
مجليس كبغسءن ڤراوبهن ايكليم
نكارا بروني دارالسلام
Brunei Darussalam National Council
on Climate Change
داسر كبغسءن ڤراوبهن ايكليم
نكارا بروني دارالسلام
BRUNEI DARUSSALAM NATIONAL CLIMATE CHANGE POLICY

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Volume 1

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This policy was prepared by the Climate Policy Drafting Committee (CPDC) coordinated by the BCCS. Members of the working group, who each represent participating ministries and departments of the Government of Brunei Darussalam and other organisations, discussed and agreed to use certain data and to orientation of this policy. These may differ from the data and methodologies normally used in each country.

The gap and scenario analysis for the projection of greenhouse gas (GHG) emissions was adopted using Massachusetts Institute of Technology (MIT) Global Change Program methodology (https://globalchange.mit.edu/research/research-projects/pathways-paris).

This policy is a live document on which BCCS will continuously revise at regular intervals.

داسر كبڬساءن ڤراوبهن ايكليم

نكارا بروني دارالسلام

BRUNEI DARUSSALAM NATIONAL CLIMATE CHANGE POLICY



KEBAWAH DULI YANG MAHA MULIA PADUKA SERI BAGINDA
SULTAN HAJI HASSANAL BOLKIAH MU'IZZADDIN WADDAULAH
IBNI AL-MARHUM SULTAN HAJI OMAR 'ALI SAIFUDDIEN SA'ADUL KHAIRI WADDIEN,
SULTAN DAN YANG DI-PERTUAN NEGARA BRUNEI DARUSSALAM

Petikan Titah

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SULTAN DAN YANG DI-PERTUAN NEGARA BRUNEI DARUSSALAM

Titah Sempena Sambutan Hari Kebangsaan Negara Brunei Darussalam Kali Ke-34
7 Jamadilakhir 1439 bersamaan dengan 23 Februari 2018

"Di arena antarabangsa, Negara Brunei Darussalam akan terus mengamalkan sikap hormat menghormati dan mengekalkan hubungan baik dengan negara-negara lain. Kita akan turut berusaha menangani isu-isu yang menjadi tumpuan masyarakat antarabangsa seperti... perubahan iklim."

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Titah Sempena Ulang Tahun Keputeraan Baginda Yang Ke-73 Tahun
12 Zulkaedah 1440 bersamaan dengan 15 Julai 2019

"Di peringkat antarabangsa, Negara Brunei Darussalam akan terus mengamalkan dasar hormat menghormati sesama negara tanpa mengira apa jua ideologi... Brunei juga akan terus komited, tidak akan menarik diri dari bekerjasama dengan masyarakat antarabangsa untuk menangani cabaran-cabaran semasa yang utama, seperti isu perubahan iklim..."



Luagan Lalak Forest Recreational Park, Labi
Photo by Mohd Azzan Safwan bin Dato Paduka Haji Sidek



"Towards a Low Carbon and Climate-Resilient Brunei Darussalam"

Brunei Darussalam adopts a Whole-of-Nation approach in addressing adverse changing climate patterns. Through effective policies, careful planning and management, Brunei Darussalam is committed to pave low carbon and climate-resilient pathways for a sustainable nation. This Brunei Darussalam National Climate Change Policy underpins the principles, values and strategies to reduce carbon emissions, increase carbon sink and strengthen climate resilience nationwide.



Tasek Pelangi Biru National Reserve, Mukim Mengkubau
Photo by Mohd Azzan Safwan bin Dato Paduka Haji Sidek

Contents

Maqasid of the Shari'ah 2

Message from the Council 4

Climate Change Impacts in Brunei Darussalam 6

Greenhouse Gas Inventory 2018 8

Policy Statement 12

Strategies Overview 13

National Circumstances 15

Greenhouse Gas Emissions Scenario 2035 16

Policy Framework 18

Strategies 20

- Strategy 1 Industrial Emissions 22
- Strategy 2 Forest Cover 26
- Strategy 3 Electric Vehicles 30
- Strategy 4 Renewable Energy 34
- Strategy 5 Power Management 38
- Strategy 6 Carbon Pricing 42
- Strategy 7 Waste Management 46
- Strategy 8 Climate Resilience & Adaptation 50
- Strategy 9 Carbon Inventory 54
- Strategy 10 Awareness & Education 58

Summary of Action Plan Timeline 62

Policy Governance 64

Abbreviation 66

Glossary 67

Acknowledgement 69



Balai Khazanah Islam Sultan Haji Hassanal Bolkiah
Photo by Mohd Azzan Safwan bin Dato Paduka Haji Sidek

Maqasid of the Shari'ah

The Brunei Darussalam National Climate Change Policy strategies are driven by the five Objectives (Maqasid) of the Shari'ah.

The Preservation and Promotion of Faith (M1)

This policy functions as a guideline where we are mandated to fulfil our *amanah* and our responsibility to protect the Earth. This is linked to the preservation of faith while the promotion of faith ensures the nurture and the development of the community's morals and values such as compassion, equity and justice.



The Preservation and Promotion of Life (M2)

This policy is focused on increasing the nation's adaptation to climate change. The preservation of life relates to preserving the environment, health, and physical security while the promotion of life is any action that promotes *maslahah* (social benefit) and prevents *mafsadah* (social detriment) in terms of life.



The Preservation and Promotion of Intellect (M3)

This policy intends to promote the utilisation and innovation of technologies through research i.e. Electric Vehicles and Solar Panels to create a pathway for a sustainable nation. This is also the preservation of intellect as it includes maintaining existing research and knowledge hubs.



The Preservation and Promotion of Progeny (M4)

The policy hopes to protect and maintain our nation's resources for the future generations. This concerns the preservation of progeny as it seeks to ensure sufficient resources for the nation. It encourages the use of best sustainable practices by instilling good values and manners, as well as productive and successful civilisations through the promotion of progeny.



The Preservation and Promotion of Wealth (M5)

This policy provides an opportunity for Brunei Darussalam to further develop the country's economy. The shift away from the oil and gas industry will help to instigate economic diversification to ensure financial sustainability in the long-term, which leads to the preservation and promotion of wealth.



Message from the Council

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

Brunei Darussalam has maintained a 72% forest cover representing one of the last remaining pockets of intact and pristine ecosystem in the world. Our richness in biodiversity is reflected in the number of native species that can only be found in Brunei Darussalam. We have also sustained an urban air quality among the cleanest globally. As a small, coastal area with a tropical climate, vulnerability assessments have shown that the country has medium to high climate change exposure.

The changes in climate have been evident in Brunei Darussalam – we are experiencing a warming trend of 0.25°C and an increase in rainfall of 100mm per decade respectively, causing more frequent and significant flash floods, forest fires, strong winds and landslides. These extreme weather events will intensify as the global temperature continue to rise. We must then take measures to minimise the impacts by reducing our own greenhouse gas (GHG) emissions and increasing our capacity to adapt to the changing climate.

The Brunei Darussalam National Climate Change Policy (BNCCP) was carefully and strategically formulated by the relevant stakeholders who will drive decarbonisation efforts of Brunei Darussalam's economic growth moving forward. Led by a Council of four key Ministries, the BNCCP aims to provide the pathways for all sectors of the economy to move "Towards a Low Carbon and Climate-Resilient Brunei Darussalam.". This ambition encapsulates our climate commitment as a nation in accordance with our principles of the Maqasid of the Shari'ah in achieveing Wawasan Brunei 2035 and the Paris Agreement, whilst safeguarding the welfare of our people and ensuring a clean, green and sustainable environment can be preserved for our future generation.

We are hopeful that through this policy, we can secure the involvement and support from the public and private sectors, investors, academics, our youth and the rest of the members of our community to progress towards a sustainable Brunei Darussalam.

It's climate action, now.

The Brunei Darussalam National Council on Climate Change

25 July 2020



Yang Berhormat
Dato Seri Setia
Ir. Awang Haji Suhaimi
bin Haji Gafar

Minister of
Development
(Co-Chair)



Yang Berhormat
Dato Seri Setia
Awang Haji Ali
bin Apong

Minister of Primary
Resources and
Tourism



Yang Mulia
Dato Seri Paduka
Awang Haji Matsatejo
bin Sokiaw

Deputy Minister of
Energy



Yang Berhormat
Dato Seri Setia
Dr. Awang Haji Mat Suny
bin Haji Md Hussein

Minister of Energy
(Co-Chair)



Yang Berhormat
Dato Seri Setia
Awang Abdul Mutalib
bin Pehin Orang Kaya
Seri Setia Dato Paduka
Haji Mohammad Yusof

Minister of
Transport and
Infocommunications



Climate Change Impacts in Brunei Darussalam

Brunei Darussalam has an equatorial climate, experiencing year-round high temperature, rainfall and humidity. The changing climate patterns will exacerbate weather-related disasters.

Temperature

Rainfall

OBSERVED CHANGES



There is a warming in the mean temperature, increasing at a rate of **0.25°C per decade** from the year 1970

Rainfall patterns show an intensifying trend in the total rainfall amount, increasing at a rate of **100mm per decade**



CLIMATE CHANGE PROJECTIONS



In the next 30 years, Brunei will likely to experience an increase in temperature at a rate of **0.4°C per decade**[1]

From the year 2021 to 2051, rainfall projection indicates an increasing rate of **5.0mm per year**[2]



[1] [2] Climate Change over Brunei Darussalam under RCP 4.5 and RCP 8.5 scenarios under PRECIS (Providing Regional Climates for Impact Studies) 2.0 System report, by BDMD (2020).

What is Climate Change?

Climate change is the long-term changes in the climate pattern that is attributed directly to the increase in global temperature caused by human activities i.e. the burning of fossil fuel which releases Greenhouse gas (GHG). The GHG accumulates over the Earth's atmosphere, where it traps the radiation (heat) from the sun like a blanket and prevents it from escaping the Earth. This traps heat and makes the Earth warmer, a phenomenon known as Global Warming. These changes will alter the weather patterns, leading to multiple climate-induced events such as drought, flash flood and sea level rise.

Ocean

Corals in Littledale Shoal, an hour away from Serasa beach, have already experienced some **bleaching events** which can be attributed to rising ocean temperature and high salinity



Brunei will likely see an increase in **sea level rise** within the next **30–50 years.** By 2100, sea level can reach up to **1.2 meters globally**



Health

The changes in climate will likely lengthen the transmission seasons of vector-borne diseases





Studies suggest high temperature and humidity will increase our **exposure to vector-borne diseases** such as dengue, malaria and zika in Brunei Darussalam

Wildlife

Since 1970, **40%** of all wildlife biodiversity has been lost from forest degradation



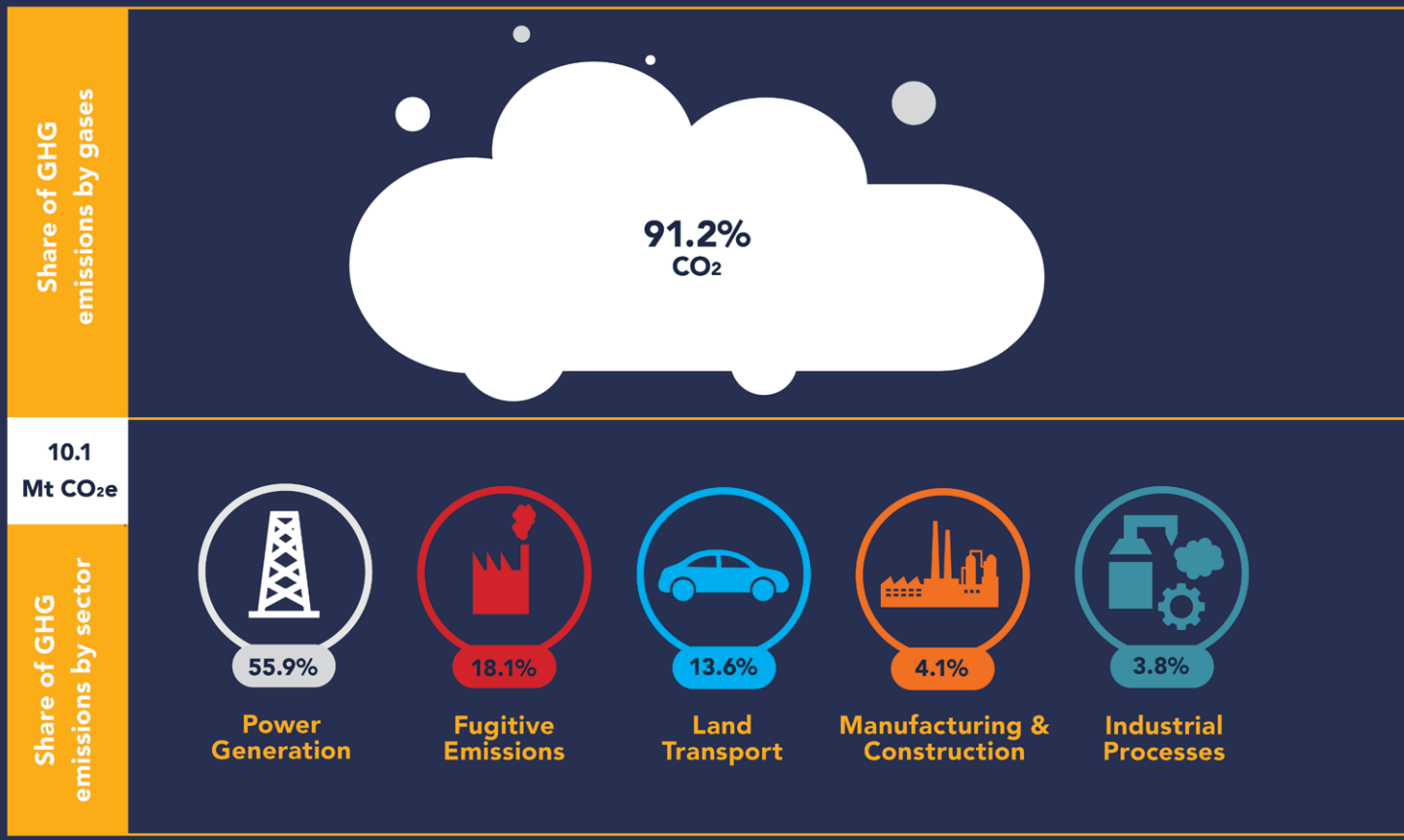
The changes in weather pattern will alter the phenology of our local biodiversity, further making our **wildlife vulnerable**



SOURCE: BDMD, NDMC, IPCC, UTB

Greenhouse Gas Inventory 2018

Brunei Darussalam's GHG inventory refers to the national anthropogenic emissions and removals, and was estimated by methodologies that comply with the 2006 Intergovernmental Panel on Climate Change (IPCC) Guideline for National GHG Inventories.



Note: 1. Carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) are the only gases covered in inventory. Emissions of these GHGs are presented using a common metric, CO_2 equivalent (CO_2e), which indicates the relative contribution of each gas, per unit mass to a Global Warming Potential (GWP).
2. Units are presented in Million tonnes of CO_2 equivalent (Mt CO_2e).

Estimations were carried out for four sectors, namely the Energy; Industrial Processes and Product Use (IPPU); Agriculture, Forestry and Other Land Use (AFOLU), and Waste sector. The Brunei Climate Change Secretariat (BCCS) coordinates the compilation of the GHG inventory with data from relevant stakeholders.





Carbon sinks



Reabsorbed by Forest

11.4 Mt CO_2e



Disclaimer: The stated figures for GHG Inventory will be subject to further revisions, updates and improvement to the methodologies used.



Signs of fresh regeneration of vegetation in areas devastated by forest fires due to high temperature in Lumut, Belait.



Policy Statement

This policy has been established to pave for Brunei Darussalam's low carbon and climate-resilient pathways for a sustainable nation.

Strategies

The Brunei Darussalam National Climate Change Policy shall adopt ten key strategies with 2035 as a general target year.

1 **INDUSTRIAL EMISSIONS**
Reduce overall emissions in the industrial sector through zero routine flaring and to As Low As Reasonably Practicable (ALARP).

2 **FOREST COVER**
Increase carbon sink through afforestation and reforestation with a target of planting 500,000 new trees.

3 **ELECTRIC VEHICLES**
Increase total share of Electric Vehicles to 60% of total annual vehicle sales.

4 **RENEWABLE ENERGY**
Increase total share of renewable energy to at least 30% of total capacity in the power generation mix.

5 **POWER MANAGEMENT**
Reduce GHG emissions by at least 10% through better supply and demand management of electricity consumption.

6 **CARBON PRICING**
Impose price on carbon emissions.

7 **WASTE MANAGEMENT**
Reduce municipal waste to landfills to 1kg/person/day.

8 **CLIMATE RESILIENCE & ADAPTATION**
Increase capacity to adapt to climate impacts and in achieving resilience.

9 **CARBON INVENTORY**
Mandatory monthly and annual reporting of carbon inventory.

10 **AWARENESS & EDUCATION**
Increase awareness and education surrounding mitigation and adaptation responses against climate change.

The Brunei Darussalam National Climate Change Policy is guided by the principles of achieving Wawasan Brunei 2035 and promoting Brunei Darussalam's economic security, sustainability and prosperity through a low carbon approach in three key areas.



Oil & Gas Exports

To increase oil and gas production

Environmental Sustainability

To protect Brunei Darussalam's pristine environment

Economic Diversification

To increase downstream industry economic output contribution
&
Increase new non-oil and non-gas based industry activities

National Circumstances

The implementation of the policy strategies shall be in accordance to Brunei Darussalam's four key national circumstances.



An Oil and Gas Economy

Brunei Darussalam is a developing economy with heavy reliance on oil and gas. Diversification efforts are currently focused on energy-intensive industries, mainly downstream oil and gas.



Forested Areas

Brunei Darussalam prioritises nature-based solutions for its mitigation and adaptation measure which limits land availabilities for others such as large-scale renewable energy projects.



Fossil Fuel Dependency

Energy prices are heavily regulated. Energy supply mix is almost 100% fossil fuel-based, with a very small share in solar photovoltaic.



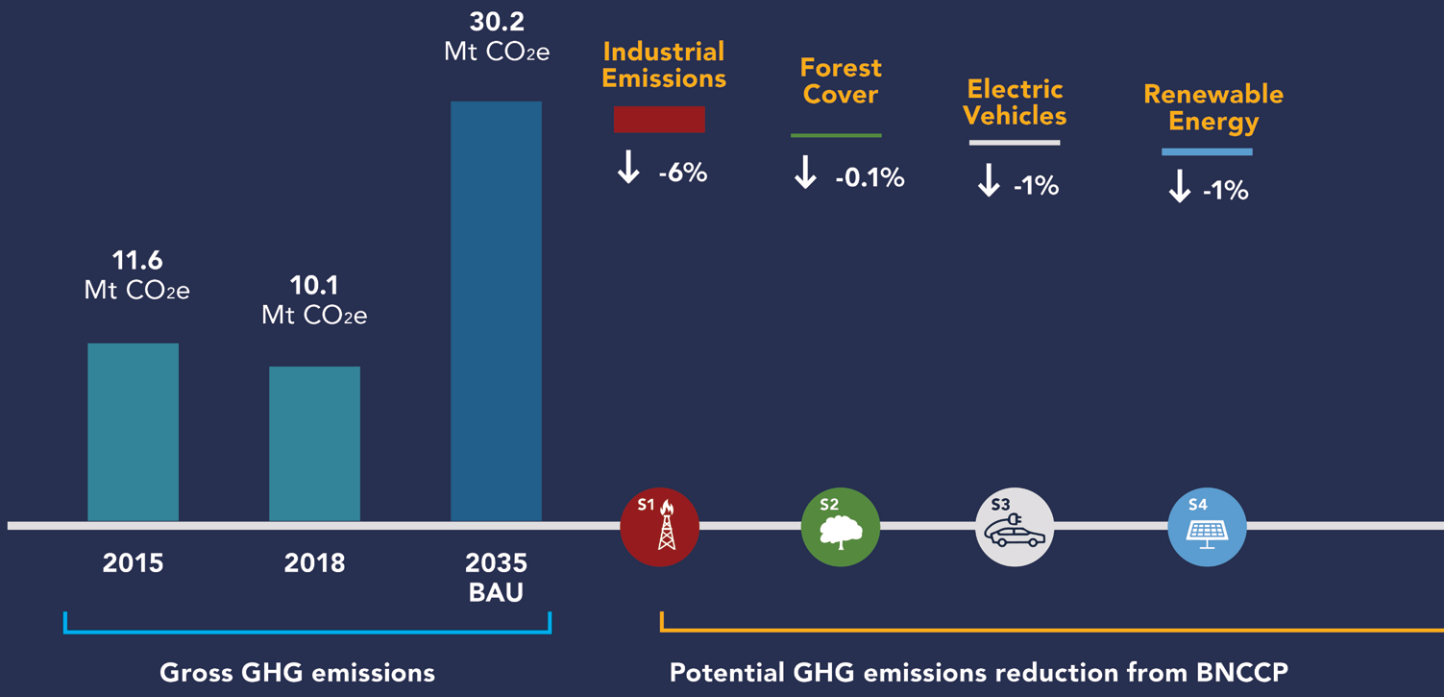
Vulnerable to Low Carbon World

As the world seeks to move towards carbon neutrality by 2050, fossil fuel may no longer be an option for Brunei Darussalam's current buyers. The role as an exporter may be impacted.

Greenhouse Gas Emissions Scenario 2035

Business-As-Usual (BAU) Scenario is intended to represent Brunei Darussalam's gross GHG emissions trend with current policy commitments. The modelling for BNCCP Scenario shown below is strengthened by targets outlined in Strategy 1–7. The BNCCP Scenario shows the potential to reduce GHG emissions to more than 50% in 2035 compared with the BAU level.

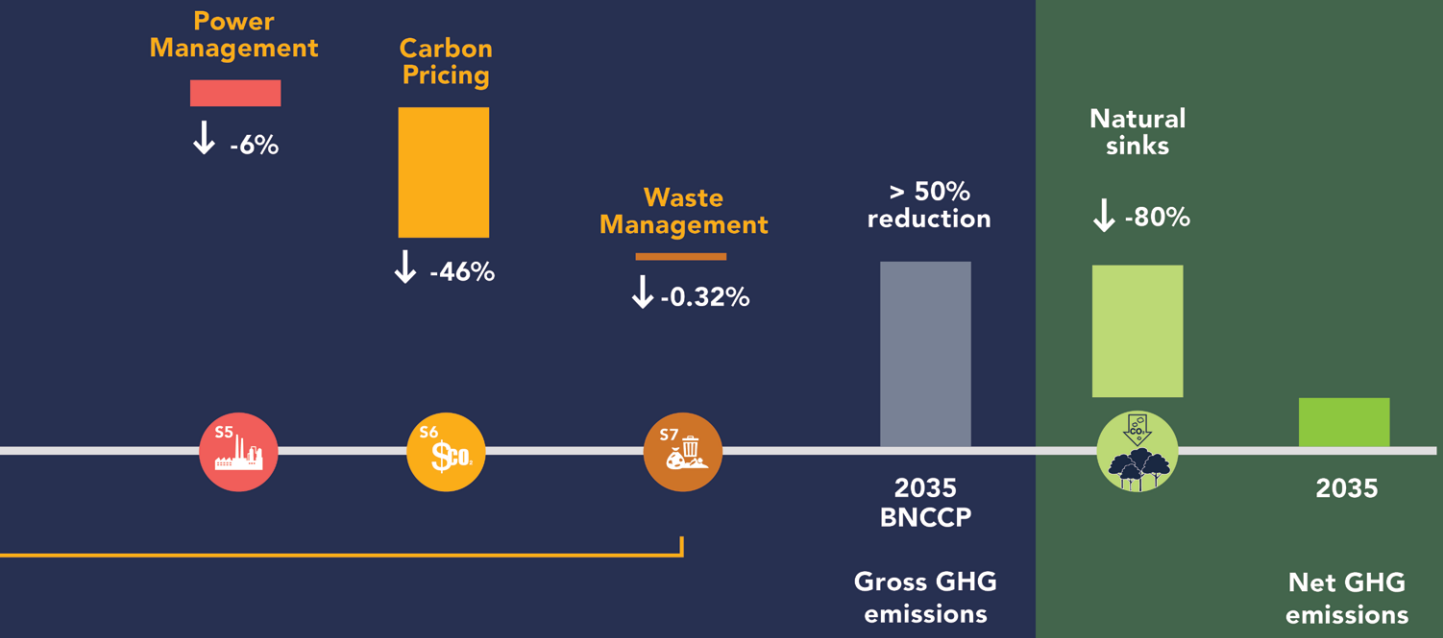
From 2015 to 2018, GHG emissions have declined at a pace of approximately 4% per year, driven mainly by the reduction of upstream emissions from flaring and venting.



Disclaimer: 1. The stated figures for the projection under BAU and BNCCP scenarios will be subject to revision and further updates and improvement to the methodologies used.
2. Carbon pricing (Strategy 6) is based on carbon removal scenarios.

Under the BAU Scenario, GHG emissions is expected to grow at a rate of 4.9% annually, from 11.6 Mt CO_2e in 2015, to 30.2 Mt CO_2e in 2035. This is assuming that GDP is growing at an annual rate of 1.8% and fuel combustion activities also increased.

About 80% of 2035 GHG emissions can be absorbed by Brunei's forest that serves as a natural sink, assuming that forest cover is maintained at 72%.



Policy Framework

Maqasid of the Shari'ah

Wawasan Brunei 2035

Brunei Darussalam National Climate Change Policy

- Industrial Emissions
- Electric Vehicles
- Power Management
- Waste Management
- Carbon Inventory
- Forest Cover
- Renewable Energy
- Carbon Pricing
- Climate Resilience & Adaptation
- Awareness & Education

These general **Policy Tools** are adopted to achieve the strategy goals

- Regulations and Legislation
- Partnership and Collaboration
- Technology and Infrastructure
- Human Capital and Skill Sets
- Research and Development
- Education and Awareness
- Compliance to National and International Standards
- Policy Transmission and Communication
- Finance and Budgeting
- Smart Nation

The BNCCP will open **New Opportunities**



- Green or Low Carbon Industries
- Local Business Development
- Local Employment and Competencies
- Digital Technologies
- Research and Development
- Foreign Direct Investment

Strategies



Sultan Haji Omar 'Ali Saifuddien Bridge is the longest bridge in Southeast Asia, with 30-kilometre in length. It was built by adopting a sustainable construction method to ensure minimal disruption to nature and habitat.



Key of icons to indicate linkages to the Maqasid of the Shari'ah content

- The Preservation and Promotion of Faith (M1)
- The Preservation and Promotion of Life (M2)
- The Preservation and Promotion of Intellect (M3)
- The Preservation and Promotion of Progeny (M4)
- The Preservation and Promotion of Wealth (M5)

Fugitive emissions from oil and gas production, transportation, processing, venting and flaring declined by 65% over the period of 2010 to 2018. Substantial rejuvenation projects within the oil and gas industry facilities for GHG emissions abatement both onshore and offshore were the main driver for the reduction. Despite this, fugitive emissions still account for about 18.1% of Brunei Darussalam's total GHG emissions in 2018.



Flaring at the Brunei LNG plant.

Photo courtesy of
Brunei LNG Sdn Bhd.



LEAD AGENCY
MINISTRY OF ENERGY

Strategy 1

Industrial Emissions

This strategy seeks to reduce industrial emissions from the industries in Brunei Darussalam by 2035 through zero routine flaring and to ''As Low As Reasonably Practicable'' (ALARP).

Strategic Objectives



1. Attain and maintain zero routine flaring, as defined by World Bank standard.
2. Reduce industrial emissions to ''As Low As Reasonably Practicable'' (ALARP).
3. Establish a national long-term industrial emission reduction target.

Performance Indicators

Industrial emissions (in Mt CO_2e)	No. of successful collaborative projects (in Units)	No. of significant sources that have completed an ALARP assessment (in Units)	Zero routine flaring by 2030 (in %)

LEAD AGENCY
MINISTRY OF ENERGY

Policy Tools

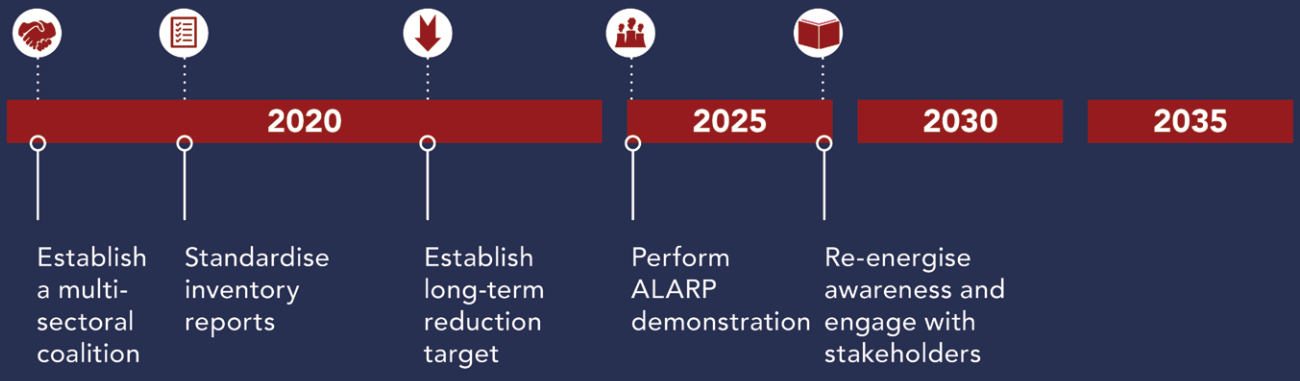
Standardise quantifying and qualifying inventory report for industrial emissions to be aligned to carbon inventory strategy. **BCCS**

Perform ALARP demonstration, including using Best Available Technologies (BAT). **Oil & Gas Industries**

Establish a coalition between Government, industry and higher learning institutions through research, collaboration and education. **ME**

Re-energise awareness, develop competencies and engage stakeholders and communities in reducing industrial emissions. **ME**

Timeline

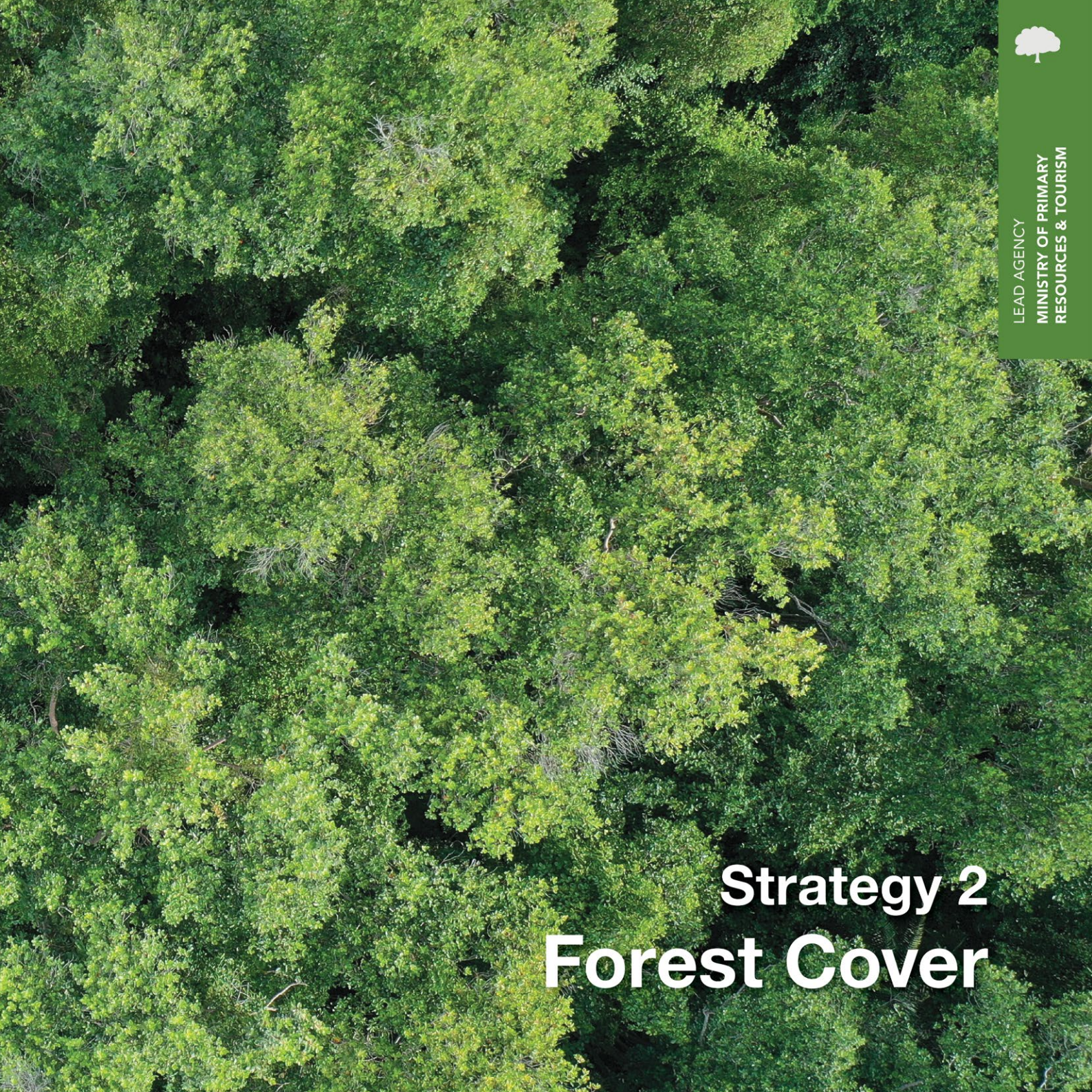


Note: 1. This strategy will be updated once inventory for industrial emission is established.
2. Lead agency for this strategy shall establish detailed operational document for implementation.

Brunei Darussalam is home to one of the most diverse and complex ecosystems in the world. Forest cover constitutes about 72%, or 380,000 hectares, of land area which plays a vital role in carbon sequestration. Brunei Darussalam aims to increase its forest reserve from 41% to 55% of the total land area. At present, 104,920 trees have been identified to increase the country's carbon sink through reforestation efforts.



Tasek Pelangi Biru National Reserve, Mukim Mengkubau



LEAD AGENCY
MINISTRY OF PRIMARY RESOURCES & TOURISM

Strategy 2
Forest Cover

This strategy seeks to increase Brunei Darussalam's carbon sink through afforestation and reforestation programmes with a target of planting 500,000 new trees by 2035. Increase in forest cover would increase the domestic carbon sequestration potential. This will have positive effects on habitats, biodiversity, and ecosystems.

A further 400,000 trees from the existing target have been proposed leading up to 2035. However, this target requires the establishment of a sustainable funding and planting mechanism. Additionally, full participation of the public and private sectors is essential to ensure an integrated approach for a successful reforestation program.

Strategic Objectives



1. Strengthen regulations for all deforestation activities for developmental purposes by ensuring afforestation and reforestation programmes are carried out, including in degraded areas.
2. Identify areas for carbon sink expansion including forest land, cropland, settlements, wetlands, seagrass, and other land.
3. Provide nature-based solutions to prevent soil erosion and flooding as a natural buffer from effects of development.
4. Establish platforms to financially support and sustain afforestation and reforestation programmes.
5. Maintain local ecosystems and biodiversity to support afforestation and reforestation efforts.



Performance Indicators

Green-spaces in developmental area (in Square Metre)	Areas of carbon sink (in No. of Trees)

LEAD AGENCY
MINISTRY OF PRIMARY RESOURCES & TOURISM

Policy Tools

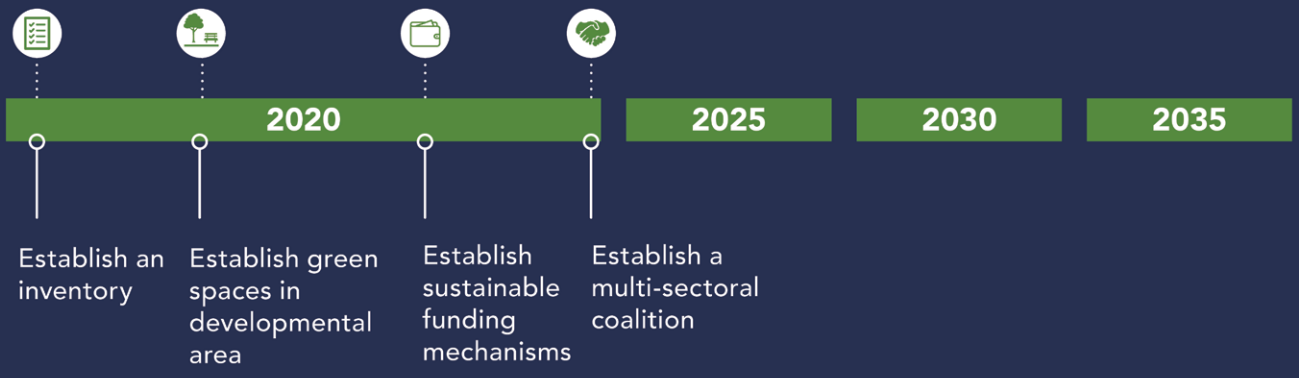
Establish an inventory to account for existing and new carbon sink areas including forest land, cropland, settlements, wetland, seagrass, and other land types. **BCCS**

Strengthen requirements for the allocation of green spaces for future developmental areas including suitable tree species for planting. **TCP**

Establish sustainable funding mechanisms for afforestation and reforestation programmes. **MOFE**

Establish a partnership between the Government, private sector, industry, educational institutions, non-governmental organisations and the community through research collaborations, education, awareness and promotion of community forestry. **FD**

Timeline



Note: Lead agency for this strategy shall establish detailed operational document for implementation.

Land transportation accounted for the third-largest share of GHG emissions in 2018. The total number of registered vehicles were over 426,000, and oil (gasoline and diesel) remains the primary fuel used in this sector. High car dependency, ownership and usage lead to an increase in the number of active vehicles on the road. The number of vehicles is expected to grow at a rate of 2% annually between 2018 and 2035. A shift towards electrification is a viable option for Brunei Darussalam because travelling is mostly short-distanced, and electricity is inexpensive for charging. This will significantly reduce fuel consumption and subsequently cut down GHG emissions in this sector.



The Raja Isteri Pengiran Anak Hajah Saleha Bridge links Mukim Lumapas with the Capital

Photo by Mohd Azzan Safwan bin Dato Paduka Haji Sidek



CO-LEAD AGENCIES
MINISTRY OF TRANSPORT & INFOCOMMUNICATIONS AND MINISTRY OF ENERGY

Strategy 3
Electric Vehicles

This strategy seeks to reduce Brunei Darussalam's carbon emissions from the land transportation sector by increasing the share of Electric Vehicles (EV) to 60% of total annual sales by 2035. This target is subject to future development of EV and policies in place to promote ownership of EV such as, but not limited to, the following: price of fuel and electricity; low EV prices (e.g. through tax incentives); and availability of infrastructures (e.g. charging stations).

This strategy will be carried out by the Electric Vehicle Joint Task Force (EVJTF), co-led by the Ministry of Transport and Infocommunications and Ministry of Energy, and will focus on EV while other options such as fuel economic regulation, other energy efficient vehicles, public transportation and smart urban planning to promote low carbon travel could be considered separately by the relevant agencies.

Strategic Objectives



1. Develop policies and programmes to support deployment of EV.
2. Collaborate with key relevant Government agencies, main industry players and the private sectors in identifying and implementing measures to promote the use of EV.
3. Identify and implement measures to shift public preference from Internal Combustion Engines (ICE) to EV.
4. Develop measures to manage use of EV and ensure sustainable use of EV.



Performance Indicators

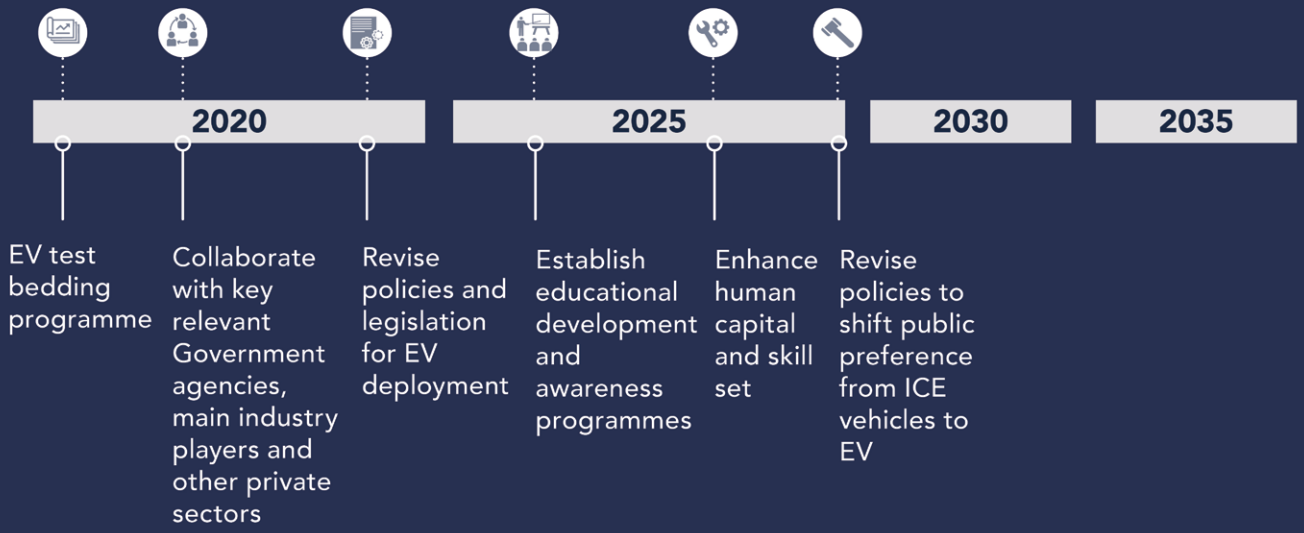
No. of EV on the road (in Units)	No. of ICE vehicles on the road (in Units)	No. of charging stations (in Units)	Electricity consumption at charging station (in kWh)	Petroleum product consumption at petrol station (in ktoe)

CO-LEAD AGENCIES
MINISTRY OF TRANSPORT & INFOCOMMUNICATIONS AND MINISTRY OF ENERGY

Policy Tools

- Revise policies and legislation to allow deployment of EV. — EVJTF
- Collaborate with key relevant Government agencies, main industry players and other private sectors to increase access to charging facilities and other supporting infrastructure. — EVJTF
- Establish educational development and awareness programmes to ensure long-term societal change towards the use of EV. — EVJTF
- To conduct a small to medium scale EV test bedding programme in order to assess the policies and infrastructure requirements before mass deployment of EV in Brunei Darussalam. — EVJTF
- Revise policies to shift public preference from ICE vehicles to EV. — EVJTF
- Enhance human capital and skill set through training and development programmes that upskill and reskill current capacities into technical field of EV. — EVJTF

Timeline



Note: The EVJTF shall establish detailed operational document for implementation

Renewable energy accounts for just 0.14% of Brunei Darussalam's total electricity generation mix, which comes from a 1.2 MW solar PV demonstration power plant, Tenaga Suria Brunei in Seria, Belait District. In view of the country's significant solar radiance, solar PV offers the most practical option to meet domestic demand for electricity in terms of grid parity. However, Brunei Darussalam will continue to undertake resource assessment and feasibility of solar water heating, biofuels (diesel, gas, aviation fuels), and ocean (hydroelectricity).



Tenaga Suria Brunei in Seria, Belait District

Photo courtesy of Ministry of Energy



LEAD AGENCY
MINISTRY OF ENERGY

Strategy 4

Renewable Energy

This strategy seeks to ensure a smooth transition for nationwide adoption and use of renewable energy technologies. This strategy focuses on increasing total share of renewable energy to at least 30% of the total capacity in the power generation mix using mainly solar photovoltaic (PV) by 2035.

Strategic Objectives



1. Establish local competencies towards a regional centre of excellence in renewable energy.
2. Facilitate seamless integration of renewable energy mix into the national power generation mix.
3. Establish financial mechanisms to support renewable energy research, development and deployment.
4. Establish attractive Foreign Direct Investment (FDI) packages for different types of renewable energy sources and technologies.
5. Establish a Renewable Portfolio Standard for Brunei Darussalam for energy-intensive industries.



Performance Indicators

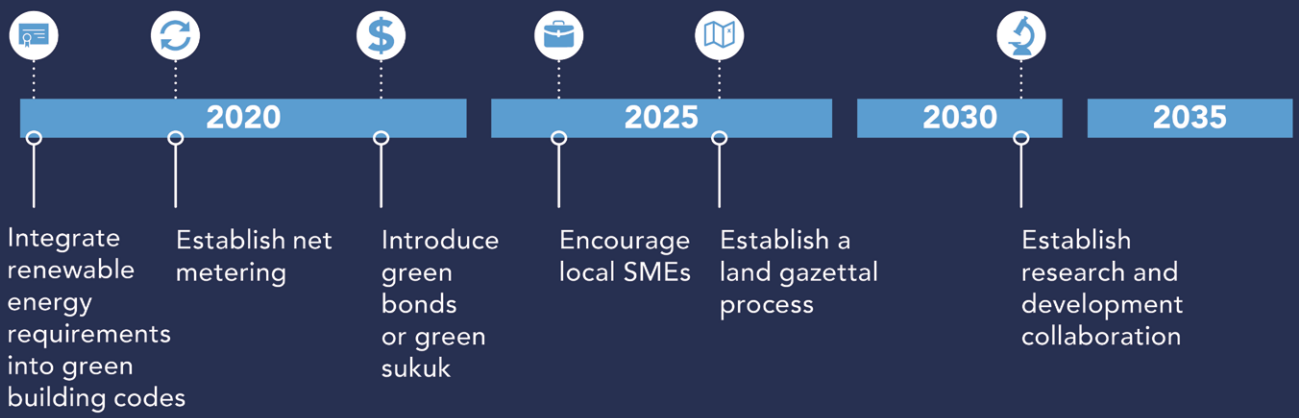
Renewable Energy capacity in the total generation mix (in %)	No. of high impact R&D research initiatives (in Units)	Amount of FDIs on Renewable Energy projects (in BND)	No. of households participating in net metering scheme (in Units)	No. of local SMEs in Renewable Energy sector (in Units)

LEAD AGENCY
MINISTRY OF ENERGY

Policy Tools

Integrate renewable energy requirements into green building codes including residential, commercial and industrial buildings.	DME
Establish research and development collaboration on current and alternative renewable energy sources with local higher institutions.	SED
Impose mandatory directive to energy-intensive users and utility companies to attain renewable energy certificates.	SED
Conduct preliminary grid impact assessment at every level of grid to ensure interconnection stability within grids.	DES
Establish a land gazettal process for renewable energy photovoltaic.	SED
Introduce green bonds or green sukuk to finance renewable energy projects.	AMBD
Establish net metering to allow customers to sell back surpluses generated from an independent system back to the grid.	SED
Encourage local SMEs to focus on new businesses across renewable energy development, construction, commissioning through to operations and maintenance.	DARe
Establish a coalition between Government, industry, higher learning institutions and the communities through research, collaboration, education, awareness and upskilling.	SED

Timeline



Note: The Sustainable Energy Division, Ministry of Energy, as Lead Agency for this strategy shall develop a Renewable Energy Roadmap and Framework respectively that will serve as the detailed operational document for implementation.

Power generation is dominated by fossil fuels and it is the largest source of GHG emissions in Brunei Darussalam, accounting for 55.9%. Largely driven by highly subsidized fuel and demand growth, electricity generation grew by 14.3% between 2010 and 2018. Department of Electrical Services (DES) and Berakas Power Company (BPC) are the two main power utilities, and jointly account for about 889 MW of total power capacity. At present, there are seven gas-fired power stations and one diesel power station.



Combined-cycle Gas Power Station, Bukit Panggal

Photo courtesy of Ministry of Energy



LEAD AGENCY
MINISTRY OF ENERGY

Strategy 5
Power Management

This strategy seeks to reduce carbon emissions contribution from the power sector by focusing on increasing energy efficiency and conservation (EEC) at both supply and demand side. The aim is to reduce GHG emissions from power generation by at least 10% by 2035 (from BAU).

Strategic Objectives



1. Establish a conducive environment for adopting energy efficiency and conservation practices both for energy supply and demand.
2. Maximise available clean electricity resources across the border to supplement domestic demand.
3. Enhance Temburong District electrification.
4. Optimise generation and load dispatch to reduce fossil fuel consumption.



Performance Indicators

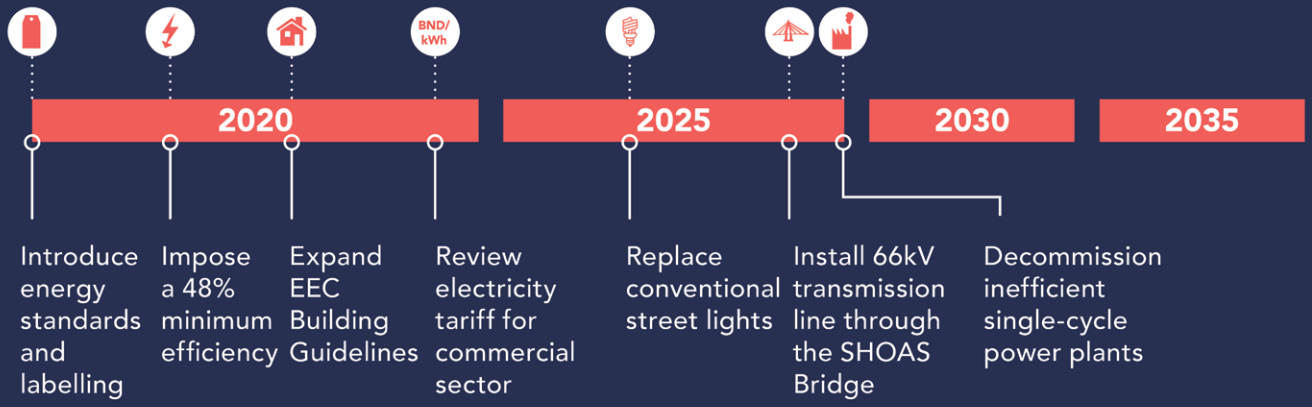
Electricity consumption at all sectors (in kWh)	No. of electrical appliances labelled with star ratings (in %)	Power plant efficiency (in %)	No. of street lights replaced with LED (in %)	Energy Intensity reduction (in %)

LEAD AGENCY
MINISTRY OF ENERGY

Policy Tools

- Introduce energy standards and labelling for commonly used electrical appliances and increase public awareness on electricity consumption. — SED
- Impose a minimum efficiency of 48% for new power plant. — DES
- Expand EEC Building Guidelines to residential and commercial sectors. — DME
- Decommission inefficient single-cycle power plants. — DES
- Replace conventional street lights with LED lights. — DES
- Install 66kV transmission line through the Sultan Haji Omar 'Ali Saifuddien (SHOAS) Bridge to connect Temburong to the main grid, and eventually decommission Temburong diesel power plant. — DES
- BND/kWh Review electricity tariff for the commercial sector. — SED
- Identify opportunities for digitalisation to promote smart nation. — SNO

Timeline



Note: Lead agency for this strategy shall establish detailed operational document for implementation.



Built in 1991, this monument commemorates the production of Seria billionth barrel of oil.
Billionth Barrel Monument, Seria

Photo by Mohd Azzan Safwan bin Dato Paduka Haji Sidek



LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Strategy 6
Carbon Pricing

This strategy seeks to reduce carbon intensity from all industrial sectors and power utilities in Brunei Darussalam through internalising the societal cost of carbon emissions and impending destructions from climate change impacts.

This strategy intends to introduce carbon pricing applicable to all industrial facilities and power utilities emitting beyond a carbon emission threshold limit by 2025.

Strategic Objectives



1 Establish comprehensive assessment on the most appropriate model for carbon pricing in Brunei Darussalam, including emissions threshold and cost per CO_2e.

2 Establish a proper Monitoring, Reporting and Verification (MRV) system to ensure accuracy and credibility in baseline emissions data for imposing carbon pricing.

3 Establish mechanism to allow carbon trading as an option.



LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Policy Tools



Establish a coalition between the Government and industries to closely work on an appropriate model for Brunei Darussalam, while preserving transparency in approaches.

BCCS



Adopt best practices on MRV system in the region and enhance internal capacities in the area.

BCCS

Note: This strategy will be updated following better findings from comprehensive assessment.



Variety of recycle bins at the Ministry of Development to encourage '3R' at office space



LEAD AGENCY
MINISTRY OF DEVELOPMENT

Strategy 7
Waste Management

This strategy seeks to reduce greenhouse gas contribution, and reduce waste to 1kg per person per day, mainly methane (CH_4) gas emissions by minimising the amount of waste that needs to be disposed of through waste minimisation, adoption of best practices and innovative technologies.

Strategic Objectives

1. Promote and implement waste minimisation through 3R (reduce, reuse and recycle) to reduce the amount of municipal solid waste and industrial waste going into landfills.
2. Pursue and adopt waste-to-energy technologies options to minimise land take and reduce volume of waste that needs to be disposed.
3. Increase public education and awareness to the general public by promoting and enhancing their participation in 3R-related initiatives and programmes.

Performance Indicators

Recycling Rate (in %)	Amount of waste disposed (in kg/person/day)	Emissions from waste sectors (in Mt CO_2e)

LEAD AGENCY
MINISTRY OF DEVELOPMENT

Policy Tools

- Promote and implement waste minimisation practices and strategies in public institutions, commercial sector and industrial sector. — DEPR
- Normalise the practice of waste segregation at source by households. — DEPR
- Pursue waste-to-energy technology options with a view to implementing most viable option(s) to minimise the use of landfills. — SED
- Increase education and awareness among the public on the importance of practicing 3R. — DEPR
- Empower the youth to champion in environmental activities to raise awareness on 3R concept and enhancing their participation in waste reduction activities. — DEPR
- Identify opportunities for digitalisation to promote smart nation. — SNO

Timeline



Note: Lead Agency for this strategy shall establish detailed operational document for implementation.



The Government has implemented a series of project in an attempt to prevent the loss of this natural landmark through coastal protection, Pantai Danau, Tutong



LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Strategy 8

Climate Resilience & Adaptation

This strategy seeks to strengthen Brunei Darussalam's resilience against climate change risks and increase its capacity to adapt to the impacts of the changing climate. Brunei Darussalam is prone to four key risks including: flood, forest fires, strong wind and land slides.

Strategic Objectives



1. Increase capacities to adapt to climate related disasters and safeguard Brunei Darussalam's livelihood, properties and resources.
2. Integrate climate science and monitor existing and future strategies and policies.
3. Increase collaboration between the Government, private sectors, local institutions, and the public towards achieving climate resilience and adaptation.
4. Enhance climate science research for climate resilience and adaptation effectiveness with nature-based solutions within Brunei Daurussalam to construct informed decision-making to benefit current and future generations.
5. Secure local food production and stocks by adapting to the impact of climate change.

Performance Indicators

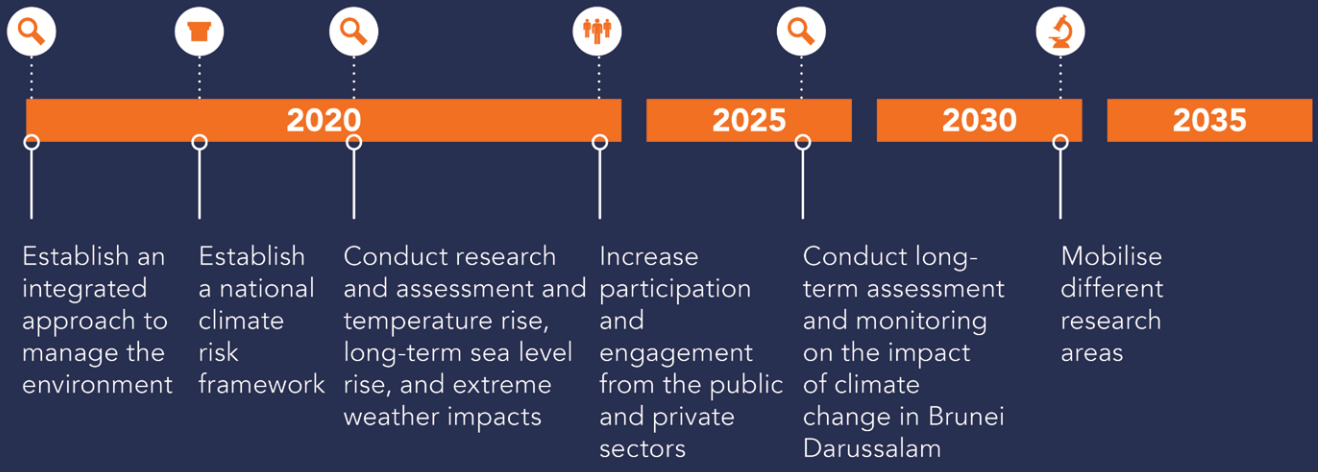
No. of crop production affected (in Units)	No. of fish stocks affected (in Units)	Total coverage of affected areas from climate related disasters (in Ha)	No. of diseases reported such as Malaria, Zika & Dengue (in Units)

LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Policy Tools

- Establish an integrated approach to manage the environment through aligning environmental regulation, Environmental Impact Assessment (EIA) and Directives to ensure environmental sustainability. — **DEPR**
- Establish a national climate risk framework to outline climate resilience initiatives within new and existing developmental and physical infrastructures (i.e. Green Building Initiatives). — **PWD**
- Conduct long-term assessment and monitoring on the impact of climate change in Brunei Darussalam (i.e. implication of flood, haze etc. to health). — **BCCS**
- Conduct research and assessment on long-term sea level rise. — **PWD**
- Conduct long-term assessment on the rise in temperature and rainfall in Brunei Darussalam. — **BDMD**
- Mobilising different research areas in order to provide assets, tools, knowledge and financial support towards bolstering climate resilience. — **BCCS**
- Increase participation and engagement from the public and private sectors to create well-informed community on climate change to improve climate resilience. — **BCCS**

Timeline



Note: Lead Agency for this strategy shall establish detailed operational document for implementation.



Sultan Omar 'Ali Saifuddien Mosque towering over the background of the Taman Mahkota Jubli Emas Bandar Seri Begawan

Photo by Kim Sin Yong



LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Strategy 9

Carbon Inventory

This strategy intends to develop a directive for all facilities and agents that emit and absorb GHG to report their greenhouse gas data, targeted to commence in 2021. The mandatory reporting seek to promote transparency and robustness in the national carbon emissions and sinks data, intended to provide a better understanding of the level of GHG emissions.

Ensuring the nation's accountability and responsibility to provide transparency through monitoring will safeguard the notion of a climate-resilient nation.

Strategic Objectives



1. Monitor all activities in measuring, collecting, reporting and verifying GHG emissions and sequestration.

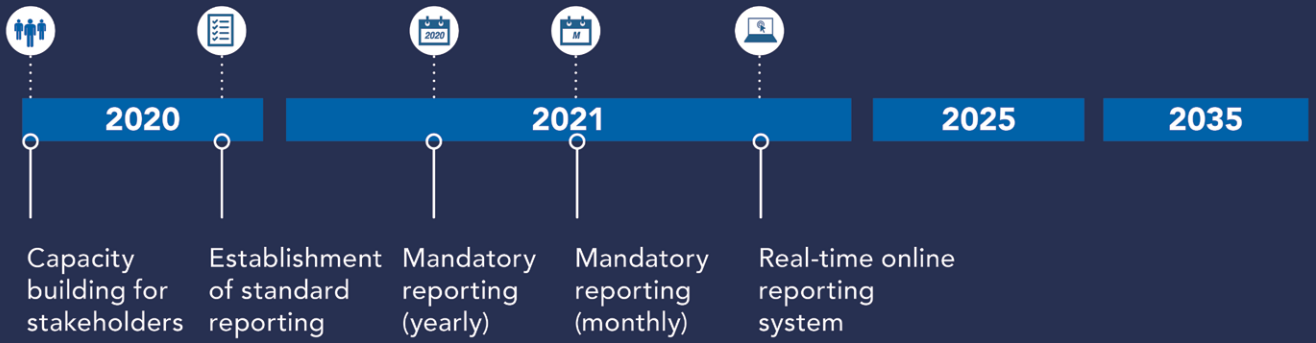
2. Facilities emitting greenhouse gas to report their emissions timely, consistently, reliably, completely, accurately and effectively.

LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Policy Tools

- Report all types of GHG; CO_2, CH_4, N_2O, SF_6, HFCs and PFCs. — BCCS
- Adopt methodology in accordance with the 2006 IPCC Reporting Guidelines, using a template available from BCCS. — BCCS
- Submit monthly and yearly inventory report. — BCCS
- The annual inventory report is required to be verified by GHG Reporting Verification Bodies or third-party firms. — BCCS
- Increase awareness among all emitting agents on the importance of measuring and reporting their GHG inventory as a key mitigation effort. — BCCS

Timeline



Note: 1. This Directive shall be further developed by the lead agency.
2. Monthly submission must be made no later than two months from the end of the reference month and yearly submission must be made no later than six months from the end of the reference year.



Primary school students showing patriotism and participating in the flag waving ceremony portraying Brunei Darussalam's future generation

Photo by Yusri Adanan



LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Strategy 10

Awareness & Education

This strategy aims to foster awareness and increase education in matters pertaining to climate change mitigation and adaptation efforts in all sectors of society, in line with our Whole-of-Nation approach, including the public, students and all stakeholders in the economic sector.

This can be achieved by: incorporating curriculum and co-curriculum programmes; effective communication and promotion for the public; and socialisation of this policy for the economic sector. Instilling importance of climate action through awareness and education is crucial in creating a well-informed and better prepared society at tackling climate change issues.

Strategic Objectives



1. Incorporate climate change mitigation and adaptation elements into all levels of the school education system, both curriculum and co-curriculum.
2. Increase climate change mitigation and adaptation awareness amongst communities and the public.
3. Increase climate change mitigation and adaptation awareness across all economic sectors.

Performance Indicators

No. of outreach programmes (in Units)	No. of Stakeholder engagement and consultation (in Units)	No. of climate-related educational programmes (in Units)

Note: This strategy intends to be carried out continuously throughout the implementation of the Brunei Darussalam National Climate Change Policy.

LEAD AGENCY
BRUNEI CLIMATE CHANGE SECRETARIAT

Policy Tools

- Establish educational development and awareness initiatives to ensure long-term societal change at primary, secondary, and tertiary levels. — **MOE**
- Conducting regular out-reach programmes to increase awareness among the general public on climate change issues. — **BCCS**
- Re-energise awareness, develop competencies and engage stakeholders and communities in reducing industrial emissions. — **ME**
- Establish a partnership between the Government, private sector, industry, educational institutions, non-governmental organisations and the community through research collaborations, education, awareness and promotion of community forestry. — **FD**
- Establish educational development and awareness programmes to ensure long-term societal change towards the use of Electric Vehicles. — **EVJTF**
- Establish a coalition between Government, industry, higher learning institutions and the communities through Renewable Energy research, collaboration, education, awareness and upskilling. — **SED**
- Establish educational development and awareness programmes to ensure long-term behavioural change on energy consumption in all sectors (public, private and commercial). — **SED**
- Promote and implement waste minimisation practices and strategies in public institutions, commercial sector and industrial sector. — **DEPR**
- Increase participation and engagement from the public and private sectors to create well-informed community on Climate Change to improve climate resilience. — **BCCS**
- Increase awareness among all emitting agents on the importance of measuring and reporting their GHG inventory as a key mitigation effort. — **BCCS**

Timeline



- **2020**
  - Establish a multi-sectoral coalition
  - Establish curriculum and co-curriculum programmes at primary, secondary and tertiary levels
  - Conduct outreach programmes
- **2025**
  - On-going awareness and stakeholder engagement

Action Plan Timeline

2020

1 Industrial Emissions
- Inventory report
- Multi-sectoral coalition
- Long-term reduction target

2 Forest Cover
- Sustainable funding mechanisms
- Multi-sectoral coalition
- Green space
- Inventory report

3 Electric Vehicles
- Collaboration
- EV test bedding programme
- Revise policies and legislations

4 Renewable Energy
- Net metering
- Green building codes
- Promote RE to local SMEs
- Green *sukuk*
- Preliminary grid assessment

5 Power Management
- Minimum efficiency
- BND/kWh Review electricity tariff
- EEC Building Guidelines
- Energy standards and labelling
- Digitalisation

6 Carbon Pricing
- Scoping assessment

7 Waste Management
- Promote waste minimisation
- Education and awareness
- Digitalisation

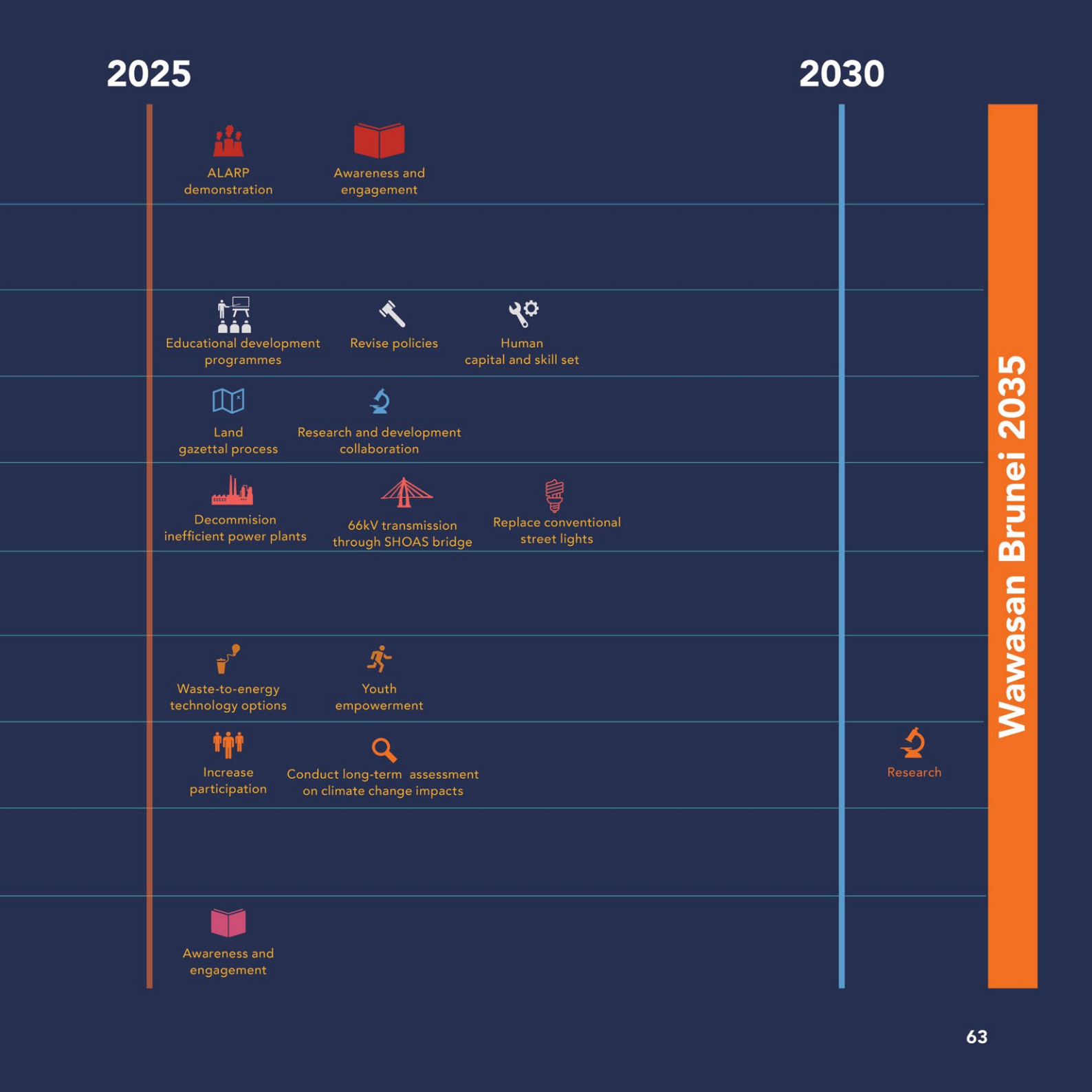
8 Climate Resilience & Adaptation
- National climate risk framework
- Integrated approach to environmental management
- Conduct research and assessment on temperature, rainfall and sea level rise

9 Carbon Inventory
- Capacity Building
- Establishment of Standard reporting
- Mandatory reporting (Yearly)
- Mandatory reporting (Monthly)
- Online reporting system

10 Awareness & Education
- Curriculum and co-curriculum programmes
- Multi-sectoral coalition
- Out-reach programmes

The ten (10) strategies and its action plans are not time bound

Brunei Darussalam National Climate Change Policy


2025
2030
ALARP demonstration
Awareness and engagement
Educational development programmes
Revise policies
Human capital and skill set
Land gazettal process
Research and development collaboration
Decommision inefficient power plants
66kV transmission through SHOAS bridge
Replace conventional street lights
Waste-to-energy technology options
Youth empowerment
Increase participation
Conduct long-term assessment on climate change impacts
Research
Awareness and engagement
Wawasan Brunei 2035

Policy Governance

The Brunei Darussalam National Climate Change Policy will be administered by the Brunei Climate Change Secretariat through the existing climate governance.

Brunei Darussalam National Council on Climate Change

- YB Minister of Development — Co-Chair
- YB Minister of Energy — Co-Chair
- YB Minister of Primary Resources & Tourism — Member
- YB Minister of Transport & Infocommunications — Member
- YM Deputy Minister of Energy — Member

Executive Committee on Climate Change

PERMANENT SECRETARY Ministry of Energy — Chair

- **CEO HENGYI** — Member
- **MD BSP** — Member
- **PS PMO** — Member
- **PS MOD** — Member
- **PS MTIC** — Member
- **PS MPRT** — Member
- **PS MOHA** — Member
- **PS MOFE** — Member
- **SG AGC** — Member
- **MD BLNG** — Ad Hoc Member
- **MD PB** — Ad Hoc Member
- **GM MC** — Ad Hoc Member
- **CO-FOUNDER GREEN BRUNEI** — Ad Hoc Member
- **PRESIDENT PUJA** — Ad Hoc Member
- **PRESIDENT BATA** — Ad Hoc Member

Mitigation Working Group

Deputy Permanent Secretary ME — Chair

Adaptation & Resilience Working Group

Deputy Permanent Secretary MOHA — Chair

Support Framework Working Group

Deputy Permanent Secretary — Chair

POLICY REVIEW

The Brunei Darussalam National Climate Change Policy is to be reviewed biannually by the Brunei Climate Change Secretariat and reported to the Executive Committee on Climate Change and the Brunei Darussalam National Council on Climate Change.

POLICY MONITORING

The policy strategies shall be monitored on a regular basis at respective Working Groups.

Strategy 1: Industrial Emissions	**Mitigation Working Group**
Strategy 2: Forest Cover	**Mitigation Working Group**
Strategy 3: Electric Vehicles	**Mitigation Working Group**
Strategy 4: Renewable Energy	**Mitigation Working Group**
Strategy 5: Power Management	**Mitigation Working Group**
Strategy 6: Carbon Pricing	**Support Framework Working Group**
Strategy 7: Waste Management	**Mitigation Working Group**
Strategy 8: Climate Resilience & Adaptation	**Adaptation and Resilience Working Group**
Strategy 9: Carbon Inventory	**Support Framework Working Group**
Strategy 10: Awareness & Education	**Support Framework Working Group**

Abbreviation

AMBD	Autoriti Monetari Brunei Darussalam
BCCS	Brunei Climate Change Secretariat (Ministry of Development)
BDMD	Brunei Darussalam Meteorological Department (Ministry of Transport and Infocommunications)
DARe	Darussalam Enterprise
DES	Department of Electrical Services (Ministry of Energy)
DEPR	Department of Environment, Parks and Recreation (Ministry of Development)
DME	Department of Mechanical and Electrical Services (Ministry of Development)
EVJTF	Electric Vehicles Joint Task Force
FD	Forestry Department (Ministry of Primary Resources and Tourism)
LTD	Land Transport Department (Ministry of Transport and Infocommunications)
MC	Mitsubishi Corporation
ME	Ministry of Energy
MOE	Ministry of Education
MOFE	Ministry of Finance and Economy
MTIC	Ministry of Transport and Infocommunications
PWD	Public Works Department (Ministry of Development)
SD	Survey Department (Ministry of Development)
SED	Sustainable Energy Division (Ministry of Energy)
SNO	Smart Nation Office (Ministry of Transport and Infocommunications)
TCP	Town and Country Planning (Ministry of Development)
UNFCCC	United Nations Framework Convention on Climate Change

Glossary

Afforestation	The act of planting trees on an area of land where there was no previous tree cover.
Anthropogenic emission	Emissions of greenhouse gas caused by human activities.
As Low as Reasonably Practicable (ALARP)	A risk management which attempts to lower cost through the implementation of risk reduction strategies.
Business As Usual (BAU)	To continue working in the normal or usual way.
Carbon sequestration	A process by which carbon dioxide is removed from the atmosphere and stored in plants, soils, geologic formations, and the ocean.
Carbon sink	Any natural vegetation that absorbs more carbon than it releases i.e. vegetation and the ocean.
Carbon trading	A market-based tool to limit GHG emissions by allowing firms or countries to buy and sell carbon permits and credits.
Climate adaptation	The ability to minimize risks from climate induced disasters.
Climate change	A change in global or regional climate patterns attributed largely to the increased levels of atmospheric carbon dioxide produced by the use of fossil fuels.
Climate mitigation	The action of reducing the severity of climate change impacts.
Climate resilience	Strengthening the ability of human and non-human systems to withstand and respond to changes in the earth's climate, and it can be thought of as a way to bridge the conceptual divide between mitigation approaches to climate change on the one hand and adaptation approaches on the other.
Coral bleaching	When corals expel algae living in their tissue, due to water that is too warm, causing the coral to turn completely white.
Decommission	To remove or withdraw from service.
Directive	An authoritative decision from an official body, which may or may not have binding force.
Electric vehicle	A vehicle that is propelled by one or more electric motors, using energy stored in rechargeable batteries.

Environmental Impact Assessment (EIA)	A report assessment evaluating the likely environmental consequence of a plan, policy or projects.
Flaring	A gas combustion that is released into the atmosphere by petroleum refineries and chemical plants.
Foreign Direct Investment (FDI)	An investment made by a firm or individual in one country into business interests located in another country.
Fossil fuels	A form of hydrocarbon formed from the remains of dead plants and animals i.e. coal and gas.
Green bonds	Created to fund projects that have positive environmental and/or climate benefits.
Greenhouse Gas	Gaseous constituents of the athmosphere, both natural and anthropogenic
Industrial waste	Waste generated by manufacturing or industrial processes.
Internal combustion engine vehicle	A vehicle with an engine that is generated by the burning of petrol, oil, or other fuel with air inside the engine.
Monitoring, Reporting and Verification (MRV)	A reporting provisions for climate change mitigation.
Phenology	Periodic biological phenomena of plants and animals that are correlated with climate conditions.
Power utility	A company that engages in the generation and distribution of electricity.
Reforestation	The process of replanting a depleted or deforested area with trees.
Renewable energy	Energy from a source that is not depleted when used.
Vector-borne disease	Illnesses that are transmitted by vectors, which include mosquitoes, ticks and fleas.
Venting	The controlled release of unburned gases directly into the atmosphere.
Wawasan Brunei 2035	Brunei Darussalam's long-term vision that aspires to develop into a nation which will be recognized for the accomplishment of its educated and highly skilled people measured by the highest international standards; quality of life that is among the Top 10 nations in the world; and a dynamic and sustainable economy with income per capita within the Top 10 countries in the world.
Whole-of-nation approach	The cooperation between the public sectors, private agencies, communities and all individuals.

Acknowledgement

The Brunei Darussalam National Climate Change Policy was prepared by the Climate Policy Drafting Committee, through facilitation led by the Brunei Climate Change Secretariat, consisting of 39 members.

1. Attorney General's Chamber, Prime Minister's Office
2. Brunei Darussalam Meteorological Department, Ministry of Transport and Infocommunications
3. Department of Agriculture and Agrifood, Ministry of Primary Resources and Tourism
4. Public Works Department, Ministry of Development
5. Department of Electrical Services, Ministry of Energy
6. Department of Environment, Park and Recreation, Ministry of Development
7. Department of Fisheries, Ministry of Primary Resources and Tourism
8. Department of Mechanical and Electrical Services, Ministry of Development
9. Energy Downstream Business Division, Ministry of Energy
10. Energy Upstream Business Division, Ministry of Energy
11. Environmental Health Service, Ministry of Health
12. Forestry Department, Ministry of Primary Resources and Tourism
13. Housing Development Department, Ministry of Development
14. Land Department, Ministry of Development
15. Land Transport Department, Ministry of Transport and Infocommunications
16. National Disaster Management Centre, Ministry of Home Affairs
17. Royal Customs and Excise Department, Ministry of Finance and Economy
18. Strategic Planning Unit, Ministry of Energy
19. Survey Department, Ministry of Development
20. Sustainable Energy Division, Ministry of Energy
21. Tourism Department, Ministry of Primary Resources and Tourism
22. Town and Country Planning Department, Ministry of Development
23. Transport Policy Division, Ministry of Transport and Infocommunications
24. Brunei Darussalam National Energy Research Institute
25. Universiti Brunei Darussalam
26. Universiti Teknologi Brunei
27. Berakas Power Company
28. Brunei LNG Sendirian Berhad
29. Brunei Methanol Company
30. Brunei Shell Marketing
31. Brunei Shell Petroleum Company Sendirian Berhad
32. Darussalam Enterprise (DARe)
33. Hengyi Industries Sdn Bhd
34. Mitsubishi Corporation
35. Brunei Darussalam National Petroleum Co Sdn Bnd (PetroleumBRUNEI)
36. PETRONAS Carigali Brunei Ltd
37. TOTAL E&P
38. Brunei Automobile Traders Association
39. Green Brunei

This policy has been reviewed by a collective youth group during the Climate Change Policy Youth Review on 2nd November 2019. 51 participants, aged 18–36, from different sectors of Brunei Darussalam discussed the research found in the draft and provided insights from the youth's perspective.

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