts in policy, regulation, technology, and market dynamics, alongside new issues such as just transition, carbon trading, and the trade-sustainability nexus, including carbon border tariffs. These transformations carry profound implications for Malaysia's export-oriented and fossil fuel-based economy. Additionally, climate change impacts continue to threaten Malaysia's socio-economy, resource security and public health, disproportionately affecting vulnerable sectors and communities.

The National Climate Change Policy 2.0 is pivotal in steering Malaysia's climate action against the backdrop of evolving global and domestic landscapes. This policy integrates the requirements of the Paris Agreement into the national climate policy framework and addresses the latest development associated with climate change. It serves as the authoritative source for the government to develop relevant regulatory instruments, including the National Climate Change Act and economic instruments such as carbon pricing and market. Additionally, the policy forms the basis for coordinating and implementing climate-related policies and strategies in an integrated manner, including the NDC Action Plan and Roadmap, Long-Term Low Emissions Development Strategies and the National Adaptation Plan. It also complements and aligns with sectoral policies such as the National Energy Transition Roadmap and the Water Sector Transformation Plan 2040.

The National Climate Change Policy 2.0, through its 5 strategic thrusts, 15 strategies, and 92 key actions, sets out a direction and framework for Malaysia to pursue a transition to a low-carbon economy and enhancing climate resilience in line with national sustainable development agenda and international climate commitments.

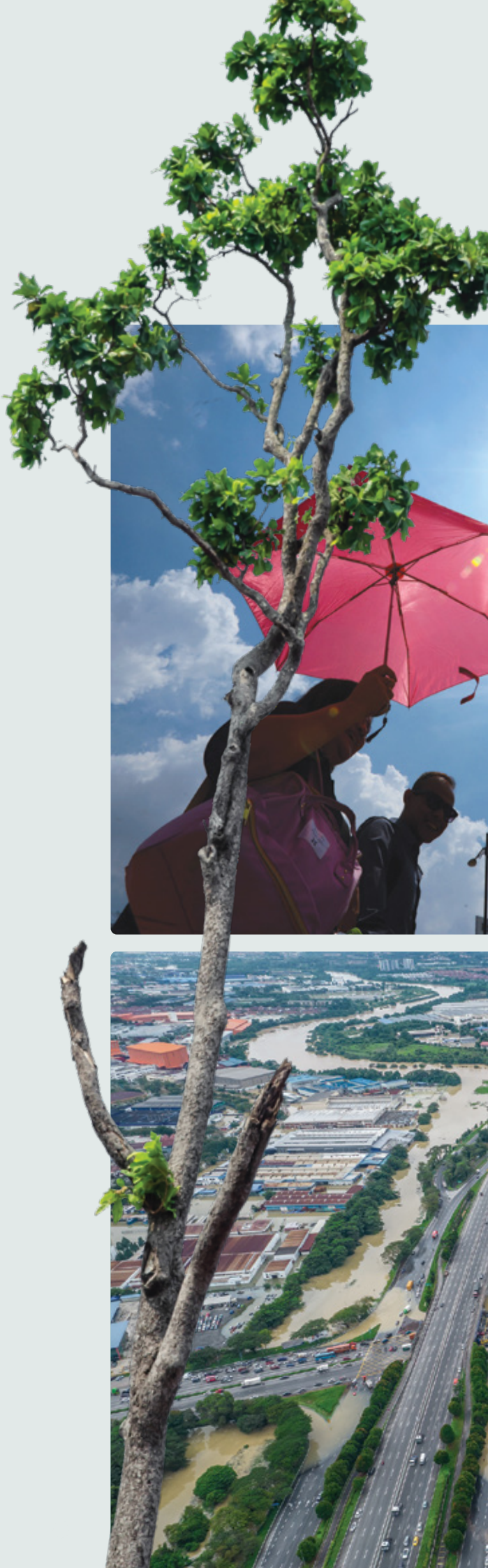
National Climate *Change*
Policy 2.0

Chapter 1 /
Preamble

Climate change has emerged as one of the defining issues of our time. The Intergovernmental Panel on Climate Change (IPCC), the world's leading authority on scientific knowledge pertaining climate change, stated in its Sixth Assessment Report that the current state of global warming at 1.1°C has already caused unprecedented climate impacts on all parts of the world[1].

This includes an increase in disasters and extreme weather events such as heat waves, floods, droughts, forest fires, as well as slow onset events such as sea level rise, land degradation and ocean acidification. These events have already caused significant losses and damages to economies, societies, infrastructure, and the natural environment. They are projected to become more frequent and intense in the future if global warming is not limited to below 1.5 degrees Celsius above pre-industrial levels, in line with the objective of the Paris Agreement. Given the urgency and significance of this challenge, addressing climate change has become a crucial aspect of public policy to ensure well-being, sustainable development, and planetary health.

Dry banks of the Pahang river in Chenor, Pahang.



Two main approaches have been adopted to address climate change: mitigation and adaptation[2]. Mitigation refers to human interventions to avoid and reduce greenhouse gas (GHG) emissions in the atmosphere, as elevated concentrations of anthropogenic GHGs, particularly CO_2, are observed to be the main cause of global warming. By the end of 2023, CO_2 levels reached around 422 parts per million, which is already contributing to adverse climate impacts[3]. Emissions reductions can be achieve by either reducing GHG sources, such as the burning of fossil fuels for energy production; or enhancing their removal by carbon sinks, for example, through preserving forests and coastal ecosystems. While mitigation tackle the root cause of climate change by lowering GHG emissions, adaptation is essential for managing its immediate and unavoidable impacts.

Adaptation generally refers to actions taken to help communities and ecosystems cope with actual or expected impacts of climate change. This approach aims to reduce vulnerability and increase adaptive capacity to dangerous impacts, such as floods and droughts, as well as cascading effects on water resources, food security and the wider economic and societal systems. The effects of climate change have already been affecting communities worldwide and can potentially lead to 14.5 million deaths and $12.5 trillion in economic losses, which corresponds to over 10% of global GDP[4].

Climate change is also expected to increase a multitude of challenges, particularly from the global responses that will continue to impact almost all sectors and segments of society. The transition towards a low carbon and resilient development is resulting in various emerging risks in international trade, investment and security. In particular, the growing demand for Environmental, Social and Governance (ESG) investments has required many investors and financial institutions to incorporate climate-related criteria into their investment and lending decisions; where alignment with climate goals and net zero commitment are pre-conditions for receiving capital allocation and investments. In most jurisdictions, regulatory bodies and policymakers have introduced certain forms of regulations to mandate ESG integration, reporting and disclosure, as well as climate-risk disclosures for companies operating within their jurisdictions.

During the 28th Conference of Parties (COP28), the outcome of the first Global Stocktake (GST) signified a landmark decision in acknowledging the need to “transition away from fossil fuels in

Malaysians using umbrella to shield against scorching hot weather in Kuala Lumpur.

Flood in 2021 following heavy rainfall in Shah Alam, Selangor.

energy systems"[5], including the recognition of abatement and removal technologies for hard-to-abate sectors as well as the role of transitional fuels; the first of its kind at the international stage. In line with the Paris Agreement's principles of equitable solutions, it is important to recognise that the transition to a low-carbon economy and decarbonisation may cause significant disruptions for certain industries, sectors, and communities. As a fossil fuel-based economy and oil- and gas-producing nation, workers may experience job losses or economic hardships as a result of the decline of the fossil fuel industry. In the context of adaptation, climate hazards such as flooding and sea level rise affect different groups of people disproportionately, in particular those most vulnerable and marginalised such as those already living below the poverty line and in climate-vulnerable regions. Additionally, climate change impacts can include disruptions to agriculture, health challenges and economic instability, which further exacerbate the vulnerabilities of these groups.

The scale of the ambition and the cross-cutting nature of the challenge means that climate action calls for a whole of nation approach. Collective responsibility and action are needed to both mitigate and adapt to climate change. This includes actions from the government, businesses, civil society, communities and individuals that contribute towards mitigating and adapting to climate change.

The National Climate Change Policy 2.0 is the second iteration of Malaysia's climate policy, designed to address new and emerging challenges at both global and domestic levels while taking into account national circumstances. Despite contributing only 0.69% to global GHG emissions[6], the Malaysian government is committed to enhancing climate actions and supporting subnational and non-state actors such as cities, companies, organisations and communities in taking more leading roles in climate action. The NCCP 2.0 provides the direction and framework for Malaysia to transition to a low-carbon economy and adopt a more resilient approach to development. It will facilitate the work needed to operationalise the Paris Agreement, helping Malaysia fulfil its commitments and obligations. Furthermore, it will guide relevant parties in responding to climate change issues in various international fora beyond the UNFCCC. Given Malaysia's numerous sectoral policies and strategies on climate change and the environment, NCCP 2.0 leverages these policies in an integrated manner by consolidating and setting out comprehensive strategies for the nation's climate action.

Chapter 2 /

Malaysia's National Circumstances and Actions

Rainforest near Pos Kuala Mu in the Banjaran Titiwangsa of Sungai Siput, Perak.

International obligations, in particular under the UNFCCC, has increased since 2009 with countries, including Malaysia, are encouraged to enhance their efforts over time by submitting increasingly ambitious Nationally Determined Contributions (NDCs) under the Paris Agreement and strengthen its climate reporting. At the domestic level, Malaysia has long had a focus on climate change with the establishment of the National Steering Committee on Climate Change (NSCCC) in 1994. Subsequently, the first National Policy on Climate Change was introduced more than a decade ago in 2009 to outline Malaysia's policy direction.

Since then, the country has seen tremendous population growth as well as socioeconomic changes as it aims to transition from a developing to a developed nation. The population has increased from 27.4 million in 2009 to 33.4 million in 2023[7]. Malaysia's GDP has increased by three times and the country's export has doubled. More townships, industries and infrastructure have been built; which contributed to 1.3 times increase of greenhouse gas emissions (GHG) from 246 to 330.4 million tonnes in 2005 and 2019 respectively[8]. Recognising the environmental challenges that comes with this expansion, Malaysia's five-year plans increasingly place greater emphasis on sustainable development and green growth. These plans aim to strike a balance between development needs and environmental preservation, while also promoting the shift towards a low-carbon economy.

The 1st National Policy on Climate Change was formulated in 2009 with the purpose of mainstreaming climate action in the country.

Cityscape of Kuala Lumpur. The cultural, financial, and economic centre of Malaysia.

Malaysia's greenhouse gas emissions profile

Malaysia experienced a steady increase in GHG emissions over the years. In fact, for most years before 2004, Malaysia was a net carbon sink, largely due to the significant amount of carbon sequestered via our tropical forest ecosystems (Figure 1). According to the Malaysia's Fourth Biennial Update Report, Malaysia's GHG emissions in 2019 totalled 330.4 million tonnes CO2eq, an increase from 250 million tonnes CO2eq in 2005[9]. In terms of the emissions portfolio, the energy sector accounts for more than 79 per cent of emissions, mainly through energy production and transportation (Figure 2).

Despite the increase in absolute emissions, the emission intensity has reduced by 35.9 per cent[10]. Malaysia's efforts in mitigation have resulted in a reduction of emissions by 30,402.76 Gg CO2eq without Land Use, Land-Use Change, and Forestry (LULUCF) and 48,040.54 Gg CO2eq with LULUCF as of 2019. In addition, emissions reduction have been achieved through initiatives in the oil and gas industry (energy sector), the cement industry (Industrial Processes and Product Use [IPPU] sector), and organic farming programs (agriculture sector), as quantified in the fourth Biennial Annual Report. Among these, the most significant reductions were observed in initiatives such as transitioning to renewable energy through hydropower generation, minimising venting and flaring in the oil and gas industry, and decreasing waste through paper recycling. Additionally, efforts include the implementation of Renewable Energy (RE) through mechanisms such as the Feed-in Tariff and the execution of the National Energy Efficiency Action Plan, among others.

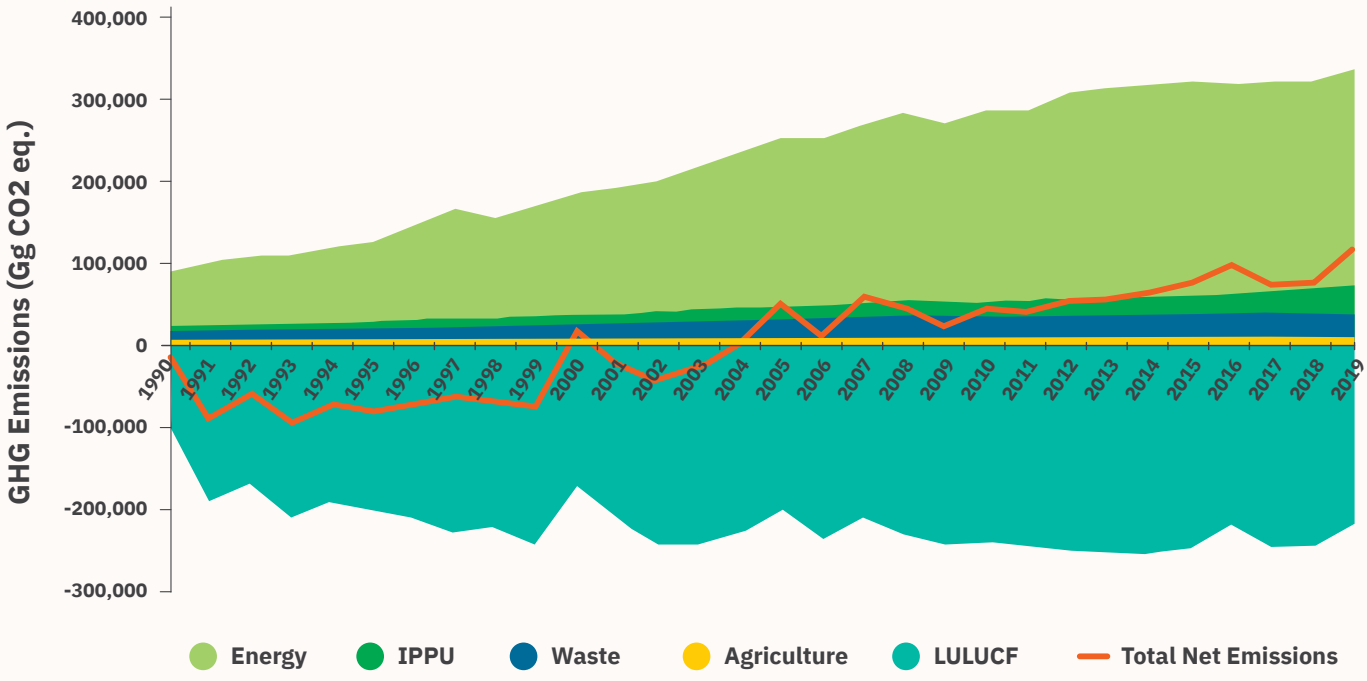


Figure 1: Emissions Time Series from 1990 to 2019

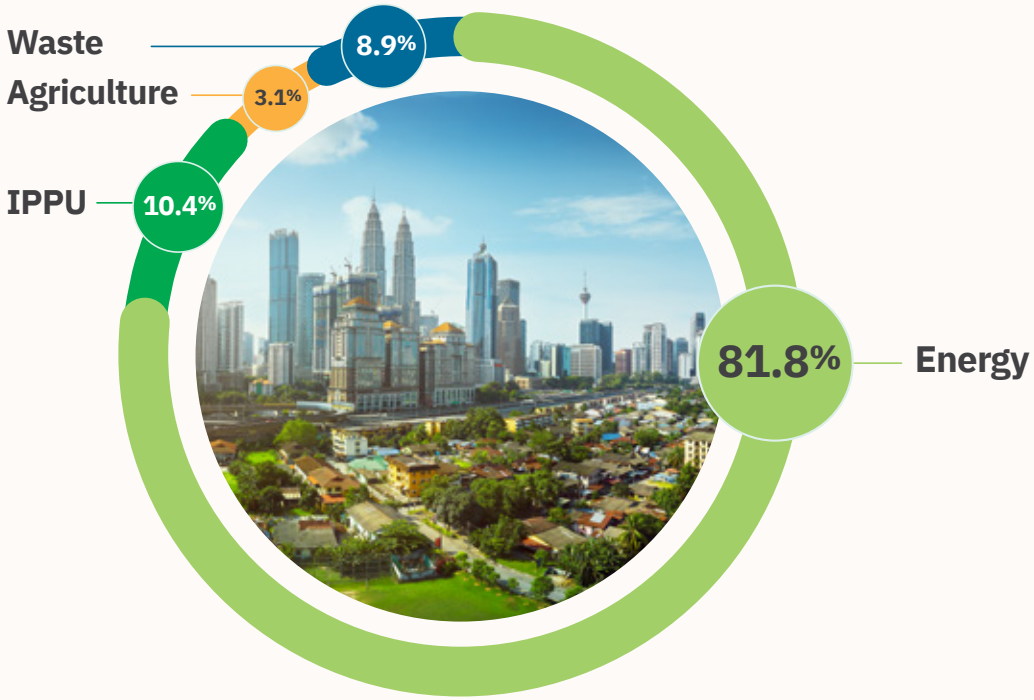


Figure 2: Greenhouse Gas Emissions for the Year 2019

Note:
Greenhouse Gas Emissions excluding LULUCF emissions with total emissions of 316.83 million tonnes CO2eq; IPPU refers to industrial processes and product use; LULUCF refers to land use, land use change, and forestry.

Climate change impacts to Malaysia

The central tenet of the Paris Agreement is to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels. The Intergovernmental Platform on Climate Change (IPCC) 6th Assessment Report, published in 2021, found that in almost all emission scenarios, warming is expected to exceed the 1.5°C threshold in the early 2030s. Based on parties' existing Paris Agreement commitment to reduce emissions, the world is on track to reach 2.4°C warming by the end of the century without strong intervention[11]. The climate system changes as warming increases, influencing frequency, intensity, timing, and spatial distribution of climate hazards. As a result, Malaysia's people, economy, infrastructure, and natural environment are increasingly impacted by climate hazards which include extreme weather events such as flooding and drought as well as slow-onset events such as sea level rise and rising temperature.

Over the past five decades, increased temperature trends of 0.13°C to 0.24°C per decade have been observed[12]. The IPCC report found that emissions of greenhouse gases from human activities are responsible for approximately 1.2°C of warming since 1850-1900, and averaged over the next 20 years, global temperature is expected to reach or exceed 1.5°C of warming[13].

The average annual temperature in Malaysia is projected to warm by 1.1 – 1.5 degrees Celsius by 2050, and 1.7 – 2.1 degrees Celsius by 2100, with Sabah and Sarawak facing higher levels of increments. The increase in temperature is likely to put an impact on the country and this includes water security, food security, public health and biodiversity, with compounding effects on vulnerable sectors and community[14].

Observing the prevailing trend in weather events, Malaysia has already begun and is projected to continue facing the repercussions of climate change across various dimensions, affecting the community, economy and infrastructure in diverse ways. The impacts of climate change are already observed and will continue to impact Malaysia's national development as well as most vulnerable sectors and community.

Water security is threatened by the influence of climate change to the water cycle. The intensification of the water cycle brings more frequent and intense dry spells, while increased rainfall can result in more intense flooding. With more than 97 per cent of water supply being derived from surface water in rivers and reservoirs, increase in dry spells and extreme drought events, compounded with an increase in demand, these factors will result in water stresses. On the other hand, heavy precipitation events are causing large scale flooding events. Heavy rainfall can also affect water infrastructure for example, where several dams were at critical levels due to heavy rainfall, resulting in excess water releases. This in turn, leads to downstream flooding. According to the Department of Irrigation and Drainage, 10.1% of the country's total area is a flood-prone area with nearly 5.67 million people affected by floods[15]. Flood risks in Malaysia have been exacerbated by local factors, such as rapid urbanisation, ineffective drainage systems, deforestation and logging, which reduce permeability and natural sponge capacity. Official flood reports have increased exponentially in the last two decades, from 91 in 2002 to 1057 in 2021[16]. It is estimated that floods caused at least RM 7.9 billion in losses to the country between 2021 and 2023, with the highest losses occurring in 2021, totalling RM 6.1 billion[17].

Being a maritime nation with over 8,840 km of coastal lines, Malaysia **coastal zones** are also vulnerable to storm surges and inundation influenced by sea level rise that have caused coastal erosion and loss of land. In Peninsular Malaysia, sea level has averagely risen by 3.2 mm and 2.9 mm for Sabah, Sarawak and Labuan. The Malaysian coastline is projected to face a maximum sea level rise of 0.25 m by 2050 and 0.74 m by 2100[18]. This will impact Malaysia's coastal and food resources, settlements, coastal infrastructure, and livelihood of fisherman and coastal communities.

Agriculture and food security is also impacted by temperature increases and changes in rainfall pattern. Vulnerability and adaptation assessments for granary areas in Peninsular Malaysia demonstrate significant reductions in average rice yields productions by 2030, ranging from a reduction of more than 30 per cent over the main season in 2030 in the Integrated Agriculture Development Area in Barat Laut Selangor (IADA BLS) to 12.5 per cent reduction in Muda Agriculture Development Authority (MADA). The impact extends to our commodities as well. Specifically, Malaysia's vital palm oil industry, which contributes over RM 130 billion in export revenue, is expected to experience a 3.3% reduced yield during El Nino and La Nina events. Moreover, it is anticipated that the proportion of oil palm plantations vulnerable to flooding will increase to 7.48% by 2100, with 7.02% at risk from sea level rise[19].

Our **cities and settlements** are becoming increasingly vulnerable to the impacts of climate change. Currently, 75% of the population resides in urban areas[20], a number projected to reach approximately 90% by 2050, mirroring global trends of rising urbanisation. In addition to the growing risk of flash floods, where 96 out of 281 towns and cities are projected to be flood prone up to 2100[21], cities are also experiencing elevated temperatures due to the urban heat island effect. Over the past century, warming trends have been observed in cities like Kuala Lumpur, Kuching, and Kota Kinabalu, with temperature increases ranging from a minimum of 1.35°C to a maximum of 6.33°C. Preliminary assessments indicate that **critical infrastructure,** including healthcare facilities, roads, railways, ports,

Photo 1: Unusual intense flood in Dec 2021 - Jan 2022 across Peninsular Malaysia

The tropical depression of Typhoon Rai made landfall in the peninsula, resulting in a 'one-in-100-year flood' – a month's worth of rainfall fell in 24 hours. The flood was considered unusual as it took place in the economic hub of the country – Klang Valley – a region that rarely receives torrential rainfall. The Department of Statistics estimated that the overall losses due to the floods in 2021-2022 amounted to RM5.3-6.5 billion of living quarters, vehicles, business premises, manufacturing, agriculture sector as well as public assets and infrastructure with 55 deaths, 71,000 displacements and affected over 130,000 people.

Photo 2: Disappearing shorelines in Malaysia

Coastal erosion is severely impacting Malaysia, sweeping away homes and public infrastructure. Driven by a combination of natural processes, human activities and climate change, NAHRIM reports that out of Malaysia's 8,400 kilometres of shoreline, approximately 1,347 kilometres are affected, with 55.4 kilometres critically eroded, particularly in Sarawak and Terengganu

airports, power stations, and flood relocation centres, are exposed to floods and sea-level rise, with impacts expected by 2030 and 2050.

Malaysia is also confronted with substantial **health risks due to climate change.** The surge of vector-borne diseases including malaria and dengue have been observed with higher temperatures. Infrastructure damages caused by natural disasters also compromise access to basic needs including food, water, hygiene and sanitation services, aggravating disease transmission. The World Health Organisation in its country report also stated that heat-related deaths could reach 45 per 100,000 by 2080 with high emissions scenario[22]. Climate change and biodiversity loss, two intertwined systemic challenges, are also identified as drivers of the emergence of new and ancient zoonoses, similar to Covid-19, which has caused one of the greatest disruptions to the world's sustainable development trajectory.

Adding to the list, Malaysia is at risk of **losing its biodiversity** which concurrently impacts the country's economic development that depends on its ecosystem service. For instance, the effects of peatland and inland forest fires would be exacerbated by projected prolonged dry spells, destroying forest reserves and degrading the land. The disappearance of mangroves due to rising sea levels and salt-water intrusion has led to depletion of vital fish nursery areas and weakens the coastal defence against coastal inundation and storm surges, directly impacting the livelihoods of coastal communities. Additionally, coral bleaching, often exacerbated during El Niño episodes, further disrupts fisheries and the tourism supply chain, as over 40% of corals succumb to bleaching, posing a significant threat to marine-based industries and coastal community livelihoods.

Climate change will have a significant impact on **vulnerable, disenfranchised and marginalised communities** including children, women, youth and indigenous people. Climate change and shifting weather patterns jeopardise the close and intricate connection the Orang Asal and Asli communities have with nature. In particular, their food sources and income are at risk since these communities are particularly

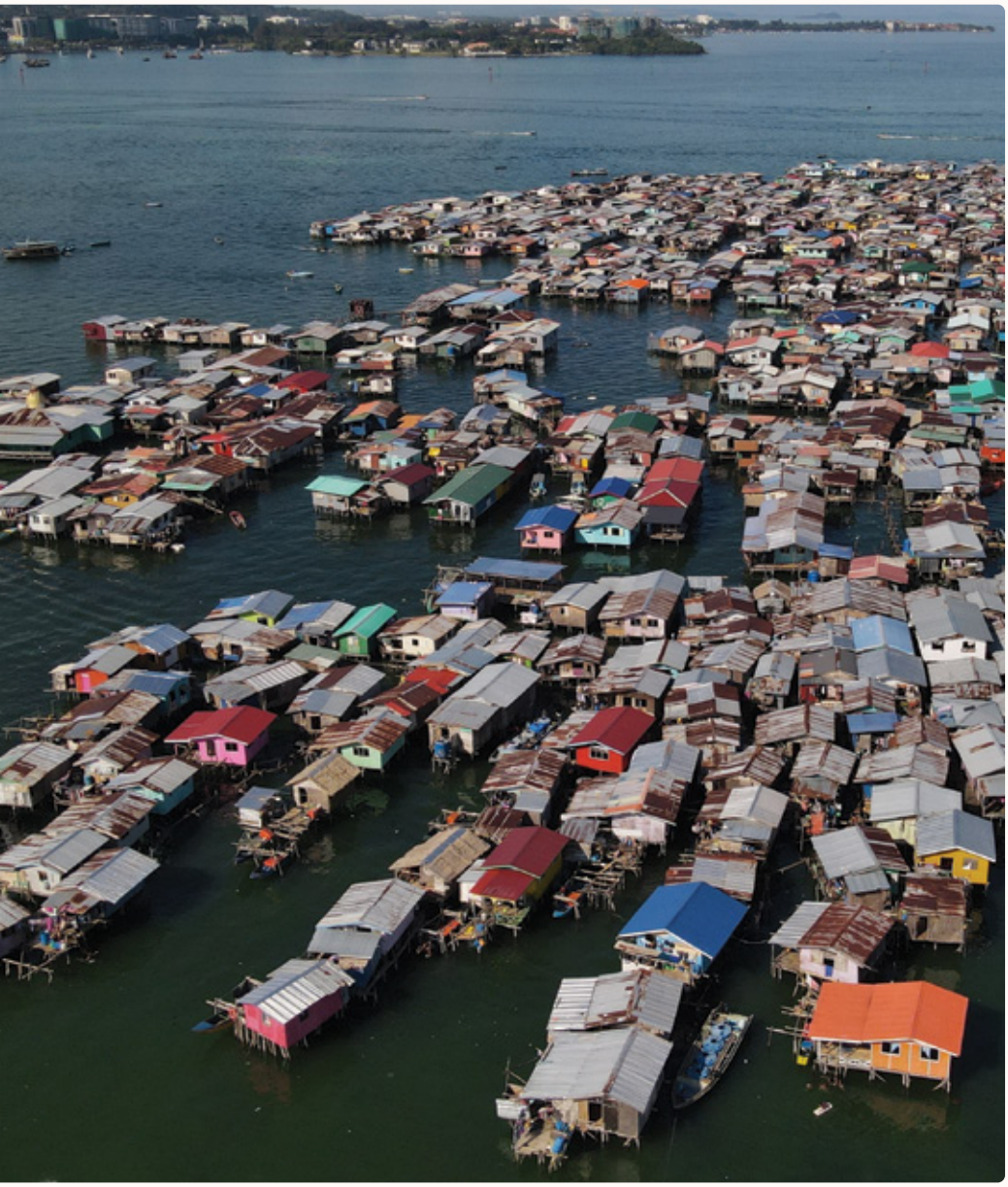
Photo 3: Paddy fields devastated by dry spell and scorching heat wave

In May 2024, Padi farmers in the Muda Agricultural Development Authority (MADA) areas in Keda are facing a 40% reduction in income due to a prolonged hot spell, which has significantly impacted crop yields. The extreme weather, along with rare crop diseases, has led farmers to seek alternative income sources or repair their fields and use water more efficiently while awaiting the next planting season.

Photo 4: The decline of Mangroves in Malaysia

According to Forest Research Institute Malaysia (FRIM), Malaysia's mangroves have been diminishing by 788 hectares annually between 1990 and 2017, dropping from 650,311 to 629,038 hectares, primarily due to conversion to land use activities such as aquaculture, agriculture and settlements. The decline may affect the country's resilience to climate change, as mangroves serve as significant carbon sinks, storing 40% more carbon than dry land forests, and act as natural buffers against storm surges, flooding and sea level rise. Additionally, the reduction in mangrove areas disrupts fisheries breeding grounds, decreasing fish stock and affecting fishermen's livelihoods.

Hamdan, O., Tariq Mubarak, H. & Ismail, P. (2020). Status of Mangrove in Malaysia. Forest Research Institute Malaysia, Malaysia. pp. 288.



Pulau Gaya in Sabah is a region highly sensitive to climate changes, experiencing both seasonal variations and long-term climatic shifts. The island is home to many undocumented children from low-income families, a significant number of whom are aged 6 to 12. These children engage in various economic activities at the market, including selling items, sewing clothes, and even participating in gambling. The community faces significant challenges stemming from climate change, particularly the increased frequency of destructive typhoons and the looming threat of rising sea levels. Additionally, environmental degradation has intensified due to improper waste disposal, resulting in the accumulation of garbage in the waters surrounding Pulau Gaya.

Photo 5: Well-being of the Orang Asli and stateless communities in Pulau Gaya, Sabah

dependent on the rainforest for their livelihoods, including hunting, fishing, and gathering. Altered weather could harm crops and disrupt seasonal cycles, while extended dry spells may deplete water bodies, impacting fish supply and cultural practices. Meanwhile, women, who are traditionally the bearers of unpaid care work, are disproportionately affected by climate impacts due to bearing the brunt of livelihood insecurities and increased household burdens. As for children and youth, nine out of ten young Malaysians experience climate-related effects, such as floods and maladies, affecting their well-being and education[23].

Chapter 3 /

The Need for this Policy

The first National Policy on Climate Change, published in 2009 (will be referred to as NPCC 1.0) served the purpose of mainstreaming climate change in Malaysia's institutional and implementation capacity to ensure climate-resilient development to fulfil national aspirations for sustainability. Its goals remain pertinent towards the country's ongoing climate ambitions. But given the rate of global development over the years, including more in-depth understanding of climate risks and progress of international climate agenda, there arises a need to reassess the country climate strategies. This entails aligning measures with the latest national targets and international commitments, including reducing carbon emission intensity against GDP by 45% by 2030 compared to 2005 levels, as well as achieving net-zero GHG emissions by 2050. In essence, the National Climate Change Policy 2.0 (NCCP 2.0) aims to facilitate the country's transition towards a low-carbon economy and climate-resilient development, as well as operationalising the Paris Agreement at the domestic level.

Over the past 15 years, the climate landscape has evolved significantly with new international commitments, emerging challenges and global trends.

The Rawang Bypass, which features a 2.7 km viaduct to protect the endemic Giam Kanching trees and minimise habitat fragmentation along the Selangor State Park in Rawang, Selangor.

International trends, obligations and commitments

At the international level, Malaysia is committed to contribute towards efforts highlighted in the United Nations Framework Convention on Climate Change (UNFCCC). As a Party to the UNFCCC and its legally binding treaties such as the Paris Agreement and Kyoto Protocol, Malaysia has implemented and will continue to fulfil its obligations and commitments to address climate change. The NCCP 2.0 will further strengthen the policy framework for Malaysia to fulfil its national obligations, commitments and pledges made in the intergovernmental processes.

Paris Agreement and national obligations to the UNFCCC

The Paris Agreement is a landmark agreement made in 2015 by all Parties and reaffirms the long-term global goal of limiting global warming to well below 2°C compared to pre-industrial levels and urges Parties to pursue efforts towards a more ambitious 1.5°C threshold. The Agreement upholds the UNFCCC principle of "common but differentiated responsibilities and respective capabilities, in the light of different national circumstances". Parties are required to communicate or update their climate pledges, also known as Nationally Determine Contributions (NDC) every five years; where successive climate pledges must have a progression beyond current ones that is fair and ambitious in light of its national circumstances.

Malaysia ratified the Paris Agreement on November 12, 2016, and submitted its first NDC four days later. In 2021, Malaysia enhanced its NDC targets to reduce economy-wide emissions intensity of GDP by 45% by 2030, compared to 2005 levels, on an unconditional basis[24]. This revision expanded the scope of greenhouse gas coverage from three to seven types and included information on adaptation strategies for vulnerable sectors and cross-cutting issues. To support its long-term decarbonization strategy, Malaysia has, at the time of writing, finalised its NDC Roadmap and Action Plan to guide implementation until 2030, along with the Long Term Low Emissions Development Strategies (LT LEDS) to achieve its net-zero GHG emissions aspiration by 2050.

In addition to reporting obligations such as the National Communications (every four years), Biennial Update Report (every two years) and the Biennial Transparency Report (every two years from 2024 onwards) under the Enhanced Transparency Framework (ETF), Malaysia is developing various policy instruments such as a climate change legislation, Malaysia's National Adaptation Plan (MyNAP) and studying the feasibility of developing a carbon pricing mechanism in Malaysia. A national policy on carbon market, aligned with the principles and requirements of Article 6 of the Paris Agreement, is also in development.

An electric car charging station at outdoor parking place in Kuala Lumpur.


Coral reefs in Pulau Tioman, Pahang.

Other international obligations, cooperation, and agreements

Besides the UNFCCC, Malaysia is also party to various multilateral environmental agreements that have interlinkages to climate change. This includes the ratification of United Nations Convention on Biological Diversity (CBD), Sendai Framework for Disaster Risk Reduction, Ramsar Convention on Wetlands, United Nations Convention to Combat Desertification (UNCCD), Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, and various regional agreements including the ASEAN Transboundary Haze Pollution agreement. Malaysia is also part of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) that aims to voluntarily incentivise emission reduction in the aviation sector.

Climate change is also progressively garnering attention within international cooperation and international trade policies as more developed nations recognise how trade can have an impact on climate change due to the inherent or embedded carbon in products and services. While climate change is not explicitly mentioned in World Trade Organisation (WTO) agreements, it is recognised that the level of detail on climate change in regional trade agreements has expanded steadily since 2012[25]. The European Union (EU) which is an important trade partner of Malaysia, plans to implement regulations that will implicate Malaysia's trade-oriented, export-reliant and high-carbon economy. This is to meet the EU Green Deal aspirations via rulings such as the EU Deforestation-Free Product Regulation (EUDR) and Carbon Border Adjusted Mechanism (CBAM) which comes into effect starting 31st December 2024 and in 2026, respectively[26]). In addition, climate change and green transition have emerged as key areas for regional corporations and strategic engagements such as the United States Indo-Pacific Economic Framework for Prosperity (IPEF). The Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) that Malaysia has signed includes a transition to a low-emission economy under the environmental chapter.

Domestic challenges and constraints

Challenges in climate policy-making

The cross-cutting and complex nature of climate change requires its integration into national, sub-national and sectoral policies. In this regard, Malaysia has taken significant steps to establish the Majlis Tindakan Perubahan Iklim Negara (MTPIN) as the apex body responsible for providing policy and strategic direction. Over the years since the inception of the NPCC 2009, climate action measures and considerations have increasingly been integrated into policies and development plans, such as the Malaysian Plan, National Physical Plan, and sectoral policies. Despite these advancements, a notable gap exists in the absence of a robust policy implementation framework, leading to challenges in coordinating vertically and horizontally across national and sub-national levels.

For instance, cross-cutting matters such as climate adaptation and disaster risk management often involves numerous institutions and jurisdictions across the federal, state and local level. In the area of natural resources and forestry, Malaysia has pledged to maintain at least 50 percent of its land as forest and tree cover. However, land falls under the purview of state governments, which may have different development and conservation priorities. On the other hand, more states are also proactively developing their own climate strategies and policy instruments. These state-level priorities and initiatives need to be synchronised with federal targets and strategies to ensure cohesive and effective climate action across the country. In addition, a lack of policy harmonisation is observed in certain sectors, such as transportation, where there is a need to transition from an environment that promote affordable, mass-market and private vehicle ownership to a more holistic approach that supports green mobility and sustainable transport systems.

Despite growing recognition on the importance of climate adaptation for sustainable development, Malaysia's climate policies and actions remain unbalanced, with a predominant focus on mitigation over adaptation. Despite the increasing acknowledgment of the importance of climate adaptation within the framework of sustainable development, Malaysia's climate policies and actions are unbalanced between mitigation and adaptation; and have predominantly focused on the former. The government's emphasis on low-carbon incentives and enablers has been instrumental in advancing Malaysia's mitigation efforts, particularly in renewable energy and green technology. However, without a more strategic and proactive approach in climate adaptation, Malaysia can potentially lose its development gains including its low-carbon investments. The cost of inaction could be severe, as the impacts of climate change are already being felt and are expected to intensify in the future.

An electric bus operating in Kuala Lumpur.

Limited application and diffusion of low carbon technologies

Limited diversification of low carbon technology portfolio

Malaysia acknowledges that transition requires development of new technologies. Current low-carbon technology in Malaysia relies on a limited set of technologies, primarily solar and hydro, which account for 2.8% and 17.1% of RE installed capacity, respectively. Due to the limitations of RE sources in terms of intermittency and grid stability, there is a need to diversify our low carbon technology portfolio as a strategic approach to providing a balanced and comprehensive transition to a low carbon future. This can provide several benefits, including reducing risks, encouraging technological innovation, creating new market opportunities, and providing greater flexibility and adaptability. The National Energy Transition Roadmap and the National Energy Policy 2022–2040 acknowledges the need for diversification by incorporating new technologies for energy storage solutions (e.g., hydrogen and battery storage) to address system stability issues and carbon capture, utilisation, and storage (CCUS) facilities to assist in decarbonising industries, especially in hard to abate sectors.

Lack of green mobility access and ecosystem for the masses

The transport sector makes up 20% of total GHG emissions in Malaysia, largely from road transportation[27]. The government has recognised the need to transition towards a cleaner transportation system by setting a target of increasing the share of urban public transport and electric vehicles (EV) by 50% and 38%, respectively, by 2040 under the Low Carbon Nation Aspiration 2040. While the government is encouraging the adoption of EVs and investing in public transportation, notably the expansion of mass rapid transit and light rail transit in the Klang Valley, there is still a lack of a holistic green mobility system that is accessible, affordable, and safe for the masses nationwide. Most cities are still facing challenges in ensuring first- and last-mile connectivity to the public transport system. Greening the automotive sector remains a challenge without a fuel economy standard to ensure new vehicle fleets are less emissions-intensive moving forward. Additionally, the high costs associated with replacing existing fleets compound this challenge. Despite the increasing affordability of electric vehicles (EVs), they remain inaccessible to the masses due to the high cost of ownership and low confidence among road users, stemming from range anxiety caused by insufficient EV charging infrastructure nationwide. Moreover, the notable upfront cost discrepancy between electric two-wheelers (E2W) and internal combustion engine two-wheelers (ICE 2W) presents a further obstacle to widespread adoption.

Further need to strengthen human capital and data-driven decision making

Given the global push for decarbonisation, low-carbon industries offer significant opportunities for economic growth and employment. Skilled and knowledgeable human capital is crucial for driving research, development, operation, and maintenance of diverse low carbon and climate resilient technologies. Presently, there is a significant gap in the country's labour force and human capital development to ensure a sufficient pool of qualified professionals to support the deployment of these technologies, particularly nascent fields such as hydrogen and CCUS. The gap encompasses not only technological expertise but extends to policymakers, regulators, scientists, and entrepreneurs who play integral roles in steering the trajectory of low-carbon industries.

With the establishment of the Intergovernmental Panel on Climate Change (IPCC) as a climate science authority, the credibility and legitimacy of scientific knowledge on climate change have increased at an astounding rate. However, generating localised, trustworthy, and high-quality data to improve risk understanding and promote evidence-based decision-making for climate adaptation and resilience remains a significant challenge. Besides building capabilities and leveraging scientific understanding, there is an imperative need to utilise climate data in decision-making processes at all levels.

Need for a supportive ecosystem for climate friendly business practices

Carbon pricing instruments and carbon market

Carbon pricing has emerged as a popular policy tool to capture the external costs of greenhouse gases and encourage investments in renewable energy and low-carbon technologies, often through carbon taxes, compliance emission trading schemes or hybrids. As of 2023, there are 73 carbon pricing instruments implemented globally with the share of global GHG emissions covered around 23%[28]. By putting a price on carbon, policymakers send a strong market signal and create economic incentives for businesses to reduce their carbon footprint and invest in cleaner alternatives, thereby supporting the growth of low-carbon markets including renewable energy projects and lowering technology costs through economies of scale and innovation.

Malaysia has made some progress in these areas by launching its first voluntary carbon market, the Bursa Carbon Exchange (BCX) in 2022. This exchange allows companies to trade technology-based and nature-based carbon credits through standardised contracts. To enhance forestry sector role in climate action, the Malaysia Forest Fund was established to implement the REDD Plus Finance Framework, offering two innovative financing mechanisms: the Forest Conservation Certificate (FCC) and the Forest Carbon Offset (FCO), the latter enabling offsetting of carbon emissions through forest conversation. At the time of writing, the National Carbon Market Policy is in development as the main instrument to support the implementation of compliance and voluntary carbon markets.

Despite these positive move, Malaysia doesn't have a formal carbon pricing mechanism to limit GHG emissions and further accelerate economic decarbonisation, explore revenue opportunities for reinvestment in low-carbon growth and nature-based solutions, and prepare for emerging cross-border carbon taxes from other jurisdictions. In this regard, Malaysia is currently conducting a feasibility study on

implementing carbon pricing mechanisms that suit its requirements and circumstances.

Meanwhile, Article 6 of the Paris Agreement underscores the significance of implementing market mechanisms, such as carbon trading, to support emission reduction projects while fostering sustainable development. It calls for the establishment of a framework for cooperative international efforts among parties to address climate change. However, challenges remain regarding the authorisation, formulation and implementation of rules, including issues related to reporting, double counting, environmental integrity, market manipulation, and the quality of emission reductions. Dialogues and negotiations on Article 6 is expected to continue at the UNFCCC level, aimed at refining its operational aspects.

In Malaysia, there's an urgent need for a system and infrastructure that can integrate the domestic and international carbon markets that is interoperable with the UNFCCC system. This integration should encompass mechanisms for corresponding adjustments on Internationally Transferred Mitigation Outcomes (ITMO) and credits traded within the global carbon market. As the demand for carbon credits increases, it is important for Malaysia's carbon market development to uphold high standards of integrity. Alongside providing clear guidelines for market players, it's crucial to establish robust environmental and social safeguards, particularly to protect the rights of local and indigenous communities, and addressing jurisdictional challenges on carbon. At the same time, the country needs to also prevent the risks of overselling to not jeopardised its own Nationally Determined Contributions (NDCs).

Climate financing gap

There is generally a large gap in financing climate action globally, especially in developing countries such as Malaysia. While the Organisation for Economic Co-operation and Development (OECD) states that the US$100 billion climate finance target was likely met in 2023[29], loan-based assistance largely prevails (making up more than two-thirds of climate financing), as ongoing issues surrounding increasing adaptation finance and mobilising loss and damage finance. Malaysia has received RM364.8 million external financing[30], however estimates from NETR alone indicate RM1.2–1.3 trillion in investments needed by 2050; hence international sources need to be utilised in order for Malaysia to meet the financial needs for the low-carbon transition and climate resilience development.

Currently, climate and environmental-related initiatives are funded largely through public financing. Public budgetary allocations remain low in absolute terms (<1% of the total GDP), and relative to the significant potential benefits that biodiversity and ecosystem services can generate[31]. One major challenge is the absence of a dedicated fund specifically allocated for climate change. Moreover, the technology costs associated with renewable energy and emerging technologies remain relatively high, further impeding progress. Additionally, banks and financial institutions perceive low-carbon investments as risky, which hampers their willingness to provide adequate financing options. There is a need to accelerate the capacity and enabling environment in Malaysia's financial industry to support the green economy.

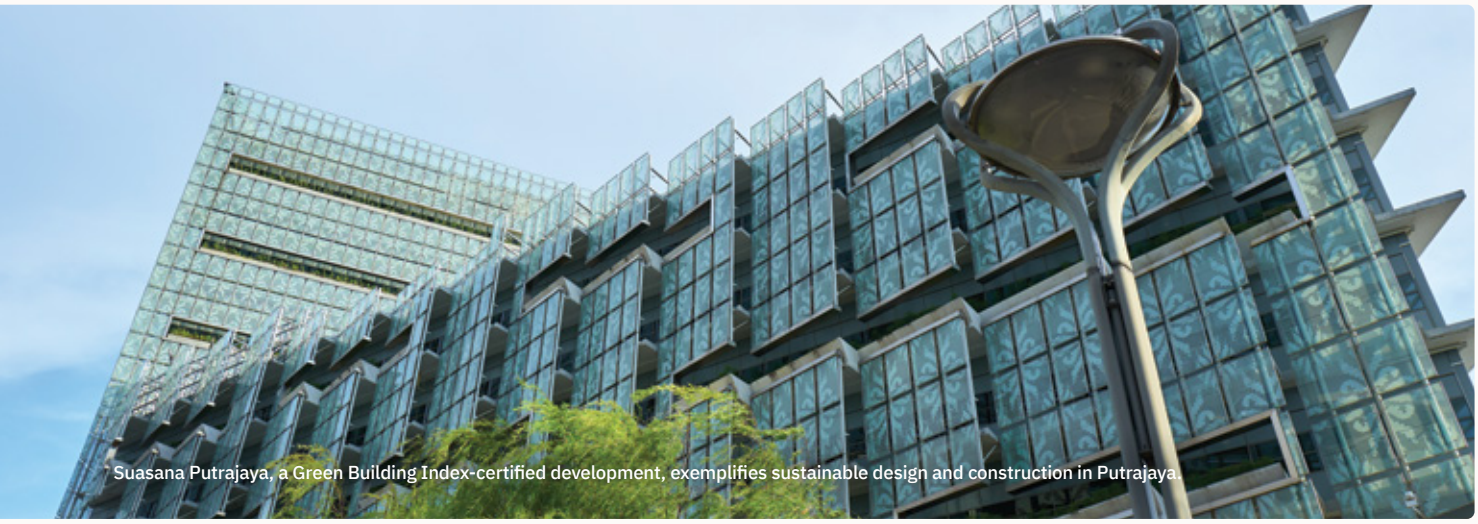
Penetration of green products

Despite the government's efforts to provide tax incentives for green technology since 2014, the lack of green product penetration in Malaysia remains a problem with multiple obstacles. Firstly, the high cost of testing and green certification creates financial obstacles for businesses attempting to introduce sustainable products to the market. The costs associated with obtaining certifications inhibit widespread adoption. Second, the voluntary nature of green certification limits the reach and impact of green initiatives. Third, the scarcity of locally produced and affordable green goods exacerbates the problems, as the domestic market lacks a robust supply chain and consumer awareness.

Domestic green financing and investments

Malaysia's low uptake of domestic green financing and investments remains an issue with multiple obstacles despite a growing trend of green products. While Malaysia has provided various economic instruments and financial incentives to boost deployment of low-carbon technology, only 42 precent of financial institutions have made commitments on net-zero[32]. The increasing efforts being made by the JC3 in assisting financial institution to integrate climate and environmental risks in development of climate strategies and the introduction of Climate Change and Principle Based Taxonomy (CCPT) by Bank Negara Malaysia provides further opportunities to fund climate resilience measures including renewable energy and energy efficiency.

Other government through initiatives such as the Fit-in Tariff system, Large Scale Solar, Net Energy Metering as well as schemes such as the Green Technology Financing Scheme (GTFS), Green Investment Tax Allowance (GITA), and Green Income Tax Exemption (GITE) puts the same pressure on businesses. However, the skewness of financing towards renewable energy projects neglects other crucial solutions, such as climate adaptation technologies. The low take-up was also hampered by other factors related to lack of information, expertise, confidence, awareness and bureaucracy, such as the complexity of applying for these schemes. Finally, without hard instruments such as carbon pricing to provide strong market signals, most business lack the incentives to take up the existing financial schemes offered by the government and drive the growth of low-carbon industries.



Suasana Putrajaya, a Green Building Index-certified development, exemplifies sustainable design and construction in Putrajaya.

New and emerging issues

Transition risks from shifting to low carbon economy

The global responses to climate change have seen one of the largest shifts in society and economy, towards a low carbon and climate resilient future. These shifts pose various risks to countries as economies and businesses have to be aligned with the changes in relation to policy, regulation, technology and the market.

Policy and regulatory risks may directly impact society, especially vulnerable groups. There's a need to ensure transitions are implemented in a just manner. Policy and regulatory risks that occur when changes in the rules governing climate change changes may result in stricter policies and regulations thus increasing the overall cost of doing business. These may include the establishment of carbon pricing instruments, reporting obligations as well as formulating legislation which needs to take into account the societal impacts. Significantly, compliance and enforcement have span beyond Malaysia's border with countries implementing climate measures that has a significant influence on regional, multilateral and bilateral trade relations.

Possible stranded assets as the economy transitions needs to be examined carefully. The accelerated pace of change has also seen drastic introduction of technology to support transition to a low carbon economy. This includes transitioning to more and diversified renewable energy technology, significant utilisation of energy efficiency as well as green and low carbon mobility solutions. In turn, these may lead to substitution of existing products and services and impact the valuation of existing and future assets and technologies.

Finally, the shift in the investment landscape, changes in consumer preferences and demand are expected to become more prevalent as the market move towards low carbon solutions. This includes notable preferences by large asset managers and institutional investors to commit to investments that are grounded in science-based targets to implement climate action as well as those with net-zero targets. Increasing demand for climate friendly products and services creates new market for green and low carbon technologies while carbon intensive products and services face reputational risks and unfavourable stakeholder actions such as boycotts. The introduction of a carbon pricing instrument or an establishment of a carbon market could also potentially spur investments and mobilise financing.

As a trading nation and an oil producing country, navigating these transition risks require a strategic response. Policy, regulatory, technological and market shifts are likely to significantly impact Malaysia's economy. Currently, 20-30% of Malaysia's economy rely on sectors which will likely face transition risks which include oil and gas, power generation, metals and mining[33]. Bank Negara Malaysia estimated that the country stands to lose US$ 65.3 billion worth of annual export revenue if it fails to comply to these transition risks[34]. This is also in response to the global energy transition which will require less reliance on the oil and gas sector.

Just transition

Just transition refers to the concept of ensuring that the shift from high-carbon to low-carbon economies is fair and equitable for all stakeholders, particularly workers and communities that may be affected by the changes. Driven by its international obligations and global shift towards sustainability as manifested in regional cooperation frameworks and trade agreements such as the US Indo-Pacific Economy Framework (IPEF), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), and the Asia-Zero Emission Community, Malaysia's aspiration to shift to a low-carbon economy will bring multifaceted challenges. While this transition can bring new employment prospects and spur the green economy, the adoption of cleaner technologies and the influx of new industries can lead to job displacement in high-emitting sectors such as energy, oil and gas, and the automotive sector. There is a need to strengthen labour policies that incorporate the principles of a just transition, focusing on upskilling existing workers and developing a new workforce to meet the demands of a high-value green economy. As the world transitions to a low-carbon future, there is a need to ensure that certain groups are not discriminated against, resulting in the loss of jobs and sources of livelihood, while propelling green growth as a new engine for job creation.

Pursuing climate resilient development

Although Malaysia is on the right track on the way to pursue a climate resilient development, mitigation and adaptation are still being treated as separate in policy, planning and public discourse; not embedded and integrated in a holistic manner. Climate change is strongly interlinked with other sectors and all societal aspects including energy, biodiversity, health, industry, food, water, built environment, housing and transport. Therefore, shifting towards climate resilience development requires navigating the complex interactions between these different systems so that action in one area does not have adverse effects elsewhere and opportunities are harnessed to cut greenhouse gas emissions, conserving biodiversity and reducing exposure and vulnerability to climate hazards. Overcoming these challenges requires strong political will, cooperative governance, evidence-based decision-making, financial resources, technological innovation, public awareness and participation.

The Bakun hydroelectric dam on the Balui River, Sarawak.

Direction and integration of climate policies

Given the multifaceted and cross-sectoral nature of climate change, many existing policies had indirectly incorporated climate change elements. Sectoral policies that support mitigation and adaptation efforts that have been formulated by other Ministries are listed in the table below. These policies, as well as future policies on climate change are not isolated but interwoven with the NCCP 2.0. This integrated approach not only amplifies the effectiveness of individual policies but also synchronise targets to ensure policy coherence across all sectors.

Recently, several complementary sectoral policies and targets have been produced which contributes to Malaysia's climate goals. For instance, the Power Sector Development Plan 2020-2038, which set an ambitious target to achieve 31 per cent of the total installed capacity on renewable energy by 2025 and 40 per cent by 2035. Additionally, in March 2023, the government launched the National Energy Transition Roadmap, aiming for RE capacity to reach 70% by 2050 as means to boost economic growth by attracting investments from multinational companies and enabling cross-border energy trade.

Policy	Ministry
Malaysia Green Technology Policy 2009	Ministry of Natural Resources and Environmental Sustainability
Malaysia Policy on Forestry 2021	Ministry of Natural Resources and Environmental Sustainability
National Agricommodity Policy 2021-2030	Ministry of Plantation and Commodities
National Agrofood Policy 2021-2030	Ministry of Agriculture and Food Security
National Coastal Zone Physical Plan 2	Ministry of Housing and Local Government
National Energy Policy 2022-2040	Ministry of Economy
National Energy Transition Roadmap	Ministry of Economy
National Industrial Master Plan 2030	Ministry of International Trade and Industry
National Physical Plan 4	Ministry of Housing and Local Government
National Policy on Biological Diversity 2022-2030	Ministry of Natural Resources and Environmental Sustainability
National Policy on the Environment 2002	Ministry of Natural Resources and Environmental Sustainability
National Science, Technology and Innovation Policy 2021-2030	Ministry of Science, Technology and Innovation
National Urbanisation Policy 2 2016-2025	Ministry of Housing and Local Government
National Water Resources Policy 2012	Ministry of Natural Resources and Environmental Sustainability

Edra Melaka Power Plant in Masjid Tanah, Melaka.

The NCCP 2.0 is the first document in Malaysia to collate the main initiatives on climate change that are being implemented in Malaysia. The policy provides the basis and jurisdiction for the Ministry of Natural Resources and Environmental Sustainability to pursue the development of other relevant policy instruments. This includes the legislative bill on climate change and market-based instruments such as the carbon market. In driving the transition towards a low-carbon economy and climate-resilient development, the NCCP 2.0 sets a broad direction and scope for climate policies in Malaysia. The NCCP 2.0 serves as guidance not only to Ministry of Natural Resources and Environmental Sustainability but also other ministries, agencies and relevant stakeholders involved or impacted by climate change.

The Policy does not prescribe detailed and sector-specific targets, except for the Nationally Determined Contribution (NDC) and net-zero target. The specific targets and implementation will be materialised through strategies such as the Long-Term Low Emission Development Strategy (LT-LEDS), Nationally Determined Contribution (NDC) Roadmap and sectoral plans such as the National Energy Transition Roadmap (NETR) and the National Policy on Biological Diversity; as well as action plans for respective ministries. This intentional flexibility in implementation aligns with the dynamic nature of the policy, which is without a fixed implementation period and remains a living document open to periodic amendments and reviews.

In essence, while the NPCC 2009 aimed to **mainstream climate action** into the national development agenda and insituitions, the NCCP 2.0 aspires to guide the country's **transition towards a low carbon economy and climate resilient development** through various policy instruments with clear national targets and aspirations.

Institutional arrangement on climate action in Malaysia

Institutionally, the National Green Technology and Climate Change Council was enhanced with the introduction of the Majlis Tindakan Perubahan Iklim Negara (MTPIN) in 2023. The MTPIN is now the highest decision-making body for discussing and setting the direction of climate change policies and actions. It provides strategic direction on green economic growth, catalysing green technology, and promoting low-carbon growth at all levels, particularly within federal and state governments. To ensure policy coherence and coordinate effective actions, the Council's membership includes key Federal Ministers and state Chief Ministers. Below the MTPIN, operational matters on climate change are guided and endorsed by the National Steering Committee on Climate Change (NSCCC), chaired by the Secretary General of the Ministry of Natural Resources and Environmental Sustainability.

At the state level, the *Mesyuarat Menteri-Menteri Alam Sekitar dan Ahli-ahli Majlis Mesyuarat Kerajaan Negeri yang Bertanggungjawab Mengenai Alam Sekitar* (MEXCOE), chaired by the Minister of Natural Resources and Environmental Sustainability, serves as a vital platform. It facilitates coordination and cooperation between the Federal government and state administrations to foster stronger and more streamlined climate action.

Other governmental committees also discuss climate change matters, including the National Energy Council, the National Physical Planning Council, and the National Water Council.

Chapter 4 /

The Structure and Key Elements of the Policy

Policy Statement

Pursuing the transition to a low-carbon economy and enhancing climate resilience in line with national sustainable development agenda and international climate commitments.

The **National Climate Change Policy 2.0 (NCCP 2.0)** is informed by recent developments, international commitments and our national development agenda, which includes the five-year development plan. In accordance with Malaysia's international commitments, the Policy incorporates the essential elements of Malaysia's national obligations under the United Nations Framework Convention on Climate Change (UNFCCC), including the Paris Agreement and the essence of the 17 Sustainable Development Goals, in particular SDG 13: Climate Action.

Policy Objectives

Building upon the previous policy, the policy objectives of the NCCP 2.0 aim to:

01.

Meet its climate targets,

which include reaching net-zero GHG emissions by 2050[1] and to meet current and future updated Nationally Determined Contributions as well as recent developments and other international obligations.

02.

Mainstream climate action

in decision making process which results in the improvement of socio-economic wellbeing and to strengthen accountability of all stakeholders.

03.

Catalyse the means of implementation of climate action

by integrating responses into national policies, plans and programmes.

04.

Undertake risk-based planning

in building climate resilience to better harness opportunities and reduce negative impacts of climate change.

[1] This target is subjected to the outcome of the Long-Term Low Emissions Development Strategy (LT-LEDS)

Principles

The Policy will be guided by four key principles to ensure that the goals and key actions support climate action in Malaysia.

01.

Common but Differentiated Responsibility and Respective Capabilities

Malaysia's participation at the international level will be done in an equitable manner in accordance with the Paris Agreement's principle of "common and differentiated responsibilities with respective capabilities in the light of national circumstances".

02.

Just and Equitable Transition

Transitioning to low carbon economy and climate resilient development should protect livelihoods of the rakyat, vulnerable groups and affected economic sectors to ensure no one is left behind.

03.

Whole of Society and Nation Approach

Planning and implementation of climate action must be carried out in a participatory, inclusive and transparent manner with all segments of society.

04.

Integrated and multi-sectoral solutions

Climate mitigation and adaptation interventions should strive to deliver co-benefits to society, building on the best available science and local knowledge.

Objectives, Strategic Thrusts, Strategies and Key Actions

The NCCP 2.0 has a set of objectives, strategic thrusts, strategies and key actions to guide Malaysia's transition towards a low carbon economy and climate resilient development. The strategic thrusts-strategies-key actions framework is designed to achieve the policy objectives. There are four objectives within the policy which interlinks to the five strategic thrusts, supported by 15 strategies and 90 key actions **(Figure 3).**

Strategic Thrust 1 aims to strengthen climate governance and institutional capacity.

This is to ensure effective regulation and policies for climate action in line with Malaysia's goal of achieving net-zero GHG emissions by 2050[2] and meeting our National Determined Contributions. To accomplish this, 3 overarching strategies and 12 key actions have been identified. These strategies encompass creating a robust legal framework, establishing an effective governance structure, enhancing institutional capacity and strengthening monitoring, reporting and verification (MRV) mechanism. The catalytic initiative, which is a legal instrument on climate change is essential to enhance accountability and streamline responsibilities.

Strategic Thrust 2 centres on achieving low-carbon development that aligns with Malaysia's national sustainable development agenda and international commitments.

In this thrust, efforts will be enhanced in decarbonising key sectors and conserving natural sinks to reduce the nation's greenhouse gas emissions. The approach involves 2 strategies and 23 key actions to reduce emissions in key sectors and enhancing carbon sinks and reservoirs. All actions are aligned with Malaysia's sectoral policies and plans, guided by the Nationally Determined Contributions (NDC) Roadmap and Action Plan and the Long-term Low Emissions Development Strategy (LT-LEDS).

[2] This target is subjected to the outcome of the Long-Term Low Emissions Development Strategy (LT-LEDS)

Strategic Thrust 3 emphasis climate resilience and adaptation measures that benefits socio-economic and development goals.

Malaysia will adopt a risk-based approach to integrate adaptation into policies, sectoral plans, and development agendas – guided by the Malaysia National Adaptation Plan (MyNAP). Adaptation interventions will be risk-informed and evidence-based according to the best available scientific knowledge and data. This thrust comprises 4 strategies and 26 key actions.

Strategic Thrust 4 focuses on scaling up blended financing and enabling a sustainable market to increase involvement of private sectors for a green economy.

Under this thrust, the 2 strategies and 17 key actions will catalyse market-enabling instruments, including but not limited to carbon pricing, carbon markets, blended financing, incentives, and enhanced support for businesses.

Strategic Thrust 5 prioritises collaborative climate action through domestic partnerships and international cooperation, aligned with global climate goals.

Malaysia remains committed to proactive collaboration with partners to realise its climate aspirations, actively participating in international goals and processes on climate change, including the UNFCCC. This strategic thrust also seeks to fortify domestic partnerships with all stakeholders and intensifying support for society and vulnerable communities; as part of whole-of-nation approach in climate action. This thrust has 4 strategies 14 key actions.

Enablers

The National Climate Change Policy 2.0 has four main enablers on cross-cutting issues to support the implementation of key actions across the five strategic thrusts:

1. Human Capital

The implementation of the NCCP 2.0 require substantial capabilities, capacities, and competencies. This challenge is most pronounced in the context of decarbonisation and energy transition, which include transitioning workers to new employment opportunities and align existing job profiles with growing demand for green skills in low carbon and new technologies such as hydrogen and carbon capture, storage and solutions. The enhancement of human capital also entails strengthening our scientific and research capabilities to harness advanced scientific insights to improve climate modelling and data analytics in promoting risk-informed planning and implementation. Efforts under the NCCP 2.0 will complement other relevant sectoral plans in green reskilling, enhancing capacity and increasing awareness in society as part of a holistic approach in advancing the national low-carbon economy and climate resilient agenda.

2. Financing & Investment

Significant funding and financing is required to implement the NCCP 2.0. In this regard, Strategic Thrust 4 has already specifically addressed the need to scale up blended financing and enabling market creation, in particular to increase greater involvement from private sectors to stimulate a green economy. In addition, the government will continue to facilitate and promote financing towards mitigation and adaptation through various fiscal instruments and sources, including financing schemes, tax allowance, tax exemption, green sukuk issuances and budgetary allocations to relevant ministries.

3.
Technology, Innovation & Infrastructure

Technology and innovation are critical enablers to achieve the objectives of the NCCP 2.0. Efforts will be intensified to create a conducive environment for fostering innovation in the public and private sector for technologies such as clean energy sources, low-carbon technologies, efficient water technologies and practices, resilient agriculture, circular economy, and disaster risk reduction. In addition, this also involves substantial investments in supportive infrastructure for energy transition, green mobility, sustainable waste management, as well as resilient infrastructure, including flood-resistant designs and advanced water management systems. More support will be provided in encouraging innovation, research and development, streamlining technology transfer, and implementing local content requirements to ensure local sourcing. Collaboration among government, the private sector and research institutions will be promoted to harness the potential of technology and infrastructure solutions for a low carbon and climate-resilient future.

4.
Communication, Education & Public Awareness

The NCCP 2.0 calls for a whole-of-society approach and shared responsibility in climate action that requires harnessing commitments from government bodies, private sectors, research institutions, academia, civil society organizations (CSOs), local communities and individuals. Efforts in communication, education, public awareness, and outreach (CEPA) will be increased to enhance awareness and education on climate action, fostering behavioural and lifestyle changes while enabling adaptation to the adverse effects of climate change. The crucial role of CSOs will be further strengthened, leveraging on their experience and community networks to ensure an inclusive transition to a low-carbon future and to prepare for the impacts of climate change, leaving no one behind in the collective efforts. Information accessibility for climate action will be strengthened, including effective communication of government initiatives to stakeholders.

Kuala Lumpur, Malaysia.

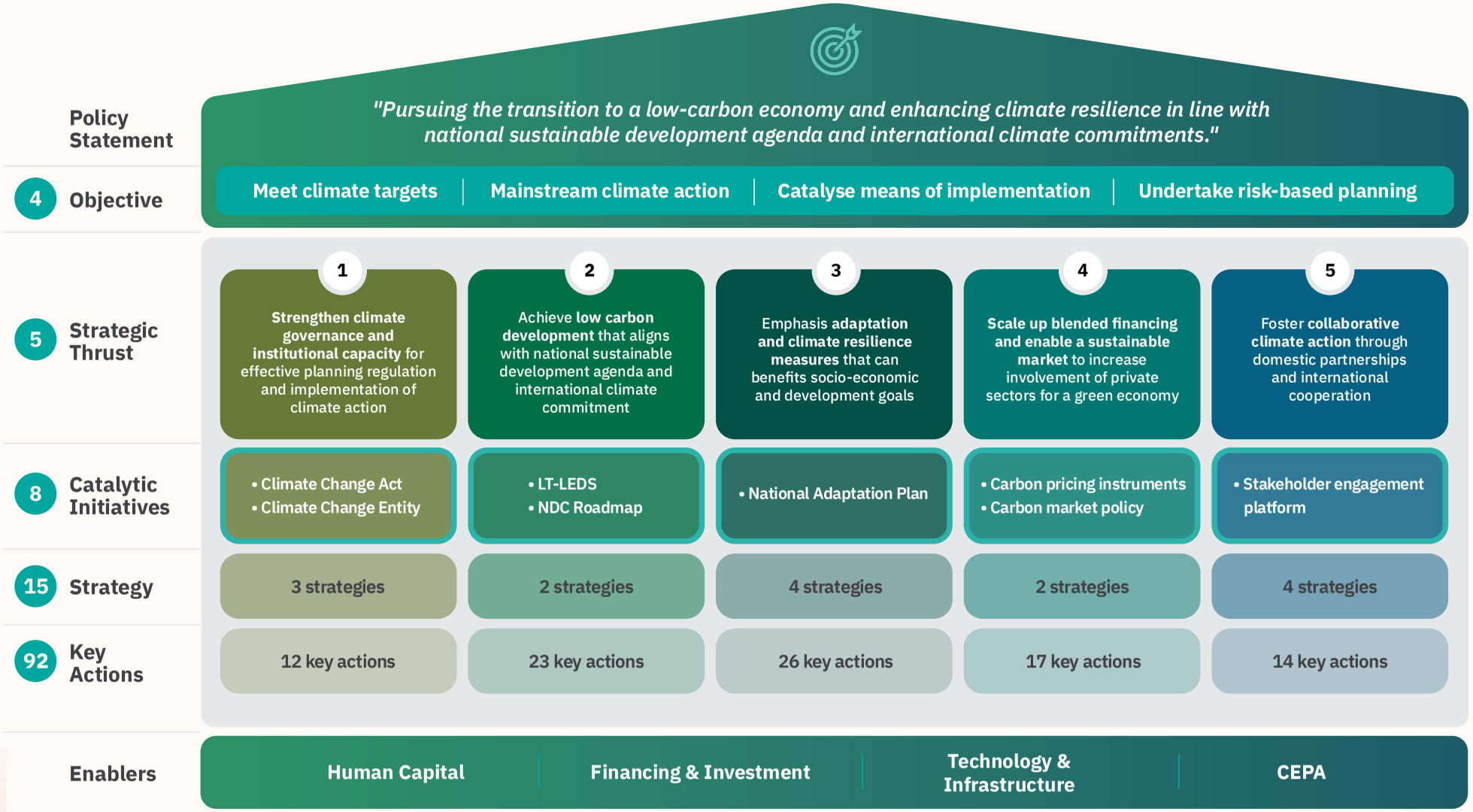


Figure 3: Framework of the National Climate Change Policy 2.0

Under the five strategic thrusts, there are a total of 15 strategies and 92 key actions. Out of the 92 key actions, there are 8 catalytic initiatives to bring transformative changes that help lead to more significant policy outcomes **(Figure 4).**

STRATEGIC THRUSTS	STRATEGIES	CATALYTIC INITIATIVES
Strategic Thrust 1: To strengthen climate governance and institutional capacity for effective planning, regulation and implementation of climate action	Strategy 1: Create a comprehensive legal framework to regulate climate action Strategy 2: Establish an effective institutional framework and governance structure to enhance management of climate action Strategy 3: Enhance institutional capacity and data systems towards an informed climate action	Climate Change Act Climate Change Entity
Strategic Thrust 2: To achieve low carbon development that aligns with national sustainable development agenda and international climate commitment	Strategy 1: Reduce greenhouse gas emissions in key sectors Strategy 2: Increase the capacity of carbon sinks and reservoirs of greenhouse gases	Nationally Determined Contributions (NDC) Action Plan & Road Map Long-Term Low Emissions Development Strategy (LT-LEDS)
Strategic Thrust 3: To emphasise adaptation and climate resilience measures that benefits socio-economic and development goals	Strategy 1: Implement risk-based planning and strategies to integrate adaptation across policies, sectoral and development plans Strategy 2: Undertake integrated approach and best practices to maximise co-benefits Strategy 3: Use best available science and data to support evidence-based and risk-informed actions and decision making Strategy 4: Intensify research and development to better understand climate risks and develop innovative climate solutions	National Adaptation Plan

Figure 4: Strategies and catalytic initiatives of the National Policy on Climate 2.0

STRATEGIC THRUSTS	STRATEGIES	CATALYTIC INITIATIVES
Strategic Thrust 4: Scale up blended financing and enabling a sustainable market to increase involvement of private sectors for a green economy	Strategy 1: Stimulate a green economy through market enablers	Carbon pricing instruments Carbon market policy
	Strategy 2: Scale up domestic and investments to combat climate change	
Strategic Thrust 5: Foster collaborative climate action through domestic partnerships and international cooperation	Strategy 1: Contribute to international goal and process on climate change including the UNFCCC	Stakeholder engagement platform
	Strategy 2: Promote cooperation in line with national circumstances through bilateral and multilateral frameworks, institutions and mechanisms	
	Strategy 3: Strengthen partnerships to synergise efforts in harnessing opportunities and reduce negative impacts of climate change	
	Strategy 4: Enhance community awareness, preparedness and adaptive capacity to build climate resilience in an inclusive manner	

National Climate *Change*
Policy 2.0

Chapter 5 /

Strategic Thrusts

Strategic Thrust 1:

To strengthen climate governance and institutional capacity for effective planning, regulation and implementation of climate action

As climate change intensifies, there is an urgent need for improved governance, regulation, and coordination of climate action. The cross cutting and complex nature of climate action, which spans various sectors and ministries, has presented significant challenges for effective coordination and implementation. At the sub-national level, the challenge are exacerbated by the misalignment between national and state-level approaches to managing land and natural resources. Additionally, there is a lack of an overarching framework for both mitigation and adaptation to guide effective policy and planning at the state level. In response, Malaysia has taken a significant step forward by establishing the Malaysian Climate Action Council, which serves as the apex body for providing policy and strategic guidance.

Looking ahead, this policy reinforces the imperative to strengthen our climate governance and institutional capacity through several strategies and catalytic initiatives. These initiatives include developing a specific legislation on climate change and establishing a dedicated an entity for climate action. Enhanced coordination will be emphasised at the sub-national level, as land, water, and natural resources-essential components of climate resilience-fall under the jurisdiction of state governments. Therefore, it is crucial to empower state and local institutions and build their capacity to effectively address climate challenges.

This strategic thrust consists of three strategies and 12 key actions.

Strategy 1	Strategy 2	Strategy 3
Create a comprehensive legal framework to regulate climate action	**Establish an effective institutional framework and governance structure to enhance management of climate action**	**Enhance institutional capacity and data systems towards an informed climate action**

Strategy 1: Create a comprehensive legal framework to regulate climate action

Currently, Malaysia lacks a comprehensive climate change legal framework. While numerous legislations are relevant to climate change, there is currently no overarching climate change act or clear legal mechanisms specifically addressing it. Moving forward, this Policy emphasises a shift towards governing and establishing rules for climate action by defining key responsibilities, obligations and procedures to coordinate implementation in an integrated manner.

KEY ACTION	DESCRIPTION
ST1S1KA1 (Catalytic Initiative)	Develop a regulatory framework on climate change to regulate and coordinate climate action across all sectors and levels to fulfil climate obligations and commitments
ST1S1KA2	Promote integration of climate actions into all relevant policies and legislations in sectors identified in NDC, LT-LEDS, MyNAP and any other related sector

Strategy 2: Establish an effective institutional framework and governance structure to enhance management of climate action

This strategy will prioritise the establishment of a well-organised and efficient system of institutions and governance mechanisms to enhance the management and oversight of climate-related efforts and initiatives. This will involve the implementing a catalytic initiative to create a dedicated entity responsible for overseeing climate action in Malaysia, including the implementation of this Policy. Additionally, it will focus on strengthening the institutional structure to support a robust legal framework for addressing climate change.

KEY ACTION	DESCRIPTION
ST1S2KA1 (Catalytic Initiative)	Strengthen current institutions and mechanisms to coordinate the national climate change agenda together with international obligations, such as establishing a dedicated entity for climate change
ST1S2KA2	Strengthen the governance and coordination of climate change legal framework across federal and state levels including by establishing appropriate institutional structure
ST1S2KA3	Strengthen sectoral institutions and capacities to govern climate action towards meeting Malaysia's NDC and climate targets, including sectors identified in the NDC, LT-LEDS, MyNAP and other related sectors
ST1S2KA4	Enhance disaster risk governance to ensure effective operations in all phases of the disaster management cycle to improve preparedness in view of more frequent and extreme weather events
ST1S2KA5	Enhance the governance of water and coastal sectors by implementing and exploring suitable institutional frameworks and governance structures to enhance climate resistance, such as the Integrated River Basin Management
ST1S2KA6	Strengthen the capacity and capabilities of local authorities to enable effective planning, implementation, monitoring and evaluation of low carbon and climate resilience initiatives

Padas River, Beaufort, Sabah.

BOX 1:

Malaysia's Nationally Determined Contributions to the Paris Agreement

In 2021, Malaysia has submitted its second updated Nationally Determined Contributions to the United Nations Framework Convention on Climate Change (UNFCCC). As part of the revised NDC, Malaysia pledged to unconditionally reduce 45% of economy-wide carbon intensity (against GDP) by 2030 compared to the 2005 levels. Five main sectors were selected which is energy, industrial processes and product use, waste, agriculture and LULUCF. In addition, Malaysia has included seven greenhouse gases in the scope, which include methane and nitrous oxide in addition to carbon dioxide.

As part of its updated NDC, Malaysia has included accompanying information on its adaptation strategies; focusing on the management of water resources and security, coastal resources, agriculture and food supply, urban and infrastructure resilience, public health as well as forestry and biodiversity. In addition, key adaptation cross sectoral areas are included on 1) disaster risk management; 2) climate financing support, technology transfer and capacity building and 3) monitoring and evaluation mechanism.

Source: Malaysia's Update of Its First Nationally Determined Contribution, UNFCCC

Strategy 3: Enhance institutional capacity and data systems towards an informed climate action

This strategy aims to strengthen institutional capacity and improve the data collection framework by investing in data infrastructure, capacity development, and fostering collaboration among diverse stakeholders. The dedicated entity on climate change is expected to play a pivotal role as the central hub for gathering, managing and analysing crucial data while establishing higher standards. Additionally, there will be a concerted effort to increase human capital and promote green jobs to meet the growing demand for skilled labour in low-carbon development and achieve net-zero aspirations.

KEY ACTION	DESCRIPTION
ST1S3KA1	Strengthen national GHG emissions inventory through establishing a data repository for collecting, analysing, managing and reporting GHG emissions data
ST1S3KA2	Improve climate modelling, monitoring and evaluation systems to support low carbon and climate resilience planning
ST1S3KA3	Communicating climate-related data including climate hazards through a multi-hazard data centre that promotes efficient data and information sharing, improving accessibility and meeting various stakeholder needs
ST1S3KA4	Enhance technical capacity and collaboration among the local and international research community to generate and understand best available science on climate change

Solar panels in Semporna, Sabah.

Strategic Thrust 2:

To achieve low carbon development that aligns with national sustainable development agenda and international climate commitment

In contributing to the mitigation of global climate change and pursuing low carbon development, the largest extent of the challenge is in decarbonising critical sectors to meet international commitments and addressing the transition risks associated with climate change. This challenge is uniquely intricate for Malaysia, given its status as an oil and gas-producing country. As a developing nation, Malaysia also relies on fossil fuels as the bedrock of its economy. Notably, the energy sector, responsible for approximately 78% of the nation's greenhouse gas emissions as of 2020, will be the primary focus for reducing greenhouse gas emissions. However, Malaysia possesses a valuable natural endowment in the form of substantial forest and tree cover, which stands at 54.58% as of 2020[35]. This natural asset functions as a vital carbon sink, offsetting about two-thirds of the country's greenhouse gas emissions—an indispensable component in our trajectory towards achieving net-zero.

The strategic thrusts presented herein delineate a two-pronged approach aimed at achieving a net- zero GHG emissions nation by 2050. This overarching strategy will be shaped by the Long-Term Low Emissions Development Strategy (LT-LEDS), emphasising extensive decarbonisation strategies and carbon dioxide removals, both nature- and technology-based. The roadmap for the immediate

future, leading up to 2030, will be guided by the Nationally Determined Contributions (NDC) Roadmap and Action Plan, focusing on curbing emission intensity in key sectors. All key actions are aligned with Malaysia's existing sectoral plans, notably the National Energy Transition Roadmap (NETR) and the Low Carbon Nation Aspiration 2040.

This strategic thrust consists of two strategies and 23 key actions.

Strategy 1	Strategy 2
Reduce greenhouse gas emissions in key sectors	**Increase the capacity of carbon sinks and reservoirs of greenhouse gases**

Strategy 1: Reduce greenhouse gas emissions in key sectors

This overarching strategy outline the measures to reduce sectoral emissions across energy, transportation, agriculture, waste management, industrial processes, and product use. It will be guided by two catalytic initiatives. First is the **NDC roadmap,** aimed at reducing emission intensity by 45% by 2030 compared to 2005 levels[3], which contains short-term and readily attainable climate mitigation measures. Second, the **LT-LEDS** will outline long-term strategies and establish science-based targets to ensure that our mitigation and decarbonisation pathways are grounded in scientific evidence. Malaysia has already embarked on an energy transition away from fossil fuel-based systems, with appropriate plans and initiatives in place, such as the National Energy Transition Roadmap and Low Carbon Nation Aspiration 2040. This transition will also necessitate new technological solutions, such as hydrogen and batteries including the human capital and skills necessary to explore, develop, and maintain them. Additionally, the policy focuses on creating a holistic green mobility system by augmenting the public transport modal share and facilitating electric vehicle adoption. The scope also extends to sustainable urban planning, effective waste management, promoting a circular economy, reducing agricultural emissions and curbing methane emissions.

CODE	KEY ACTIONS
ST2S1KA1 (Catalytic Initiative)	Develop, track and review the **Nationally Determined Contributions (NDC) Roadmap and Action Plan** to chart the actions needed to achieve Malaysia's climate action goals.
ST2S1KA2 (Catalytic Initiative)	Implement the **Long-Term Low Emission Development Strategy (LT-LEDS)** to meet Malaysia's aspiration to achieve net-zero GHG emissions by 2050

[3] This target is contingent upon future revisions of Malaysia's updated NDC under the Paris Agreement as of 2021

CODE	KEY ACTIONS
ST2S1KA3	Enhance efforts to increase renewable energy (RE) capacity and percentage of generated electricity from renewable energy to meet relevant national targets
ST2S1KA4	Reduce dependency on coal power plants to meet targets based on the National Energy Transition Roadmap
ST2S1KA5	Develop just transition strategies to address risks of energy transition including impacts on jobs, labour and community and upskilling workforce in green jobs
ST2S1KA6	Study the usage of fossil fuel sources for the transition to a low-carbon economy, such as natural gas and liquid natural gas, alongside the potential of new energy sources such as hydrogen.
ST2S1KA7	Shift towards the use of public transportation by encouraging and facilitating greater public transport ridership, mode shift and addressing issues related to first-last mile connectivity, including the aim of achieving the relevant transport modal share[4]
ST2S1KA8	Promote modal and fuel shift for enhanced green mobility by improving public accessibility to electric vehicles and developing relevant standards for fuel efficiency
ST2S1KA9	Promote the use of next-generation vehicles in line with policies such as National Automotive Policies and Low Carbon Mobility Blueprint
ST2S1KA10	Scale up biofuel usage, including implementing relevant policies such as the National Biodiesel Programmes for transportation and industrial sector
ST2S1KA11	Enhance measures to increase energy efficiency to achieve the targets of National Energy Efficiency Action Plan and National Energy Transition Roadmap
ST2S1KA12	Encourage cities to develop plans to reduce emissions, aligned with relevant policies such as the National Low Carbon Cities Masterplan
ST2S1KA13	Encourage adoption of green and resilient city concepts in urban and townships planning, such as the low-carbon city, sponge city, smart city and transit-oriented development through planning guidelines and nature-based solutions
ST2S1KA14	Implement relevant initiatives in solid waste management such as separation at source; incentives for recycling activities to achieve solid waste recycling rate in line with sectoral targets[5]

[4] The Low Carbon Aspirations set a 40-60 public-private transport modal split by 2025
[5] Under the 12th Malaysia Plan, Malaysia has set a target of achieving national recycling rate of 40 per cent by 2025

CODE	KEY ACTIONS
ST2S1KA15	Enhance the adoption of circular economy and sustainable consumption and production for waste management including promoting mechanisms such as Extended Producer Responsibility (EPR), user-pay and polluter-pay principles, and self-regulation among industries.
ST2S1KA16	Enhance efforts to reduce GHG emissions of the agro-food and Agricommodity sectors by facilitating improvements in output efficiency and adoption of sustainable agriculture practices.
ST2S1KA17	Strengthen measures to reduce methane emissions, including reduction of intensity at upstream level and for waste, oil and gas production, the agriculture sector and other relevant sectors
ST2S1KA18	Support the diffusion and promotion of new low -emission technologies and energy resources, including low-carbon hydrogen production and next-generation vehicles

BOX 2:

NATIONAL ENERGY TRANSITION ROADMAP (NETR)

The National Energy Transition Roadmap (NETR) was launched in 2023 to guide the country's energy transition away from fossil fuel-based systems. The NETR emphasises balancing climate mitigation and the need to bolster net socioeconomic values such as GDP and job creation to support Malaysia's aim to achieve net-zero GHG emissions by 2050. The roadmap has four strategic pillars, 12 strategies, 31 action plans and five cross-cutting enablers which aims to reduce at least 10 metric ton of GHG emissions per year and targeting a 70 per cent share of renewable electricity capacity by 2050, a significant leap from the current 25 per cent.

The NETR is guided by a broad spectrum of energy transition levers which include energy efficiency, renewable energy, hydrogen, bioenergy, green mobility, and carbon capture, utilisation and storage (CCUS) that can potentially generate an estimate of MYR 25 billion in investments. The breadth of NETR aspirations demonstrates Malaysia's determination to tackle the energy transition from multiple angles while keeping options open to innovation and emerging technologies.

Source: National Energy Transition Roadmap, Ministry of Economy

Strategy 2: Increase the capacity of carbon sinks and reservoirs of greenhouse gases

Malaysia's greatest asset in contributing to curbing global climate change has been in its rich natural assets, which play a pivotal role in its decarbonisation pathways and long-term climate ambitions. The country has established the direction and policy framework to safeguard the green lung of the country through policies such as Malaysia Policy on Forestry (2021) and National Policy on Biological Diversity 2022-2030. This strategy aligns with existing sectoral policies in promoting the protection, conservation and restoration of Malaysia's nature and ecosystems, both land and oceans, towards achieving net-zero GHG emissions by 2050. This will be pursued through promoting sustainable forest management, expanding protected area systems and sustainable land practices. Besides natural carbon sinks, decarbonisation efforts will also be supplemented by a responsible deployment and utilisation of emerging technologies such as carbon capture, utilisation and storage (CCUS) which the NETR has identified as one of the energy transition levers.

CODE	KEY ACTIONS
ST2S2KA1	Conserve and enhance land and marine-based carbon sinks though maintaining and extending forest and tree cover including a representative system of protected areas and other effective area-based conservation measures (OECM)
ST2S2KA2	Scale up ocean-based mitigation action by strengthening protection, conservation, and restoration of marine and coastal ecosystems, such as mangroves and seagrass beds
ST2S2KA3	Enhance efforts to conserve forest sustainably, including limiting the total oil palm cultivated areas (in line with the current cap[6])
ST2S2KA4	Promote sustainable land management practices that increase soil carbon sequestration including afforestation, reforestation and sustainable agricultural practices
ST2S2KA5	Support the diffusion and investment in emerging technologies, such as carbon capture, utilisation and storage (CCUS), particularly in hard-to-abate sectors

[6] In 2019, the government has announced the policy to limit total oil palm cultivated area at 6.5 million hectares until 2023

Community mangrove restoration efforts in Gelang Patah, Johor.

Strategic Thrust 3:

To emphasise adaptation and climate resilience measures that benefits socio-economic and development goals

Towards ensuring a climate resilient development, a major challenge lies in managing the physical risks associated with global climate change. According the IPCC 6th assessment report, the average global temperature have reached 1.1°C above the pre-industrial levels, and it was observed that global temperatures for most months in 2023 were 1.5°C above the pre-industrial levels[36]. While the imperative to adapt to climate change is clear, the uncertainty in fully understanding the extent of the impacts remains high due to the high complexity of the climate and environment system. How Malaysia copes with inevitable climate change will involve not only specific adaptation actions but enhancing our adaptive capacity and resilience to reduce, adjust to, and, if possible, take advantage of the consequences of these changes.

Moving forward, Malaysia will adopt a risk-based approach that aims to integrate adaptation seamlessly across all policies, sectoral plans, and development agendas. But taking into cognisance that undertaking comprehensive planning is a long-term approach, immediate actions must be taken to curb climate change impacts that's already affecting our economy and communities. In this regard, integrated approach and best practices will be undertaken to fortify our defences against climate impacts but also provide co-benefits with climate mitigation and broader development goals. More importantly, our measures will be anchored on best available science and data to foster evidence-based and risk-informed actions across whole of society. Research and developments will be intensified to generate knowledge for risks understanding and build solutions.

This strategic thrust consists of four strategies and 26 key actions.

Strategy 1	Strategy 2	Strategy 3	Strategy 4
Implement risk-based planning and strategies to integrate adaptation across policies, sectoral and development plans	Undertake integrated approaches and best practices to maximise co-benefits	Use the best available science and data to support evidence-based and risk-informed actions and decision-making	Intensify research and development to better understand climate risks and develop innovative climate solutions

Strategy 1: Implement risk-based planning and strategies to integrate adaptation across all policies, sectoral and development plans

To proactively anticipate and manage current and future climate risks, it is crucial to implement government-led risk-based planning to ensure a resilient development. **The National Adaptation Plan** will guide this strategic process to integrate adaptation across all relevant policies and plans. In addition, this policy will emphasise expanding vulnerability assessments to include high-risk regions and critical sectors, developing new risk frameworks, and boosting adoption of existing frameworks. From water resource management to flood risk reduction and drought preparedness, the focus will be placed on managing water-related hazards. In the meantime, adaptation planning will be prioritised in critical sectors including water resources, land use planning, coastal resources, infrastructure planning, and cities to build resilience against physical risks such as flood, sea level rise, drought, landslide, heat and saltwater intrusion.

CODE	KEY ACTIONS
ST3S1KA1 (Catalytic Initiative)	Formulate and implement the **National Adaptation Plan** while promoting its integration into national, sectoral and sub-national development plans and programmes
ST3S1KA2	Integrate climate adaptation and disaster risk reduction by aligning relevant policies and plans such as the National Adaptation Plan and the National Policy on Disaster Risk Reduction

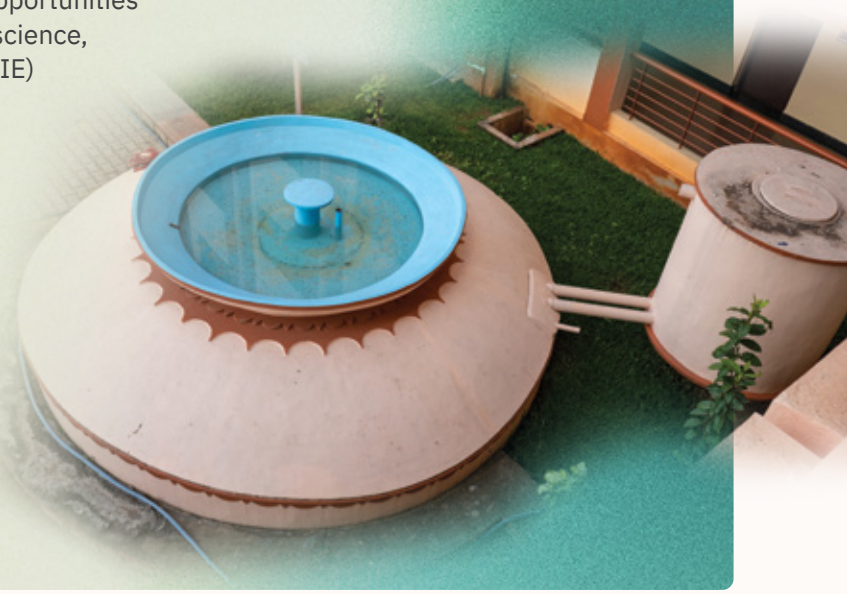
CODE	KEY ACTIONS
ST3S1KA3	Undertake a comprehensive national climate risks assessment to identify and understand the potential risks and vulnerabilities from climate change impacts in various sectors and regions including: • water and coastal resources; • agriculture and food security; • forestry and biodiversity: • infrastructure: • energy and built environment; and • public health
ST3S1KA4	Explore mechanisms and tools to integrate climate change considerations at every level of the planning process
ST3S1KA5	Develop and implement strategies and tools to manage water-related risks such as flood, drought, sea level rise and storm surge to enhance water resource management, services and security, aligned with the Water Sector Transformation Agenda 2040 and Climate Change Adaptation Framework for Water Sectors
ST3S1KA6	Promote a shift towards climate-resilient infrastructure by facilitating risk-informed planning and design, such as considering climate risks in infrastructure projects, specifically flood and coastal protection measures, water infrastructure, energy systems, public health, disaster facilities, agriculture facilities and transportation
ST3S1KA7	Strengthen the governance of coastal and marine areas to unlock the potential of blue economy in moving towards integrated, effective and sustainable management of ocean resources
ST3S1KA8	Promote climate resilience landscape and seascape by integrating climate risks into land use and spatial planning, ecological connectivity and marine spatial planning
ST3S1KA9	Enhance capacity building to undertake climate vulnerability and adaptation assessment in relevant sectors
ST3S1KA10	Enhance planning and implementation of climate and disaster resilient cities among local authorities by widespread adoption of relevant guidelines and standards.

BOX 3:

WATER SECTOR TRANSFORMATION 2040

The Water Sector Transformation 2040 (WST 2040) is a national agenda that aims to transform the water sector into a dynamic and vibrant economic sector that can contribute significantly to the national GDP, provide good quality and affordable water to the Rakyat, generate new job opportunities and facilitate resilient development of science, technology, innovation, and economy (STIE) and research, development, innovation, and commercialisation (RDIC) in the sector.

Focusing on four main agendas, WST 2040 seek to 1) ensure continuous and sustainable water supply for the people; 2) improving the financial sustainability of the national water industry; 3) improving access to water supply and the efficiency of water industry operations; and 4) enhancing the resilience of the water sector against climate change.



Source: Water Sector Transformation 2040

Strategy 2: Undertake integrated approach and best practices to maximise co-benefits

Immediate actions are required to address the increasing scale and frequency of natural hazards exacerbated by climate change. These hazards, including floods, droughts, heat waves, sea level rise, and storm surges, threaten Malaysia's economy, food security, infrastructure, natural environment, and communities. The policy will emphasise an integrated approach and best practices as part of its adaptation interventions that can deliver co-benefits to the greatest extent feasible. Rather than relying solely on conventional technological and infrastructure solutions, our natural assets will be leveraged as much as possible in this strategy by deploying nature-based solutions at scale to continue providing fundamental ecosystem services for building climate resilience. The promotion of climate-resilient and sustainable practices in water resources management, coastal and marine resource management, agriculture, biodiversity, and land use will be intensified.

CODE	KEY ACTIONS
ST3S2KA1	Promote and upscale ecosystem-based adaptation by conserving, restoring and sustainably manage ecosystems including coastal habitats to ensure provision of key ecosystem services for mitigation and adaptation including green cover expansion and watershed, wetlands and river conservation
ST3S2KA2	Enhance diversification and exploration of alternative water sources such as off river storage, groundwater, coastal reservoir, underground water storage, rainwater harvesting and other sources suited to local characteristics
ST3S2KA3	Increase sustainability of water resources and flood resilience by promoting application of nature-based and alternative technology, protecting water catchment areas and adoption of sustainable drainage and tidal gate systems at the local level
ST3S2KA4	Undertake suitable coastal protection measures such as grey-green infrastructure and ecosystem-based adaptation in vulnerable areas depending on local characteristics
ST3S2KA5	Promote sustainable agriculture practices that improve climate resilience, biodiversity conservation, soil health, productivity, waste reduction, and crop efficiency, particularly in climate-vulnerable areas, including through advanced farming techniques and technology
ST3S2KA6	Increase protection of wildlife against climate change such as establishing wildlife reserves, preserving genetic diversity and enhancing human-wildlife conflict management in disasters
ST3S2KA7	Promote responsible use of ocean and fisheries resources through appropriate measures designed to increase climate resilience and enhance the livelihoods of coastal communities
ST3S2KA8	Pilot smart technologies adoption and innovation in reducing carbon emissions, climate adaptation, waste management and disaster risk reduction

Impacts of flooding and landslide in Karak, Pahang.

Strategy 3: Utilise the best available science and data to support evidence-based, risk-informed actions and decision-making for climate action.

Climate actions are strongly determined by climate science. Significant progress was made in understanding the impacts of climate change in Malaysia on critical sectors such as water resources, agriculture, natural resources, and public health, as well as forecasting climate trends through continuously improved climate modelling. Despite the abundance of available information and tools, there is a need to utilise this science more in our climate response, from planning and implementation to decision-making, especially in disaster risk management, agriculture, and water resources management at all levels and with all stakeholders. In the future, this policy will prioritise ensuring that adaptation measures are grounded in scientific evidence.

CODE	KEY ACTIONS
ST3S3KA1	Enhance the data collection, analysis and management of hazard, disaster and climate risk-related data to improve risks understanding
ST3S3KA2	Strengthen climate-disaster readiness and response by enhancing integrated weather and flood forecasting, multi-hazard early warning system and moving towards impact-based forecasting
ST3S3KA3	Enhance adoption of indices and tools in all sectors including the agriculture sector to strengthen agricultural resilience to guide crop suitability, management practices and infrastructure planning
ST3S3KA4	Explore indices, mechanisms and tools to monitor water stress level, sea level rise and coastal inundation for river basins to guide adaptation planning and actions in water resources management and river basin management

Pantai Jambu Bongkok, Marang, Terengganu.

Strategy 4: Intensify research and development to better understand climate risks and develop innovative solutions to enhance climate preparedness

Significant research has been conducted in Malaysia by the government and various Malaysian stakeholders, such as academia, civil society, and the private sector. These efforts will be intensified further to generate the best available science that is high confidence, granular, and credible in order to guide climate action in critical areas such as agriculture, food security, ecosystems, and human health. Additionally, research and development for innovation and climate solutions will be bolstered to stimulate and increase the uptake and adoption of products, technologies and services developed from R&D for climate mitigation and adaptation.

CODE	KEY ACTIONS
ST3S4KA1	Enhance, intensify and implement a national R&D agenda and coordinating mechanism to oversee R&D activities on climate change including in water, coastal, estuary, cities & infrastructure, agriculture, forestry and public health
ST3S4KA2	Promote agricultural research and innovations to increase varieties of climate-resilient and disease-resistant food crops, commercial crops, livestock breeds, fish as well as technologies and practices for sustainable farming systems
ST3S4KA3	Intensify research to understand climate change impacts on biodiversity including ecosystems, species, genetic diversity and pollinations
ST3S4KA4	Intensify research on health impacts of climate change including climate-sensitive diseases, particularly vector-, water-, zoonotic- and air-borne diseases as well as illness due to negative environmental impacts

Hawksbill Sea Turtle in Sipadan Island, Sabah.

Strategic Thrust 4:

Scale up blended financing and enable a sustainable market to increase involvement of private sectors

Globally, there is generally a large gap in financing climate action. As a developing nation, Malaysia faces a similar challenge in securing adequate financial resources to transition to low-carbon development and tackle the adverse impacts of climate change. It is estimated that the country requires RM 350 billion in investments to achieve net-zero[7] and an estimated RM 392 billion over the next 50 years to adapt and mitigate climate change impacts[8]. In 2021 alone, the country experienced losses amounting to RM 6.1 billion due to devastating floods[9], which requires increasing pressure on government coffers for relief, restoration, and building back better. Furthermore, Malaysia, as an upper-middle-income country, has reduced its reliance on international finance for its own development as it is no longer a net recipient of Official Development Assistance (ODA).

Moving forward, innovative ways of financing climate action will be introduced, particularly by increasing the involvement of the private sector, which is increasingly aware of climate risks. This policy emphasises the expansion of domestic green financing through several strategies, with the primary focus on market enablers to stimulate the green economy, which will be achieved through the implementation of carbon pricing instruments. Additionally, the policy aims to scale up domestic financing and investments by encouraging private sector participation and establishing a sustainable financing framework.

This strategic thrust consists of two strategies and 17 key actions.

Strategy 1

Stimulate a green economy through market enablers

Strategy 2

Scale up domestic financing and investments to combat climate change

[7] Bank Negara Annual Report 2022
[8] The Star (2023) M'sia needs almost RM400bil to adapt to climate change, says Nik Nazmi. https://www.thestar.com.my/news/nation/2023/07/13/m039sia-needs-almost-rm400bil-to-adapt-to-climate-change-says-nik-nazmi
[9] DOSM

Strategy 1: Stimulate a green economy through market enablers

This strategy aims to stimulate the green economy through market enablers such as enhancing policy and regulations, changing incentive structures, and deploying market-based mechanisms. This policy will assist in taking steps to correct the market failures related to climate change by exploring the feasibility of carbon pricing instruments that capture the external costs of greenhouse gas emissions. Moving forward, there is a need for clear direction, rules, and guidelines on Malaysia's strategy for carbon pricing. Efforts will also be enhanced to ensure responsible carbon trading, particularly in response to the growing interest from the private sector in technological and nature-based carbon removal solutions as part of their net-zero and sustainability strategies. This policy will facilitate and guide Malaysia's carbon market in promoting market creation for low-carbon and climate-resilient products through the actions.

CODE	KEY ACTIONS
ST4S1KA1 (Catalytic Initiative)	Explore the feasibility of **carbon pricing instruments** which includes various carbon pricing options and implementation
ST4S1KA2 (Catalytic Initiative)	Develop a **national policy for carbon market** to provide guidance on carbon trading including on international compliance and voluntary carbon markets
ST4S1KA3	Develop strategies to address the impacts of international carbon pricing policies, such as those addressing carbon leakage, to Malaysia
ST4S1KA4	Establish a system to coordinate the domestic and international carbon market, including for undertaking corresponding adjustments on Internationally Transferred Mitigation Outcomes (ITMO) in line with the UNFCCC
ST4S1KA5	Support the adoption of ESG practices through reporting and climate risk disclosures for Micro, Small and Medium Enterprises to build competitiveness as to greening the supply chain
ST4S1KA6	Enhance availability, accessibility and quality of climate data to improve the quality and accuracy of climate disclosures and reporting
ST4S1KA7	Develop and publish harmonised climate and sustainability reporting guidelines, comparable to international standards, to support the adoption of ESG and climate-related disclosures, taxonomies, and reporting procedures
ST4S1KA8	Encourage industries to explore low carbon business activities through provision of training, business opportunities and suitable incentives

ST4S1KA9	Develop a sustainable financing mechanism for REDD+ implementation and other recognised mechanisms
ST4S1KA10	Explore rationalisation of environmentally inefficient subsidies including fossil fuel subsidies

Strategy 2: Scale up domestic financing and investments to combat climate change

This strategy aims to scale up domestic green financing by integrating climate change into macroeconomic policies, fiscal planning and mechanisms, budgeting, investment management, and procurement practices. Malaysia has reached a notable milestone by launching the world's first sovereign sustainability sukuk and enhancing the financial industry's capacity for integrating climate risk assessments into financial decision-making processes. Moving forward, concerted efforts will be intensified to unlock and expand green finance, facilitating substantial invest in a low-carbon and resilient future.

CODE	KEY ACTIONS
ST4S2KA1 (Catalytic Initiative)	Explore mechanisms to fund the implementation of climate action, including to strengthen institutions and mechanism such as establishing and operating a dedicated entity for climate change
ST4S2KA2	Mobilise innovative financing instruments to facilitate financial flow to meet climate action needs
ST4S2KA3	Enhance capacities of financial institution to evaluate and approve climate-related project proposals
ST4S2KA4	Explore innovative fiscal mechanisms to incentivise state governments to conserve natural assets for climate action such as forest conservation certificates and forest carbon offsets
ST4S2KA5	Strengthen market enabling instruments such as promoting green procurement and fiscal incentives
ST4S2KA6	Conduct periodic financial needs assessments for Malaysia to achieve its adaptation and mitigation needs
ST4S2KA7	Enhance processes to increase and monitor climate expenditure in federal Budgets such as determining the need for a climate budget tagging

BOX 4:

Ecological Fiscal Transfer

Ecological Fiscal Transfer (EFT) is a government fiscal policy and mechanism of transferring public revenue between levels of government within a country, based on agreed ecological indicators and indices. Since 2019, Malaysia has introduced the EFT as part of annual budget cycles to incentivise state government in the protection of Permanent Reserved Forest and Protected Areas. The government has increased the annual allocation of EFT; from RM 70 million in 2022, to RM 150 million in 2023 and MYR 200 million in 2024.

The EFT mechanism is currently institutionalised under the *Pemberian Berdasarkan Tahap Pembangunan Ekonomi, Infrastruktur dan Kesejahteraan Hidup* (TAHAP). The government has aimed to enhance the implementation of EFT by incorporating them further into legal and institutional frameworks, which has been highlighted by several policies such as the National Policy on Biological Diversity 2022 – 2030.

Source: Budget speeches, biofin.org, National Policy on Biological Diversity 2022 – 2030

Strategic Thrust 5:

Foster collaborative climate action through domestic partnerships and international cooperation

Climate change is a transboundary environmental issue as emissions released in one region can have impacts across borders. As a collective action problem, climate change requires international cooperation. Furthermore, climate change has increasingly become an issue of high diplomacy, requiring strategic responses at the international level. Throughout its history, Malaysia has maintained a commitment to combat climate change, dating back to the Kyoto Protocol and continuing with the Paris Agreement.

This policy reaffirms Malaysia's role in contributing to global climate change efforts, guided by the principles of common but differentiated responsibilities and respective capabilities in the light of national circumstances. Internationally, Malaysia will remain actively engaged in established treaties such as the United Nations Framework Convention on Climate Change (UNFCCC) while fostering cooperation through bilateral and multilateral frameworks and institutions. Domestically, Malaysia will strengthen partnerships and collaboration with all stakeholders, centred on the whole of nation approach to climate action. At the same time, efforts will increase on educating and enhancing the adaptive capacity of communities in regard to climate resilience.

This strategic thrust consists of four strategies and 14 key actions.

Strategy 1	Strategy 2	Strategy 3	Strategy 4
Contribute to international goal and process on climate change including the UNFCCC	Promote cooperation in line with national circumstances through bilateral and multilateral frameworks, institutions and mechanisms	Strengthen partnerships to synergise efforts in harnessing opportunities and reduce negative impacts of climate change	Enhance community awareness, preparedness and adaptive capacity to build climate resilience in an inclusive manner

Strategy 1: Contribute to international goal and process on climate change including the UNFCCC

As a Party to the UNFCCC and its legally binding instruments, Malaysia has implemented and fulfilled its reporting obligations and subscriptions to the various frameworks developed to address climate change. This Policy seeks to carry this mandate further by perpetually enhancing our capacity to meet the current and future requirements under the UNFCCC.

CODE	KEY ACTIONS
ST5S1KA1	Enhance active participation with climate change related international (UNFCCC) and regional fora to contribute to international goals and processes on climate change
ST5S1KA2	Strengthen the capacity on climate change reporting based on international standards to continuously meet the requirement of UNFCCC including enhanced transparency framework and global stocktake
ST5S1KA3	Strengthen reporting mechanism for participation in the international carbon market, including developing the necessary infrastructure to support carbon market development, ensuring alignment with the UNFCCC requirements
ST5S1KA4	Facilitate responses to cross border movements of goods and services affected by extraterritorial policies such as the EU Carbon Border Adjustment Mechanism (CBAM) and the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

Strategy 2: Promote cooperation in line with national circumstances through bilateral and multilateral frameworks, institutions and mechanisms

Despite being a developing country, Malaysia's latest Nationally Determined Contributions are unconditional upon receiving financial, technology transfer and capacity building from developed countries. Nonetheless, the high level of scale and ambition require support from international sources. Towards this end, Malaysia will continue to work with its partners through bilateral and multilateral partnerships towards achieving its climate targets and pursuing climate resilient development.

CODE	KEY ACTIONS
ST5S2KA1	Leverage multilateral and bilateral financing, as well as investment, through international and regional economic cooperation.
ST5S2KA2	Enhance international collaboration on low carbon technology and innovations
ST5S2KA3	Enhancing collaborations that will assist Malaysia in fulfilling national climate change obligations and commitments including capacity building and technical support

Strategy 3: Strengthen partnerships to synergise efforts in harnessing opportunities and reduce negative impacts of climate change

In line with the whole of nation approach to climate action, this strategy reaffirms Malaysia to broaden and deepen the scope of engagement with various stakeholders towards sharing of knowledge, expertise, technology, and financial resources. Malaysia will continue to enhance consultation and cross sectoral collaborations in enhancing dialogue, planning, implementation including on localised climate solutions.

CODE	KEY ACTIONS
ST5S3KA1 (Catalytic Initiative)	Establish stakeholder engagement and consultation platforms with the private sectors, CSOs, think tanks, academia, as well as representatives from vulnerable communities including indigenous peoples, women, youth and persons with disabilities, aimed at enhancing dialogue in climate action
ST5S3KA2 (Catalytic Initiative)	Support institutions at the subnational level with climate change agendas, such as state action councils, to enhance coordination of climate action between federal and state level
ST5S3KA3	Strengthen cross-sectoral collaboration on climate action between ministries, agencies and government-related bodies towards a more coordinated and effective policy implementation
ST5S3KA4	Enhance collaboration on climate solutions with non-government stakeholders including CSOs, NGOs and private sectors as advisory and delivery partners

Strategy 4: Enhance community awareness, preparedness and adaptive capacity to build climate resilience in an inclusive manner

Addressing climate change necessitates mobilising commitments and actions at all levels of society. This strategy aims to induce behavioural shifts by elevating awareness and providing education about the pressing nature of climate change. Simultaneously, it prioritises adaptive interventions using a community-based approach, bolstering the resilience of local communities in adapting to the severe impacts of climate change while advocating for community-based natural resource management. In line with the principles of a just transition, these efforts ensure that all segments of society are equipped to withstand the effects of climate change.

CODE	KEY ACTIONS
ST5S4KA1	Engage and educate the public and communities on green practices and environment sustainability such as through public touchpoint projects
ST5S4KA2	Promote community-based natural resource management such as community-based agroforestry, agroecology practices and urban farming
ST5S4KA3	Enhance local community preparedness and recovery for climate-related hazards and disasters, taking into account the requirements of vulnerable groups and gender perspective

Disaster relief efforts for flood victims in Taman Sri Muda, Selangor.

National Climate *Change*
Policy 2.0

Chapter 6 /

Policy Delivery

The NCCP 2.0 establishes a strategic framework for Malaysia's climate policies and serves as a overarching guide for various ministries, agencies, and stakeholders. The delivery of the policy will be driven by implementing instruments including a legislative climate change bill and market-based mechanisms such as the carbon market. While the policy articulates overarching goals such as the Nationally Determined Contribution (NDC) and the net-zero target, specific sectoral targets and implementation will be delineated through plans such as the Long-Term Low Emission Development Strategy and the NDC Roadmap and Action Plan. As a living document, the NCCP 2.0 will be subject to periodic reviews to ensure it is responsive to emerging needs and circumstances.

Regulatory and financing instrument

The NCCP 2.0 provides the means for the government to promulgate the National Climate Change Act as a dedicated legal instrument to implement the policy. The Act will enable the establishment of policies, measures, and actions to address climate change in Malaysia and fulfil international obligations. Some of these actions includes establishing a governance system including a dedicated climate change entity, enhancing data and information disclosure, ensuring effective operation of the national carbon market, and establishing financial and funding mechanisms.

Financing the implementation of the NCCP 2.0 will leverage a range of innovative mechanisms. This will include the establishment of a dedicated climate change funding mechanism, the implementation of climate budget tagging, and the exploration of suitable economic and financing instruments to support the national climate change agenda. Additionally, substantial funds for climate-related and carbon projects is anticipated to be generated through carbon market mechanisms, as developed and guided by the National Policy on Carbon Market. The revenue from carbon credit transactions is anticipated to generate additional income, attract both domestic and international investors, boost GDP and create employment opportunities in green jobs.

The Prime Minister Office, Putrajaya

Institution and governance

The proposed entity on climate change will be the main body overseeing the implementation and coordination of the NCCP 2.0. The entity's mandate will advise, develop, coordinate, and implement the national climate change agenda and actions. The Majlis Tindakan Perubahan Iklim Negara (MTPIN), chaired by the Prime Minister and attended by state Chief Ministers, will continue to serve as the apex platform providing policy guidance and direction on the climate change agenda. Implementation will be supported through multi-national platforms such as the National Decarbonisation Committee, the National Committee on Energy Transition, the National Physical Planning Council, and the National Biodiversity Council by undertaking climate-related initiatives that supports NCCP 2.0. At the state level, the Meeting of Ministers of the Environment (MEXCOE) will facilitate further communication between Federal and State government representatives in charge of natural resources. Multi-stakeholder consultation platforms will be strengthened to enhancing dialogue in climate action among stakeholders to enhance partnership and assist in the delivery of the Policy.

Monitoring and review mechanism

To evaluate the overall progress of NCCP 2.0 a monitoring and review mechanism will be established for two main objectives. Firstly, to continuously track and assess the outcomes of Malaysia's climate action efforts, ensuring alignment with the specified key actions outlined in the policy. Secondly, to evaluate the effectiveness of the policy instruments in achieving the objectives of the NCCP 2.0 and national climate change agenda, making necessary adjustments to strengthen the policy framework and implementation. This approach treats the NCCP 2.0 as a living document, subject to regular reviews and updates to maintain its relevance, effectiveness, and responsiveness to new challenges and opportunities in the evolving climate change landscape.

MRT Train in service from Putrajaya to Kuala Lumpur.

Glossary

Adaptation	Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or makes use of beneficial opportunities.
Blended financing	Strategic combination of different sources of funding, often combining public and private capital, to support development projects or initiatives.
Blue economy	Sustainable use of ocean-based resources and innovations, bringing inclusive economies and societal benefits, while conserving the integrity of natural ecosystems.
Carbon sink	Carbon reservoirs and conditions that take-in and store more carbon (i.e., carbon sequestration) than they release. Carbon sinks can serve to partially offset greenhouse gas emissions. Forests and oceans are large carbon sinks.
Carbon Capture, Utilisation and Storage (CCUS)	The process of capturing carbon dioxide (CO2) emissions from fossil power generation and industrial processes for storage deep underground or re-use.
Climate resilient development	Development that integrates adaptation measures and their enabling conditions with mitigation to advance sustainable development for all.
Co-benefits	The positive effects that a policy or measure aimed at one objective might have on other objectives, thereby increasing the total benefits for society or the environment.
Decarbonisation	Reducing the amount of greenhouse gas emissions that a society produces, as well as increasing the amount that is being absorbed.
Disaster risk reduction	Concept and practice of reducing disaster risks through systematic efforts to analyse and reduce the causal factors of disasters.
Early warning systems	The set of technical, financial and institutional capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare to act promptly and appropriately to reduce the possibility of harm or loss.
Ecosystem-based adaptation	The use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change.
Ecosystem services	Ecological processes or functions having monetary or non-monetary value to individuals or society at large. These are often classified as (1) supporting services such as productivity or

	biodiversity maintenance, (2) provisioning services such as food or fibre, (3) regulating services such as climate regulation or carbon sequestration, and (4) cultural services such as tourism or spiritual and aesthetic appreciation.
Exposure	The presence of people livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.
Extreme weather events	Any rare and/or unexpected destructive weather phenomena that is at the extreme of historical distribution.
Greenhouse gases (GHGs)	Gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of terrestrial radiation emitted by the Earth's surface, the atmosphere itself and by clouds and causes the greenhouse effect.
Hazard	The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
Just transition	Transitioning to a low carbon economy and climate resilient development in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind.
Loss and damage	Harms resulting from sudden-onset events (climate disasters, such as floods) as well as slow-onset processes (such as sea level rise) that results in economic and non-economic losses.
Low-carbon economy	An economy that has minimal output of greenhouse gas emissions into the atmosphere.
Mitigation	Human interventions to reduce the emissions of GHGs by sources or enhance their removal from the atmosphere by "sinks".
Nationally Determined Contributions (NDCs)	Non-binding pledges that describe efforts by each country to cut emissions and adapt to climate change impacts. The Paris Agreement requires each Party to prepare, communicate and maintain successive nationally determined contributions (NDCs) that it intends to achieve.
Net-zero GHG emission	Achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere.
Paris Agreement	A legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France on 12 December 2015 to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels."

Physical risks	Risks that arises from acute (event-driven) and chronic (long term shift) climate-related events that damage property, reduce productivity, and disrupt trade.
Protected area	A legally established land or water area that is regulated and managed to achieve specific conservation objectives.
United Nations Framework Convention on Climate Change (UNFCCC)	International environmental treaty which aims to stabilise the greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interferences with the climate system.
REDD Plus (REDD+)	Reducing emissions from deforestation and forest degradation, carbon sequestration/removal through, conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.
Resilience	Ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organisation, and the capacity to adapt to stress and change.
Risk-based planning	Strategic approach that involves assessing, prioritising and mitigating potential climate risks to inform policy and decision-making.
Slow-onset events	Risks and impacts that occurs gradually and often associated with: increasing temperatures; desertification; loss of biodiversity; land and forest degradation; glacial retreat and related impacts; ocean acidification; sea level rise; and salinisation.
Sustainable development	Mode of growth that meets the needs of the present without compromising the ability of future generations to meet their own needs, balancing economic, social, and environmental considerations for long-term well-being.
Transition risks	Risk that occurs as a result of adjustment to a low-carbon economy due to changes in public policy and strategy, legislative and regulatory framework, technological advancements, and/or shift in consumer and investor behaviour.
Vulnerability	Degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes.
Wellbeing	A state of existence that fulfils various human needs, including material living conditions and quality of life, as well as the ability to pursue one's goals, to thrive, and feel satisfied with one's life.

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