Petroliam Nasional Berhad (PETRONAS) - Climate Change 2023

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Petroliam Nasional Berhad (PETRONAS) is a leading global energy company committed to powering society's progress in a responsible and sustainable manner. With close to 50,000 employees and a global reach spanning over 100 countries, we are ranked among the world's largest corporations by revenue in the Fortune Media IP Ltd's 2022 Fortune Global 500® list.

As Malaysia's national oil and gas company, we safeguard and manage the nation's hydrocarbon resources to ensure national energy security and maximise value. We explore, develop and produce hydrocarbons as well as cleaner energy solutions. We have three core businesses, namely Upstream, Gas and Downstream, supported by Project Delivery and Technology division, which acts as an enabler. We recently launched Gentari, our new entity providing customers with cleaner energy and lower carbon solutions in three core offerings – renewables, hydrogen and green mobility alongside our core portfolio.

Our Energy Transition Strategy will steer PETRONAS to strengthen our Core Business, capture new growth opportunities for New Business and at the same time responsibly manage carbon emissions to realise our Net Zero Carbon Emissions 2050 Pathway. Our priority is to strike the right balance between growth in our Core Business and New Business while reducing greenhouse gas (GHG) emissions in order to thrive in the energy transition.

C0.2

(C0.2) State the start and end date of the year for which you are reporting data and indicate whether you will be providing emissions data for past reporting years.

Reporting year

Start date
January 1 2022

End date
December 31 2022

Indicate if you are providing emissions data for past reporting years
Yes

Select the number of past reporting years you will be providing Scope 1 emissions data for
5 years

Select the number of past reporting years you will be providing Scope 2 emissions data for
5 years

Select the number of past reporting years you will be providing Scope 3 emissions data for
4 years

C0.3

(C0.3) Select the countries/areas in which you operate.

Algeria
Angola
Argentina
Australia
Azerbaijan
Belgium
Brazil
Brunei Darussalam
Canada
Chad
China
Egypt
France
Gabon
Germany
India
Indonesia
Iraq
Ireland
Italy
Japan
Malaysia
Mauritania
Mauritius
Mexico
Myanmar
Netherlands
Oman
Philippines
Poland
Portugal
Russian Federation
Senegal
Singapore
South Sudan
Spain
Sudan
Suriname
Sweden
Thailand
Turkey
Turkmenistan
United Arab Emirates
United Kingdom of Great Britain and Northern Ireland
United States of America
Uzbekistan
Viet Nam

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

MYR

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C-OG0.7

(C-OG0.7) Which part of the oil and gas value chain and other areas does your organization operate in?

Row 1

Oil and gas value chain

Upstream
Midstream
Downstream
Chemicals

Other divisions

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, another unique identifier, please specify (Registration number under the Companies Commission of Malaysia (CCM))	197401002911 (20076-K)

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual or committee	Responsibilities for climate-related issues
Director on board	PETRONAS Board has approving authority on climate related matters: • Long term strategy and targets • PETRONAS Corporate Risk Profile • Plans, budgets and major investments
Board-level committee	The Risk Committee reviews PETRONAS Corporate Risk Profile, taking into account climate-related risk and its mitigations
Board-level committee	The Audit Committee institutes regular reporting and public disclosures of climate-related matters
Board-level committee	The Nomination and Remuneration Committee sets and reviews the performance of the senior leadership scorecard that includes climate-related measures

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – all meetings	Reviewing and guiding the risk management process	<Not Applicable>	The full Board approved the PETRONAS Corporate Risk Profile annually. The Risk Committee reviews the PETRONAS Corporate Risk Profile with consideration of climate-related risks and mitigation actions on a quarterly basis.
Scheduled – all meetings	Reviewing and guiding annual budgets Reviewing and guiding strategy Overseeing and guiding the development of a transition plan Overseeing the setting of corporate targets	<Not Applicable>	The Board approved the Net Zero Carbon Emissions by 2050 Pathway and approved the annual business plan and budget to deliver the Pathway. The Net Zero Carbon Emissions by 2050 Pathway sets out in detail the short, medium and long-term targets to manage emissions from our operations and strengthen the resilience of our business.
Sporadic - as important matters arise	Reviewing and guiding strategy	<Not Applicable>	The Board approved PETRONAS' Position on Nature and Biodiversity, and Nature-based Climate Solutions strategy in support of the Net Zero Carbon Emissions by 2050 Pathway.
Scheduled – all meetings	Overseeing and guiding employee incentives	<Not Applicable>	The Board approved the long-term incentive plan for senior leadership that includes a performance measure linked to the delivery of the Net Zero Carbon Emissions by 2050 Pathway. In 2022, 20 per cent of the long-term incentive plan constituted sustainability elements, including net carbon intensity (NCI) as well as diversity and inclusion (D&I).
Scheduled – all meetings	Overseeing major capital expenditures	<Not Applicable>	The Board approved the formation of Gentari Sdn Bhd, an independent entity focused on providing clean energy solutions.
Scheduled – all meetings	Other, please specify	<Not Applicable>	The Board had a quarterly conversation series with global experts on climate-related topics which include TCFD, human rights and just transition.

C1.1d

(C1.1d) Does your organization have at least one board member with competence on climate-related issues?

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues	Primary reason for no board-level competence on climate-related issues	Explain why your organization does not have at least one board member with competence on climate-related issues and any plans to address board-level competence in the future
Row 1	Not assessed	<Not Applicable>	<Not Applicable>	<Not Applicable>

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Position or committee
Chief Executive Officer (CEO)

Climate-related responsibilities of this position
Managing annual budgets for climate mitigation activities
Managing major capital and/or operational expenditures related to low-carbon products or services (including R&D)
Managing climate-related acquisitions, mergers, and divestitures
Providing climate-related employee incentives
Developing a climate transition plan
Implementing a climate transition plan
Integrating climate-related issues into the strategy

Coverage of responsibilities
<Not Applicable>

Reporting line
Reports to the board directly

Frequency of reporting to the board on climate-related issues via this reporting line
As important matters arise

Please explain
The President and Group Chief Executive Officer heads the Executive Leadership Team (ELT). The ELT sets the enterprise-level strategic direction with the aim to align organisational purpose, strategy and business models in support of our Statement of Purpose “A progressive energy and solutions partner enriching lives for a sustainable future”.

In 2022, the ELT prepared all climate-related deliberations that were presented for Board approval, as listed in the section above. In addition, to keep up to date with latest policy developments the ELT specifically discussed the outcomes of the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC).

Management-level corporate committees supported the ELT in the formulation of strategy relating to climate change and other sustainability themes, as well as in driving systemic change and ensuring operationalisation throughout the organisation. Key corporate committees include: Project Steering Committee (Net Zero Carbon Emissions by 2050 Pathway), Sustainability Committee, Risk Management Committee, and the Health, Safety and Environment (HSE) Committee.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	The Nomination and Remuneration Committee reviewed and endorsed the establishment of Top Management Performance Measurement (“TMPM”) and enhancement of Top Management Incentive Plan i.e. Short-Term and Long-Term Incentive Plans to encourage desired leadership behaviours to successfully deliver PETRONAS’ long-term ambition, which includes the incorporation of the Environmental (including climate change), social and governance indicators with weightage of 20 per cent into the Top Management’s Long-Term Incentive Plan. The 20 per cent weightage constituted sustainability elements, including net carbon intensity (NCI) as well as diversity and inclusion (D&I).

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive
Chief Executive Officer (CEO)

Type of incentive
Please select

Incentive(s)
<Not Applicable>

Performance indicator(s)
Reduction in emissions intensity

Incentive plan(s) this incentive is linked to
Long-Term Incentive Plan

Further details of incentive(s)

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan
The inclusion of net carbon intensity (NCI) as an element in the senior leadership's scorecard acts as a performance measure linked to the delivery of our Pathway to Net Zero Carbon Emissions by 2050. Our NZCE 2050 Pathway stipulates emissions reduction from our own operations and grown ambitions for clean energy solutions, enabled by a 20 per cent allocation of total capital expenditure over the period of 2022-2026.

Entitled to incentive
Chief Financial Officer (CFO)

Type of incentive
Please select

Incentive(s)
<Not Applicable>

Performance indicator(s)
Reduction in emissions intensity

Incentive plan(s) this incentive is linked to
Long-Term Incentive Plan

Further details of incentive(s)

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan
Same as above

Entitled to incentive
Chief Operating Officer (COO)

Type of incentive
Please select

Incentive(s)
<Not Applicable>

Performance indicator(s)
Reduction in emissions intensity

Incentive plan(s) this incentive is linked to
Long-Term Incentive Plan

Further details of incentive(s)

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan
Same as above

Entitled to incentive
Other C-Suite Officer

Type of incentive
Please select

Incentive(s)
<Not Applicable>

Performance indicator(s)
Reduction in emissions intensity

Incentive plan(s) this incentive is linked to
Long-Term Incentive Plan

Further details of incentive(s)

Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan
Same as above.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term			Short-term horizon: 2024 PETRONAS has set a near-term target to cap operational emissions to 49.5 million tonnes of carbon dioxide equivalent by 2024 in Malaysia.
Medium-term	6	11	Medium-term horizon: 2030 PETRONAS also has a target to achieve 25 per cent absolute emissions reduction Groupwide by 2030 based on 2019 emissions data.
Long-term	12	31	Long-term horizon: 2050 With a strong integrated energy portfolio, we are focused on delivering our core responsibilities while transforming to meet the energy meets of the future - in line with our aspiration to achieve net zero carbon emissions by 2050.

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Identified risks relate to how oil, gas and carbon prices will impact PETRONAS Group EBITDA, based on analysis for Upstream, Gas and Downstream businesses for FY2030. In addition, we have identified opportunities in renewable energy, hydrogen and green mobility based on their impact on our EBITDA for the New Energy business for FY2030. The impact to PETRONAS Group EBITDA for the respective scenarios provided by the International Energy Agency (IEA) is identified as follows:

- Stated Policies Scenario (STEPS): +81%
- Announced Pledges Scenario (APS): +42%
- Net Zero Emissions by 2050 Scenario (NZE): -23%

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered
Direct operations

Risk management process
Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment
Annually

Time horizon(s) covered
Short-term
Medium-term

Description of process
Risk management accountability and oversight is an integral part of our governance including Climate Change governance. The Board reviews and considers our principal risks in the PETRONAS Corporate Risk Profile, covering operational and strategic risks based on periodic updates. The updates include an overview of the principal risks, a summary of material changes, as well as updates
on mitigations and performance against key indicators. The Risk Management Committee, Executive Leadership Team (ELT) and Risk Committee assist the Board with the oversight of risk management including environmental, social, and governance (ESG) and climate-related risk management.

We apply a groupwide approach to the management of risk through the establishment of the PETRONAS Risk Policy and complemented by the PETRONAS Resiliency Model, which the Enterprise Risk Management (ERM) Framework is part of. These policies and frameworks provide an integrated and holistic view of the overall strategy towards effective risk management.

Our ERM includes requirements and guidance on the tools and processes involved to systematically identify, assess, evaluate, manage, report and monitor all types of risks. The ERM process requires a thorough assessment of entities and functional risks, including climate-related risks. It also includes an impact and likelihood assessment, which supports consideration of the relative significance of risks. Principal risks are identified and approved by management as pertinent risks to the entity and requires close monitoring.

Recognising the exposure of climate-related risks to our business operations and strategies, the impact of climate change has been taken into consideration and reflected in the development of relevant principal risks such as Sustainability Risks, Financial Liquidity Risk, Market Risk and Legal and Regulatory Risks. We are also strengthening our climate-related risk management efforts and corresponding disclosures to ensure they align with global sustainability frameworks and standards. Our efforts are positioned to align with the TCFD recommendations and the World Economic Forum's Stakeholder Capitalism Metrics.

We have been actively addressing climate change for almost a decade with our Climate Change Position and Framework which is the impetus of our climate change risk assessments that have been conducted since 2015. However, increasing stakeholders' expectations towards energy companies to align the climate risk assessment with global sustainability standards and frameworks has led
us to progressively review and enhance our climate-related risk assessment approach. We have adopted TCFD's categorisation of climate-related risks into two major categories which are transition risks and physical risks.

In 2022, Sustainability Risk is included as one of the principal risks to reflect the significance of managing environmental, social and governance (ESG) related exposures including climate change risk to the business strategies for long term growth. Given the exposures climate change risk present to PETRONAS' business operations and strategies, it has been considered as input to some of the principal risks.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	Exposures to legal and regulatory risks are considered as part of delivery of Energy Transition Strategy, whereby delivery of new products in new territories in a challenging policy and regulatory landscape may hinder entry into target markets.
Emerging regulation	Relevant, sometimes included	Exposures to legal and regulatory risks are considered as part of delivery of Energy Transition Strategy, whereby ability to advocate and comply with sustainability related policies and regulations are key to realising our Net Zero Carbon Emissions 2050 Pathway.
Technology	Relevant, always included	Effective delivery of identified projects and solutions, as well as intensification of efforts to manage GHG emissions and reduce carbon intensity, are key in realising our Net Zero Carbon Emissions 2050 Pathway. These efforts focus on zero routine flaring and venting, energy efficiency, electrification and carbon capture and storage (CCS).
Legal	Relevant, always included	Exposures to legal and regulatory risks are considered as part of delivery of Energy Transition Strategy, whereby ability to shape development and comply with sustainability related policies and regulations are key to realising our Net Zero Carbon Emissions 2050 Pathway.
Market	Relevant, always included	Key factors impacting supply and demand for traditional oil and gas products include accelerated energy transition spurred by climate change impact, which will result in fall in oil and gas prices/margins due to fall in demand, as customer preference changes and renewable energy sources gain more prominence. In addition, regulatory pressure and sustainability agenda add pressure on the need to diversify into non-traditional business areas, to ensure business sustainability.
Reputation	Relevant, always included	Effective management of climate-related risks, as well as strengthened transparency on sustainability impacts and performance, are essential in shaping a positive perception of PETRONAS, particularly concerning our approach to sustainability.
Acute physical	Relevant, always included	PETRONAS' physical assets and ongoing projects are exposed to physical risks as we have presence in more than 30 countries globally. Thus, PETRONAS is not and will not be spared from the direct and indirect damages brought about by the impact of physical climate-related risks. While actions are ongoing to manage physical risks, we continuously re-assess implications, taking into consideration the changing outlook for geographical locations where we are present.
Chronic physical	Relevant, always included	PETRONAS' physical assets and ongoing projects are exposed to physical risks as we have presence in more than 30 countries globally. Thus, PETRONAS is not and will not be spared from the direct and indirect damages brought about by the impact of physical climate-related risks. While actions are ongoing to manage physical risks, we continuously re-assess implications, taking into consideration the changing outlook for geographical locations where we are present.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?
Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier
Risk 1

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Market	Uncertainty in market signals

Primary potential financial impact
Other, please specify (Our financial performance is impacted by the volatility of commodity prices, change in customer preferences, fluctuations in exchange rates and the general macroeconomic outlook.)

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
• Our core business is predominantly in oil and gas. Hence, our financial performance is highly influenced by commodity price volatility, which is generally determined by the supply and demand in the market.
• We have witnessed a shift in customers' preferences, potentially increasing demand for lower-carbon energy sources.

Time horizon
Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost of response to risk

Description of response and explanation of cost calculation
• A review of our Holding Company Units (HCUs) strategies is continuously undertaken in response to the wide-ranging market risks and the corresponding challenges in generating value from our business. We focus on prioritising resources to areas of the highest importance to the organisation and business whilst meeting the expectations of our key stakeholders. We also proactively conduct rigorous efforts to respond to new demands within the core business and growth areas.
• Key factors affecting PETRONAS' financial performance and risk appetite, including market risk, are reviewed and monitored regularly to facilitate strategic decision-making, ensure business activities are undertaken within the approved thresholds, and trigger actions promptly.

Comment

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Emerging regulation	Mandates on and regulation of existing products and services

Primary potential financial impact
Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
As a global energy company, our exposure to changes in the legal and regulatory landscape can come from various causes. Climate change-related enforcement has gained prominence and led to additional legal and regulatory measures, increasing compliance costs and potential claims.

This also takes into account climate change-related legal and regulatory requirements which are unique to each region and/or country where we operate.

Time horizon
Medium-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost of response to risk

Description of response and explanation of cost calculation
• Conduct regular company-internal communications, awareness sessions and training programmes on critical legal areas and specific operational laws affecting the respective entities to enhance awareness and emphasise strict compliance with legal and regulatory requirements.
• Established a pathway to Net Zero Carbon Emissions 2050.
o Introduce steps to translate our Net Zero Carbon Emissions 2050 Pathway into short-, medium- and long-term targets to reduce GHG emissions
o Allocate 20 per cent of total capital expenditure from 2022 to 2026 to scale up decarbonisation efforts and grow low-carbon energy solutions.
o Introduce our position and guiding principle in developing our business in relation to nature and biodiversity and exploring the potential value of nature-based climate solutions.
o Set up a centralised Carbon Management Division within Upstream operations to drive CCS and decarbonisation at pace.
o Set up a Project Steering Committee to steer the establishment and implementation of a credible net zero carbon emissions roadmap, and endorse targets and tangible actions required.

Comment
In addition to compliance cost, emerging regulations may also lead to limited access to debt capital markets as financial institutions have incorporated considerations that exclude oil and gas from their financing, which may impact our competitive edge and growth. We may also lose our competitive standing in the energy industry due to ineffective ESG management which could have a cascading impact on the value chain.

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?
Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier
Opp1

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Products and services

Primary climate-related opportunity driver
Development and/or expansion of low emission goods and services

Primary potential financial impact
Increased revenues through access to new and emerging markets

Company-specific description
• Defined strategic direction coupled with price volatility and changes in customer demand have steered PETRONAS to accelerate diversification of our energy mix to timely capture new market opportunities.
• Establishment of Gentari as our clean energy solutions entity functions to offer clean energy solutions via renewable energy, hydrogen and green mobility.
• In addition, PETRONAS is also exploring other lower carbon opportunities for business growth including biofuels, specialty chemicals, circular economy and nature-based climate solutions.

Time horizon
Short-term

Likelihood
Very likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation
Our immediate focus is to purposefully scale and strategically position the following identified businesses:
• Specialty Chemicals: Strengthen presence in the specialty chemicals business to offer customers a broad range of high-quality products through PETRONAS Chemicals Group Bhd.
• Bio-based Value Chain: Offer bio-based products and offerings to meet emerging market demands.
• Renewable Energy: Build 30-40 GW of renewable energy capacity by 2030.
• Hydrogen: Pursue up to 1.2 MTPA of hydrogen by 2030.
• Green Mobility: Capture 10 per cent market share of public EV charging points across key markets in Asia Pacific.

Comment

Identifier
Opp2

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resilience

Primary climate-related opportunity driver
Other, please specify (Development and/or expansion of low carbon exploration & production business)

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
PETRONAS is undertaking efforts to unlock Malaysia's potential as a regional carbon capture and storage (CCS) solutions hub and exploring opportunities through collaborations in carbon dioxide storage technologies.

Time horizon
Medium-term

Likelihood
Very likely

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation
We have formalised our collaborations with customers technology and industry partners to develop carbon capture and storage (CCS) technology as a viable abatement option for our own operations and to unlock Malaysia's potential as a regional carbon capture and storage (CCS) solutions hub. To date, 19 potential storage sites (6 saline aquifers and 13 depleted fields) to offer CCS as an option for carbon management solution have been identified.

Additionally, three agreements were signed to collaborate on CCS technologies as well as CO_2 storage solutions to decarbonise the country's upstream sector and provide CO_2 storage solutions for the region, namely Memorandum of Understanding (MoU) with POSCO International Corporation and POSCO Engineering & Construction Co Ltd, MoU with ExxonMobil Exploration and Production Malaysia Inc.

PETRONAS has also signed a Memorandum of Understanding (MoU) with Japan Bank for International Cooperation (JBIC) to expand and enhance bilateral cooperation between PETRONAS and Japanese companies in projects undertaken by PETRONAS globally, in cluding carbon capture and storage (CCS).

Finally, we have reached Final Investment Decision (FID) for the development of the Kasawari CO2 Sequestration (CCS) project in offshore Sarawak. The CCS facility is expected to be in operation in stages starting from 2024 (Phase 1), with first injection in 2026 (Phase 2).

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Use of recycling

Primary potential financial impact
Increased revenues through access to new and emerging markets

Company-specific description
New Plastics Economy:
PETRONAS Chemicals Group Berhad (PCG) targets to recover 100 per cent of plastic waste equivalent to its production volume of polymers for the Malaysia market by 2030.

Sustainable Aviation Fuel:
PETRONAS Dagangan Berhad (PDB), the principal marketing arm of PETRONAS partnered with Malaysia Aviation Group to jointly explore potential collaborative opportunities that advance sustainability, including the supply and adoption of Sustainable Aviation Fuel at Kuala Lumpur International Airport (KLIA). On 17 December 2021, Malaysia Airlines, the national carrier of Malaysia, also operated its inaugural flight using sustainable aviation fuel in partnership with Neste and PDB. PDB has also signed a sustainable aviation fuel offtake agreement with Malaysia Aviation Group, where PDB will supply more than 230,000 tonnes of sustainable aviation fuel to Malaysia Aviation Group's airlines with the first delivery expected from 2027 at the Kuala Lumpur International Airport.

Time horizon
Long-term

Likelihood
More likely than not

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
No, we do not have this figure

Potential financial impact figure (currency)
<Not Applicable>

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure

Cost to realize opportunity

Strategy to realize opportunity and explanation of cost calculation
Through PETRONAS Chemicals Group Berhad (PCG), we aim to spearhead the nation’s transition into New Plastics Economy (NPE). This involves collaborating with the Malaysian authorities and relevant stakeholders through the Malaysia Sustainable Plastic Alliance (MaSPA), which complements the actions set out in the Malaysia Roadmap towards zero single-use plastics (2018-2030).

Additionally, PCG has performed a feasibility study with Plastic Energy Ltd to construct a plastic waste to crude naphtha facility in Malaysia. The objective of the study is to bring the technology to Malaysia by turning low quality, mixed plastic waste from landfills into naphtha quality pyrolysis oil. The end-product will be used as feedstock for polymer production, enabling PCG to offer certified circular polymer resins.

Through PETRONAS Dagangan Berhad (PDB), we are venturing into biofuels through a planned development of a greenfield biorefinery as well as co-processing at existing PETRONAS facilities. The biorefinery is targeted to be ready for start-up in 2025, and will be positioned to supply sustainable aviation fuel with operational flexibility to also produce hydrogenated vegetable oil (HVO) or renewable diesel.

Comment

C3. Business Strategy

C3.1

(C3.1) Does your organization's strategy include a climate transition plan that aligns with a 1.5°C world?

Row 1

Climate transition plan

No, our strategy has been influenced by climate-related risks and opportunities, but we do not plan to develop a climate transition plan within two years

Publicly available climate transition plan

<Not Applicable>

Mechanism by which feedback is collected from shareholders on your climate transition plan

<Not Applicable>

Description of feedback mechanism

<Not Applicable>

Frequency of feedback collection

<Not Applicable>

Attach any relevant documents which detail your climate transition plan (optional)

<Not Applicable>

Explain why your organization does not have a climate transition plan that aligns with a 1.5°C world and any plans to develop one in the future

PETRONAS' Pathway to Net Zero Carbon Emissions 2050 will address emissions from our operations with short-, mid- and long-term targets, and include growth targets for our cleaner energy solutions. Delivery of these targets is anchored on our business context, national policies, international frameworks, and scientific consensus on climate change that supports the ambitious goals outlined in the Paris Agreement. We aim to drive our efforts to be within the range of Paris-aligned scenarios and Intergovernmental Panel on Climate Change 1.5°C and 2.0°C scenarios.

PETRONAS aims to play a key role in the energy transition, focusing on energy security and at the same time delivering energy solutions responsibly. Our Energy Transition Strategy is centred on creating value for our customers and stakeholders, with consideration of our role as a national oil company, unique DNA and competitive advantage.

Our priority is to strike the right balance between growth in Core Business and New Business, while reducing greenhouse gas (GHG) emissions. Oil and gas remain PETRONAS' core business. We will produce oil and gas in a differentiated manner, with focus on reducing carbon emission and at competitive cost.

At the same time, PETRONAS has charted a more granular pathway for Net Zero Carbon Emissions 2050. We have identified key abatement levers and their potential to decarbonise PETRONAS' Scope 1 and Scope 2 emissions. We are working on establishing a better understanding of our Scope 3 emission and their impact to our operations.

Explain why climate-related risks and opportunities have not influenced your strategy

<Not Applicable>

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

	Use of climate-related scenario analysis to inform strategy	Primary reason why your organization does not use climate-related scenario analysis to inform its strategy	Explain why your organization does not use climate-related scenario analysis to inform its strategy and any plans to use it in the future
Row 1	Yes, qualitative and quantitative	<Not Applicable>	<Not Applicable>

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenario	Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Transition scenarios: IEA NZE 2050	Company-wide	<Not Applicable>	We have identified certain risks and opportunities to our business based on the three International Energy Agency (IEA) scenarios – Stated Policies Scenario (STEPS), Announced Pledges Scenario (APS), and Net Zero Emissions by 2050 Scenario (NZE). The scenarios were chosen based on their breadth that consider the world's different states based on energy makeup and carbon dioxide emission levels. They present three climate pathways, with temperature rise ranging from below 2°C to 2.7°C by 2100, providing granular and regional data breakdown. The time horizons used were short term (2024), medium term (2030) and long term (2050). Identified risks relate to how oil, gas and carbon prices will impact PETRONAS Group EBITDA, based on analysis for Upstream, Gas and Downstream businesses for FY2030. We have identified opportunities in renewable energy, hydrogen and green mobility based on their impact on our EBITDA for the New Energy business for FY2030.
Transition scenarios: IEA APS	Company-wide	<Not Applicable>	Same description as above.
Transition scenarios: IEA STEPS (previously IEA NPS)	Company-wide	<Not Applicable>	Same description as above.

C3.2b

(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.

Row 1

Focal questions

1. Time bound action plan and targets to deliver net zero carbon emissions by 2050 pathway
2. The potential impact to PETRONAS Group EBITDA
3. Potential cost impact of carbon pricing based on the different climate scenarios

Results of the climate-related scenario analysis with respect to the focal questions

1. Developed PETRONAS' Net Zero Carbon Emissions by 2050 Pathway that sets clear milestone targets for reducing our operational emissions and frames our growth ambitions in new lower carbon value chains
2. Identified risks relate to how oil, gas and carbon prices will impact PETRONAS Group EBITDA, based on analysis for Upstream, Gas and Downstream businesses for FY2030. We have identified opportunities in renewable energy, hydrogen and green mobility based on their impact on our EBITDA for New business for FY2030.
3. Use of internal carbon pricing for sensitivity analysis

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	The Three-Pronged Growth Strategy has guided PETRONAS in strengthening the foundation of its oil and gas, and new business, putting us on a stronger footing to pursue our next phase of growth. As the momentum for the energy transition accelerates, we have crystallised the Three-Pronged Growth Strategy into the PETRONAS Energy Transition Strategy. PETRONAS has identified and pursues several New Businesses to make our portfolio resilient in response to changing customer preferences and to offer clean energy solutions. Our immediate focus is to purposefully scale and strategically position identified businesses namely specialty chemicals, bio-based value chain, carbon capture and storage, renewable energy, hydrogen and green mobility. Each of these businesses are expected to progress at varying pace and trajectories depending on technological advancements and market demand. Specialty Chemicals: In 2022, we strengthened our position in specialty chemicals with the acquisition of Perstorp Group, a global leader in sustainable specialty chemicals. We also have a new lube oil additives manufacturing facility in Echt, Netherlands by BRB International, a wholly-owned subsidiary of PETRONAS Chemicals Group (PCG), to expand specialty portfolio and product offerings. Bio-based value chain: Through PETRONAS Dagangan Berhad (PDB), we are venturing into biofuels through a planned development of a greenfield biorefinery, as well as co-processing at existing PETRONAS facilities. The biorefinery is targeted to be ready for start-up in 2025 and will be positioned to supply sustainable aviation fuel with operational flexibility to also produce hydrogenated vegetable oil (HVO) or renewable diesel. CCS: We reached Final Investment Decision for the development of the Kasawari CO2 Sequestration project in offshore Sarawak. Gentari: Our clean energy solutions arm was established in 2022, to focus on delivering PETRONAS' ambitions in Renewable Energy, Hydrogen and Green Mobility with pace.
Supply chain and/or value chain	Yes	PETRONAS' suppliers and contractors are encouraged to embrace sustainability principles and be accountable for their implementation. Our suppliers are at various stages of implementing sustainability practices across their respective businesses. We provided our assistance through multiple engagements and training programmes to help them progress. Our efforts include, but not limited to the following: 1) Collaboration with financial institutions on the Vendor Financing Programme (VFP) since 2018. In 2022, a total of 270 participants attended the "Fostering Green Financing Solutions" to learn about funding opportunities to diversify into clean energy value chains and adopt sustainability practices. 2) Collaborated with Oil and Gas Services and Equipment (OGSE) industry players though our Vendor Development Programme (VDP) and subject matter experts (SMEs) to promote local entrepreneurship to contribute to socioeconomic growth and improve communities through an increase in employment opportunities.
Investment in R&D	Yes	PETRONAS' investments in technology and innovation aims to fast-track the undertaking of our strategy, which will garner large-scale transformative effects both for PETRONAS and the energy industry. We have intensified innovation to drive long term sustainability in key focus areas namely carbon capture and storage (CCS), specialty chemicals, hydrogen, renewables, advanced materials and circular economy. In response to climate-related risks and opportunities, efforts namely, but not limited to: •The sanctioning of Kasawari CO2 Sequestration, Carbon Capture & Storage (CCS) project aims to achieve first injection by 2026 and R&D on various capture technologies •Launched PETRONAS' Advanced Proton Exchange Membrane (PEM) Electrolyser, and successfully delivered 450kW eletrolyser to Malaysia's first multi-fuel station and secured sales following market launch of patented Proton Membrane (PEM) electrolyser •PETRONAS Research Sdn Bhd and SEDC Energy Sdn Bhd, a subsidiary of Sarawak Economic Development Corporation, have signed an agreement to jointly develop algae production technology which includes cultivation, harvesting and extraction of crude algae oil that will later be refined to produce sustainable aviation fuel (SAF). •Feasibility study between PCG and Plastic Energy Ltd to construct a plastic waste to crude naphtha facility in Malaysia. The objective of the study is to bring the technology to Malaysia by turning low quality, mixed plastic waste from landfills into naphtha quality pyrolysis oil. The end-product will be used as feedstock for polymer production, enabling PCG to offer certified circular polymer resins. •We have also achieved the first steel cut milestone for our offshore low-speed wind turbine project. Various other actions are also in motion to allow PETRONAS to tap into the innovative ecosystem, which include but not limited to: •Setting-up our venture capital funding 2018 and accelerator program, i.e., FutureTech. •Launched a novel initiative in the form of Race2Decarbonise in 2022, a US$250 million hackathon to seek out decarbonisation ideas and solutions to deliver its short-term target of capping emissions at 49,500,000 metric tonnes CO2e by 2024. •Establishment of two technology and research centres at Imperial College London and Heriot-Watt University to push for greater technological advancements in cleaner energy solutions
Operations	Yes	Our key abatement levers are: zero routine flaring and venting, energy efficiency, electrification and CCS to reduce operational emissions, where feasible, and to offset remaining hard-to-abate emission with nature-based climate solutions. In delivering our strategy, various projects and initiatives were pursued in 2022, including but not limited to the following: •Zero routine flaring and venting in support of the World Bank's Zero Routine Flaring by 2030 Initiative •40 energy efficiency and optimisation projects across our Upstream, Gas and Downstream businesses. •Malaysia LNG Sdn Bhd (MLNG) signed a Power Purchase Agreement with Syarikat SESCO Bhd, a subsidiary of Sarawak Energy, for 90MW of hydroelectric power import to PETRONAS LNG Complex (PLC) in Bintulu •Installation of photovoltaic (PV) panels at PLC and deployment of floating solar PV technology for open sea application at two locations in Malaysia. As extraction of hydrocarbons can be a source of methane emissions, reducing methane emissions is a critical priority for the oil and gas sector and thus, a component of the PETRONAS Net Zero Carbon Emissions by 2050 Pathway. We are committed to reduce 50 per cent of methane emissions from our Groupwide natural gas value chain by 2025, from 2019 levels, and achieve a 2030 target of 70 per cent methane emissions reduction for PETRONAS Groupwide natural gas value chain. Meanwhile, to support Malaysia's methane pledge of 30 per cent methane emissions reduction by 2030, PETRONAS will play an active role through Malaysia Petroleum Management as the oil and gas regulator, in committing to 50 per cent methane emissions reduction for Malaysia's natural gas value chain. PETRONAS also launched a novel initiative in the form of Race2Decarbonise in 2022, a US$250 million hackathon to seek out decarbonisation ideas and solutions to deliver its short-term target of capping emissions at 49,500,000 metric tonnes CO2e by 2024. In driving focused and sustainable strategy execution, approximately 20% of total capital expenditure will be allocated for decarbonisation projects and expansion into cleaner energy solutions from 2022 to 2026.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Capital expenditures	Allocate approximately 20 per cent of our CAPEX for decarbonisation projects and expansion into cleaner energy solutions from 2022 to 2026 to reduce Group emissions and overall carbon intensity.

C3.5

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's climate transition?

	Identification of spending/revenue that is aligned with your organization's climate transition	Indicate the level at which you identify the alignment of your spending/revenue with a sustainable finance taxonomy
Row 1	No, but we plan to in the next two years	<Not Applicable>

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?
Absolute target

C4.1a

(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.

Target reference number
Abs 1

Is this a science-based target?
Please select

Target ambition
<Not Applicable>

Year target was set
2022

Target coverage
Company-wide

Scope(s)
Scope 1
Scope 2

Scope 2 accounting method
Location-based

Scope 3 category(ies)
<Not Applicable>

Base year
2019

Base year Scope 1 emissions covered by target (metric tons CO2e)
50870000

Base year Scope 2 emissions covered by target (metric tons CO2e)
1490000

Base year Scope 3, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 2: Capital goods emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 4: Upstream transportation and distribution emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 5: Waste generated in operations emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 6: Business travel emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 7: Employee commuting emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 8: Upstream leased assets emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 10: Processing of sold products emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 11: Use of sold products emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 13: Downstream leased assets emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 14: Franchises emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 15: Investments emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Other (upstream) emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Other (downstream) emissions covered by target (metric tons CO2e)
<Not Applicable>

Base year total Scope 3 emissions covered by target (metric tons CO2e)
<Not Applicable>

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)
54870000

Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1
100

Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2
100

Base year Scope 3, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1: Purchased goods and services (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 2: Capital goods emissions covered by target as % of total base year emissions in Scope 3, Category 2: Capital goods (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target as % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 4: Upstream transportation and distribution covered by target as % of total base year emissions in Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 5: Waste generated in operations emissions covered by target as % of total base year emissions in Scope 3, Category 5: Waste generated in operations (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 6: Business travel emissions covered by target as % of total base year emissions in Scope 3, Category 6: Business travel (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 7: Employee commuting covered by target as % of total base year emissions in Scope 3, Category 7: Employee commuting (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 8: Upstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 8: Upstream leased assets (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target as % of total base year emissions in Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 10: Processing of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 10: Processing of sold products (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 11: Use of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 11: Use of sold products (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 13: Downstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 13: Downstream leased assets (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Category 14: Franchises emissions covered by target as % of total base year emissions in Scope 3, Category 14: Franchises (metric tons CO2e)

<Not Applicable>

Base year Scope 3, Category 15: Investments emissions covered by target as % of total base year emissions in Scope 3, Category 15: Investments (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Other (upstream) emissions covered by target as % of total base year emissions in Scope 3, Other (upstream) (metric tons CO2e)
<Not Applicable>

Base year Scope 3, Other (downstream) emissions covered by target as % of total base year emissions in Scope 3, Other (downstream) (metric tons CO2e)
<Not Applicable>

Base year total Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)
<Not Applicable>

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes
100

Target year
2030

Targeted reduction from base year (%)
25

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]
41152500

Scope 1 emissions in reporting year covered by target (metric tons CO2e)
46480000

Scope 2 emissions in reporting year covered by target (metric tons CO2e)
1420000

Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 2: Capital goods emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 4: Upstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 5: Waste generated in operations emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 6: Business travel emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 7: Employee commuting emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 8: Upstream leased assets emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 9: Downstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 10: Processing of sold products emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 11: Use of sold products emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 12: End-of-life treatment of sold products emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 13: Downstream leased assets emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 14: Franchises emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Category 15: Investments emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Other (upstream) emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Scope 3, Other (downstream) emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Total Scope 3 emissions in reporting year covered by target (metric tons CO2e)
<Not Applicable>

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)
50210000

Does this target cover any land-related emissions?
No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

% of target achieved relative to base year [auto-calculated]
33.9712046655732

Target status in reporting year
Underway

Please explain target coverage and identify any exclusions
Our 2030 target is to achieve greenhouse gas emissions reduction of 25 per cent from 2019 levels for Groupwide operations based on the equity share approach. This translates to a reduction from 54.87 MtCO2e to around 41.15 MtCO2e. The target is inclusive of Corporate and Others (including MISC Group and KLCC Property Holdings), whereby GHG emissions accounting for these business divisions require further refinements due to different organisational boundary used previously, and the breakdown of Scope 1 and Scope 2 emissions data included above does not include MISC Group and KLCC Property Holdings.

Plan for achieving target, and progress made to the end of the reporting year
PETRONAS is continuously finding opportunities to reduce its carbon emissions to meet our Net Zero Carbon Emissions 2050 Pathway through various climate actions. In 2022, we achieved GHG emissions reductions of 0.6 Million tCO2e and cumulatively since 2013, we have reduced 18.1 Million tCO2e of GHG emissions from our operations. PETRONAS has classified its operational emissions reduction efforts into four decarbonisation levers as follows: zero routine flaring and venting, energy efficiency, electrification, and carbon capture and storage (CCS).

List the emissions reduction initiatives which contributed most to achieving this target
<Not Applicable>

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?
Target(s) to reduce methane emissions
Net-zero target(s)
Other climate-related target(s)

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number
Oth 1

Year target was set
2019

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Other, please specify	Other, please specify (Capping greenhouse gas emissions at 49.5 MtCO2e for Malaysia operations by 2024)

Target denominator (intensity targets only)
<Not Applicable>

Base year

Figure or percentage in base year

Target year
2024

Figure or percentage in target year
49.5

Figure or percentage in reporting year
46.11

% of target achieved relative to base year [auto-calculated]
<Calculated field>

Target status in reporting year
Underway

Is this target part of an emissions target?
No, this is a GHG emissions target on its own. We have included it as an 'Others' target as it is a capping target, without a base year.

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions
The short-term target of capping GHG emissions at 49.5 Million tCO2e by 2024, includes the oil and gas value chain where more than 90 per cent of GHG emissions are contributed by activities in Upstream, Gas and Downstream Malaysia operations excluding Corporate and Others (MISC Group and KLCC Property Holdings) activities.

Plan for achieving target, and progress made to the end of the reporting year
GHG emissions from Malaysia operations have been showing positive improvements, as it remained below the cap of 49.5 Million tCO2e. This was contributed by ongoing

investment in GHG emissions reduction efforts from FY2019 to FY2022 despite economic downturn.

List the actions which contributed most to achieving this target
<Not Applicable>

Target reference number
Oth 2

Year target was set
2022

Target coverage
Business activity

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Methane reduction target	Other, please specify (Methane reduction (%))

Target denominator (intensity targets only)
<Not Applicable>

Base year
2019

Figure or percentage in base year
398.96

Target year
2025

Figure or percentage in target year
199.48

Figure or percentage in reporting year
199.97

% of target achieved relative to base year [auto-calculated]
99.7543613394826

Target status in reporting year
Underway

Is this target part of an emissions target?
Yes, it contributes to overall GHG emissions reduction by 2030 (25% reduction) and our net zero carbon emissions by 2050 aspiration.

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions
The methane reduction target covers the natural gas value chain, which is aligned with the Oil and Gas Climate Initiative (OGCI) reporting parameters, which includes production processing and storage, transportation, distribution and end-use of natural gas. The target coverage includes 11 sources of methane emissions.

Plan for achieving target, and progress made to the end of the reporting year
Our short-term methane target is to reduce 50 per cent of methane emissions from our natural gas value chain operations by 2025 compared to 2019. Due to data maturity, our 2022 reported data includes 4 sources of methane emissions, as we continue to improve our methane quantification, the numbers will be revised to reflect the 11 sources of methane emissions as per our target coverage. In 2022, we reduced absolute methane emissions by 49.88 per cent from 2019 levels, with Upstream flaring and venting reduction efforts playing a significant role. These efforts included setting flaring and venting targets, operational campaigns, and implementing capital expenditure projects. We plan to further reduce our methane footprint through continued reduction efforts and improved quantification accuracy.
We are increasing efforts to improve methane measurements. Among the technologies tested in 2022 were satellite and drone to measure methane emissions from onshore and nearshore facilities. Based on the evaluations, suitable top-down measurement technology will be selected to enable reconciliation with bottom-up measurement and meet OGMP2.0 Gold Standard expectations. We tested satellite technology to measure methane emissions where the results showed no emissions above the detection threshold of 100kg/hr at PETRONAS sites. PETRONAS is pursuing another remote sensing technology through strategic collaborations with a local drone service provider to test methane sensors on drones (multi-rotor type) at selected sites i.e. gas transmission assets, refineries and regasification terminals.

List the actions which contributed most to achieving this target
<Not Applicable>

Target reference number
Oth 3

Year target was set
2022

Target coverage
Business activity

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Methane reduction target	Other, please specify (Methane reduction (%))

Target denominator (intensity targets only)
<Not Applicable>

Base year
2019

Figure or percentage in base year
398.96

Target year
2030

Figure or percentage in target year
119.69

Figure or percentage in reporting year
199.97

% of target achieved relative to base year [auto-calculated]
71.2536255236868

Target status in reporting year
Underway

Is this target part of an emissions target?
Yes, it contributes to overall GHG emissions reduction by 2030 (25% reduction) and our net zero carbon emissions by 2050 aspiration.

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions
The methane reduction target covers the natural gas value chain, which is aligned with the Oil and Gas Climate Initiative (OGCI) reporting parameters, which includes production processing and storage, transportation, distribution and end-use of natural gas. The target coverage includes 11 sources of methane emissions.

Plan for achieving target, and progress made to the end of the reporting year
Our mid-term methane target is to reduce 70 per cent of methane emissions from our natural gas value chain operations by 2030 compared to 2019. Due to data maturity, our 2022 reported data includes 4 sources of methane emissions, as we continue to improve our methane quantification, the numbers will be revised to reflect the 11 sources of methane emissions as per our target coverage. In 2022, we reduced absolute methane emissions by 49.88 per cent from 2019 levels, with Upstream flaring and venting reduction efforts playing a significant role. These efforts included setting flaring and venting targets, operational campaigns, and implementing capital expenditure projects. We plan to further reduce our methane footprint through continued reduction efforts and improved quantification accuracy.

List the actions which contributed most to achieving this target
<Not Applicable>

Target reference number
Oth 4

Year target was set
2022

Target coverage
Country/area/region

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Methane reduction target	Other, please specify (Methane reduction (%))

Target denominator (intensity targets only)
<Not Applicable>

Base year
2019

Figure or percentage in base year
100

Target year
2030

Figure or percentage in target year
50

Figure or percentage in reporting year

% of target achieved relative to base year [auto-calculated]
<Calculated field>

Target status in reporting year
Underway

Is this target part of an emissions target?

Is this target part of an overarching initiative?
Other, please specify (The methane emissions reduction target will support Malaysia's commitment to the Global Methane Pledge, a collective effort by more than 150 countries to reduce global methane emissions by at least 30 per cent from 2020 levels, by 2030.)

Please explain target coverage and identify any exclusions
This is a methane reduction target that covers Malaysia's natural gas value chain, which is aligned with the Oil and Gas Climate Initiative (OGCI) reporting parameters, which includes production processing and storage, transportation, distribution and end-use of natural gas. This includes the non-operated assets in Malaysia.

Plan for achieving target, and progress made to the end of the reporting year
Through Malaysia Petroleum Management (MPM), PETRONAS rolled out the Exploration and Production Minimum Environmental Specification (MES) that outlines the requirements on methane emissions measurements, quantifications, and reporting by all upstream operators that are operating in Malaysia. Adhering to these standards ensures that reported methane emissions are accurate and consistent, thereby driving efforts towards reduction.

To further advocate other upstream operators in managing methane emissions, PETRONAS had collaborated with other MGP members in Malaysia (Shell & ExxonMobil) to conduct methane roundtables and methane capability development series with all upstream operators in Malaysia that includes topics like global movements, international standards, methane measurements, methane reduction and available technologies.

List the actions which contributed most to achieving this target
<Not Applicable>

Target reference number
Oth 5

Year target was set
2019

Target coverage
Country/area/region

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Other, please specify	Other, please specify (Installed renewable energy capacity (Megawatts))

Target denominator (intensity targets only)
<Not Applicable>

Base year

Figure or percentage in base year

Target year
2024

Figure or percentage in target year
3000

Figure or percentage in reporting year
1086

% of target achieved relative to base year [auto-calculated]
<Calculated field>

Target status in reporting year
Underway

Is this target part of an emissions target?
No

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions
Increase renewable energy capacity to 3,000MW by 2024

Plan for achieving target, and progress made to the end of the reporting year

List the actions which contributed most to achieving this target
<Not Applicable>

C4.2c

(C4.2c) Provide details of your net-zero target(s).

Target reference number
NZ1

Target coverage
Company-wide

Absolute/intensity emission target(s) linked to this net-zero target
Abs1

Target year for achieving net zero
2050

Is this a science-based target?
Please select

Please explain target coverage and identify any exclusions
Net Zero Carbon Emissions for PETRONAS (Equity Share approach)

Do you intend to neutralize any unabated emissions with permanent carbon removals at the target year?
Yes

Planned milestones and/or near-term investments for neutralization at target year

Planned actions to mitigate emissions beyond your value chain (optional)

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.
Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation		
To be implemented*	2	
Implementation commenced*		
Implemented*	44	620000
Not to be implemented		

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Fugitive emissions reductions	Other, please specify (Flare and vent reduction)

Estimated annual CO2e savings (metric tonnes CO2e)
180000

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period
Please select

Estimated lifetime of the initiative
Please select

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)
440000

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 1

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

Investment required (unit currency – as specified in C0.4)

Payback period
Please select

Estimated lifetime of the initiative
Please select

Comment

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Dedicated budget for other emissions reduction activities	

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products?
No

C-OG4.6

(C-OG4.6) Describe your organization's efforts to reduce methane emissions from your activities.

Leveraging flaring and venting initiatives to reduce significant sources of methane emissions. Additionally, leak reduction and repair (LDAR) exercise conducted to reduce methane emission from process leaks.

C-OG4.7

(C-OG4.7) Does your organization conduct leak detection and repair (LDAR) or use other methods to find and fix fugitive methane emissions from oil and gas production activities?

Yes

C-OG4.7a

(C-OG4.7a) Describe the protocol through which methane leak detection and repair or other leak detection methods, are conducted for oil and gas production activities, including predominant frequency of inspections, estimates of assets covered, and methodologies employed.

LDAR exercise currently conducted at minimum once a year covering all production assets in upstream, gas and downstream business. The current methodologies used is using Optical Gas Imaging (OGI) camera to scan the leak and measure the LEL level of the gas release using portable gas detector. Moving forward, PETRONAS will aim to comply with OGMP2.0 (Level 4 measurement) in which the Quantitative Optical Gas Imaging (QOGI) camera will be used to detect the leak and quantify the methane emissions.

C-OG4.8

(C-OG4.8) If flaring is relevant to your oil and gas production activities, describe your organization's efforts to reduce flaring, including any flaring reduction targets.

Flaring reductions is achieved through various means e.g. gas injection, compressors improvement and gas monetisation. PETRONAS' Upstream business arm has a target of Zero Continuous Flaring by 2030. This is aligned with our external commitment to the World Bank's Zero Routine Flaring initiative.

C5. Emissions methodology

C5.1

(C5.1) Is this your first year of reporting emissions data to CDP?

No

C5.1a

(C5.1a) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

Row 1

Has there been a structural change?

No

Name of organization(s) acquired, divested from, or merged with

<Not Applicable>

Details of structural change(s), including completion dates

<Not Applicable>

C5.1b

(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

	Change(s) in methodology, boundary, and/or reporting year definition?	Details of methodology, boundary, and/or reporting year definition change(s)
Row 1	Yes, a change in boundary	We have revised our carbon emissions accounting method to adhere to international frameworks (refer to PETRONAS Integrated Report 2022, page 167) and sector specific guidance to give us a robust basis for Scope 1 and Scope 2, and a better understanding of Scope 3 greenhouse gas emissions. In reviewing and improving our GHG emissions accounting methods, the total GHG emissions for operational control changed from previous disclosures due to the change of organisational boundary during re-baselining activities conducted in FY2022. Changes in scope since 2021 disclosures cover the inclusion of VESTIGO and Iraq operations and removal of Myanmar because of divestment. PETRONAS has also started to calculate and disclose Scope 3 GHG emissions for Category 11: Use of Sold Products. PETRONAS has plans to validate the Scope 3 methodology and conduct external verification in subsequent years.

C5.1c

(C5.1c) Have your organization's base year emissions and past years' emissions been recalculated as a result of any changes or errors reported in C5.1a and/or C5.1b?

	Base year recalculation	Scope(s) recalculated	Base year emissions recalculation policy, including significance threshold	Past years' recalculation
Row 1	Yes	Scope 1 Scope 2, location-based	As a result of our enhanced emissions accounting practices, which includes a change in organisational boundary where our target now is based on equity share approach instead of operational control. We have adjusted our 2019 baseline reference to 54.87 MtCO2e (from 57.75MtCO2e) via equity share approach. However, GHG emissions accounting for Corporate and Others (including MISC Group and KLCC Property Holdings) require further refinements due to different organisational boundary used previously. As such, Scope 1 and Scope 2 breakdown is not inclusive of Corporate and Others.	Yes

C5.2

(C5.2) Provide your base year and base year emissions.

Scope 1

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
50870000

Comment
Excludes Corporate and Others, equity share approach

Scope 2 (location-based)

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
1490000

Comment
Excludes Corporate and Others, equity share approach

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 1: Purchased goods and services

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 2: Capital goods

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 4: Upstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 5: Waste generated in operations

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 6: Business travel

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 7: Employee commuting

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 8: Upstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 9: Downstream transportation and distribution

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 10: Processing of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 11: Use of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 12: End of life treatment of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 13: Downstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 14: Franchises

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 15: Investments

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.3

(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
IPIECA's Petroleum Industry Guidelines for reporting GHG emissions, 2nd edition, 2011
ISO 14064-1
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
47620000

Start date
January 1 2022

End date
December 31 2022

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)
44670000

Start date
January 1 2021

End date
December 31 2021

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 2

Gross global Scope 1 emissions (metric tons CO2e)
47140000

Start date
January 1 2020

End date
December 31 2020

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)
53090000

Start date
January 1 2019

End date
December 31 2019

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 4

Gross global Scope 1 emissions (metric tons CO2e)
49660000

Start date
January 1 2018

End date
December 31 2018

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 5

Gross global Scope 1 emissions (metric tons CO2e)
55878500

Start date
January 1 2017

End date
December 31 2017

Comment
Data for Operational Control boundary (excludes Corporate and Others)

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based
We are reporting a Scope 2, location-based figure

Scope 2, market-based
We have operations where we are able to access electricity supplier emission factors or residual emissions factors, but are unable to report a Scope 2, market-based figure

Comment
We are able to access electricity supplier emission factors or residual emission factors only in some of our international locations, and 97% of our Scope 1 and 2 emissions are from Malaysia operations. Therefore, we are not reporting a Scope 2 market-based figure given the magnitude of the emissions are considered insignificant for now.

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based
1960000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2022

End date
December 31 2022

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 1

Scope 2, location-based
1760000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2021

End date
December 31 2021

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 2

Scope 2, location-based
1920000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2020

End date
December 31 2020

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 3

Scope 2, location-based
1930000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2019

End date
December 31 2019

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 4

Scope 2, location-based
1960000

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2018

End date
December 31 2018

Comment
Data for Operational Control boundary (excludes Corporate and Others)

Past year 5

Scope 2, location-based
621500

Scope 2, market-based (if applicable)
<Not Applicable>

Start date
January 1 2017

End date
December 31 2017

Comment
Data for Operational Control boundary (excludes Corporate and Others)

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1, Scope 2 or Scope 3 emissions that are within your selected reporting boundary which are not included in your disclosure?
Yes

C6.4a

(C6.4a) Provide details of the sources of Scope 1, Scope 2, or Scope 3 emissions that are within your selected reporting boundary which are not included in your disclosure.

Source of excluded emissions
Corporate and Others, including MISC Group and KLCC Property Holdings.

Scope(s) or Scope 3 category(ies)
Scope 1
Scope 2 (location-based)

Relevance of Scope 1 emissions from this source
Please select

Relevance of location-based Scope 2 emissions from this source
Please select

Relevance of market-based Scope 2 emissions from this source
<Not Applicable>

Relevance of Scope 3 emissions from this source
<Not Applicable>

Date of completion of acquisition or merger
<Not Applicable>

Estimated percentage of total Scope 1+2 emissions this excluded source represents
<Not Applicable>

Estimated percentage of total Scope 3 emissions this excluded source represents
<Not Applicable>

Explain why this source is excluded
GHG emissions accounting for Corporate and Others require further refinements due to different organisational boundary used previously. At this stage, we do not have breakdown of data by Scope 1 and Scope 2 for Corporate and Others. However, GHG emissions for Corporate and Others have been included in our base year for C4.1b target (Abs1). The total figures for Scope 1 and Scope 2 in Corporate and Others are: 2022: 4.45 MtCO2e; 2021: 4.65 MtCO2e; 2020: 4.58 MtCO2e, 2019: 4.79 MtCO2e, 2018: 4.45 MtCO2e under Operational Control boundary.

Explain how you estimated the percentage of emissions this excluded source represents
<Not Applicable>

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Based on the GHG emissions baseline study conducted in 2022, Category 1 was also identified as a category of interest, based on stakeholder input and/or business materiality, either qualitatively or quantitatively However, due to the nature and complexity of gathering the data, its inclusion is being deferred to a future time. Moving forward, PETRONAS will work to quantify Category 1 for disclosure.

Capital goods

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
A study was initiated in 2022 to quantify Scope 3 from this category based on procurements' spent data (coverage of approximately 12% of the entities in PETRONAS). The exercise was at preliminary level and materiality of this category is yet to be determined.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Upstream transportation and distribution

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
A study was initiated in 2022 to quantify Scope 3 from this category based on procurements' spent data (coverage of approximately 12% of the entities in PETRONAS). The exercise was at preliminary level and materiality of this category is yet to be determined.

Waste generated in operations

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Business travel

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Employee commuting

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Upstream leased assets

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
A study was initiated in 2022 to quantify Scope 3 from this category based on procurements' spent data (coverage of approximately 12% of the entities in PETRONAS). The exercise was at preliminary level and materiality of this category is yet to be determined.

Downstream transportation and distribution

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Processing of sold products

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Based on the GHG emissions baseline study conducted in 2022, Category 10 was also identified as a category of interest, based on stakeholder input and/or business materiality, either qualitatively or quantitatively However, due to the nature and complexity of gathering the data, its inclusion is being deferred to a future time.

Use of sold products

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
307610000

Emissions calculation methodology
Fuel-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners

Please explain

End of life treatment of sold products

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Based on the GHG emissions baseline study conducted in 2022, Category 12 was also identified as a category of interest, based on stakeholder input and/or business materiality, either qualitatively or quantitatively However, due to the nature and complexity of gathering the data, its inclusion is being deferred to a future time.

Downstream leased assets

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Based on the GHG emissions baseline study conducted in 2022, Category 13 was also identified as a category of interest, based on stakeholder input and/or business materiality, either qualitatively or quantitatively However, due to the nature and complexity of gathering the data, its inclusion is being deferred to a future time.

Franchises

Evaluation status
Not evaluated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Investments

Evaluation status
Relevant, not yet calculated

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain
Based on the GHG emissions baseline study conducted in 2022, Category 15 was also identified as a category of interest, based on stakeholder input and/or business materiality, either qualitatively or quantitatively However, due to the nature and complexity of gathering the data, its inclusion is being deferred to a future time.

Other (upstream)

Evaluation status

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

Other (downstream)

Evaluation status

Emissions in reporting year (metric tons CO2e)
<Not Applicable>

Emissions calculation methodology
<Not Applicable>

Percentage of emissions calculated using data obtained from suppliers or value chain partners
<Not Applicable>

Please explain

C6.5a

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

Start date
January 1 2021

End date
December 31 2021

Scope 3: Purchased goods and services (metric tons CO2e)

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)
289960000

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Past year 2

Start date
January 1 2020

End date
December 31 2020

Scope 3: Purchased goods and services (metric tons CO2e)

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)
283830000

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Past year 3

Start date
January 1 2019

End date
December 31 2019

Scope 3: Purchased goods and services (metric tons CO2e)

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)
315930000

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

Past year 4

Start date

End date

Scope 3: Purchased goods and services (metric tons CO2e)

Scope 3: Capital goods (metric tons CO2e)

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

Scope 3: Upstream transportation and distribution (metric tons CO2e)

Scope 3: Waste generated in operations (metric tons CO2e)

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

Scope 3: Downstream transportation and distribution (metric tons CO2e)

Scope 3: Processing of sold products (metric tons CO2e)

Scope 3: Use of sold products (metric tons CO2e)

Scope 3: End of life treatment of sold products (metric tons CO2e)

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

Scope 3: Other (upstream) (metric tons CO2e)

Scope 3: Other (downstream) (metric tons CO2e)

Comment

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure
34.57

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
13660000

Metric denominator
barrel of oil equivalent (BOE)

Metric denominator: Unit total

Scope 2 figure used
Location-based

% change from previous year
11.2

Direction of change
Decreased

Reason(s) for change
Other emissions reduction activities

Please explain
Upstream GHG intensity for total upstream operations has reduced driven by zero continuous flaring and venting requirement in PETRONAS Carbon Commitments.

Intensity figure
0.02

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

Metric denominator
barrel of oil equivalent (BOE)

Metric denominator: Unit total

Scope 2 figure used
Location-based

% change from previous year
11.11

Direction of change
Increased

Reason(s) for change
Please select

Please explain
This is the intensity figure for our downstream refineries.

Intensity figure
0.68

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

Metric denominator
Other, please specify (tonnes)

Metric denominator: Unit total

Scope 2 figure used
Location-based

% change from previous year
1.5

Direction of change
Increased

Reason(s) for change
Please select

Please explain
This is the intensity figure for our downstream petrochemical plants.

C-OG6.12

(C-OG6.12) Provide the intensity figures for Scope 1 emissions (metric tons CO2e) per unit of hydrocarbon category.

C-OG6.13

(C-OG6.13) Report your methane emissions as percentages of natural gas and hydrocarbon production or throughput.

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?
Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	42150000	IPCC Fourth Assessment Report (AR4 - 100 year)
CH4	5385000	IPCC Fourth Assessment Report (AR4 - 100 year)
N2O	205620	IPCC Fourth Assessment Report (AR4 - 100 year)
Please select		Please select

C-OG7.1b

(C-OG7.1b) Break down your total gross global Scope 1 emissions from oil and gas value chain production activities by greenhouse gas type.

Emissions category
Combustion (excluding flaring)
Flaring
Venting
Other (please specify)

Value chain
Upstream
Midstream
Downstream

Product
Unable to disaggregate

Gross Scope 1 CO2 emissions (metric tons CO2)
42150000

Gross Scope 1 methane emissions (metric tons CH4)
215400

Total gross Scope 1 emissions (metric tons CO2e)
47620000

Comment
The numbers above are for operational control approach.

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/area/region.

Country/area/region	Scope 1 emissions (metric tons CO2e)
Malaysia	44350000
Other, please specify (International)	3270000

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.
By activity

C7.3c

(C7.3c) Break down your total gross global Scope 1 emissions by business activity.

Activity	Scope 1 emissions (metric tons CO2e)
Combustion (operational control)	33530000
Flaring (operational control)	8330000
Venting (operational control)	3740000
Others (operational control)	2010000

C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4

(C-CE7.4/C-CH7.4/C-CO7.4/C-EU7.4/C-MM7.4/C-OG7.4/C-ST7.4/C-TO7.4/C-TS7.4) Break down your organization's total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Net Scope 1 emissions , metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Electric utility activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	13500000	<Not Applicable>	
Oil and gas production activities (midstream)	22750000	<Not Applicable>	
Oil and gas production activities (downstream)	11360000	<Not Applicable>	
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/area/region.

Country/area/region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Other, please specify (Malaysia)	1760000	
Other, please specify (International)	200000	

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

Please select

C7.7

(C7.7) Is your organization able to break down your emissions data for any of the subsidiaries included in your CDP response?

Yes

C7.7a

(C7.7a) Break down your gross Scope 1 and Scope 2 emissions by subsidiary.

Subsidiary name

PETRONAS Chemicals Group Berhad

Primary activity

Other base chemicals

Select the unique identifier(s) you are able to provide for this subsidiary

Another unique identifier, please specify (Registration number under the Companies Commission of Malaysia (CCM))

ISIN code – bond

<Not Applicable>

ISIN code – equity

<Not Applicable>

CUSIP number
<Not Applicable>

Ticker symbol
<Not Applicable>

SEDOL code
<Not Applicable>

LEI number
<Not Applicable>

Other unique identifier
199801003704 (459830-K)

Scope 1 emissions (metric tons CO2e)
5700000

Scope 2, location-based emissions (metric tons CO2e)
1350000

Scope 2, market-based emissions (metric tons CO2e)

Comment

Subsidiary name
PETRONAS Gas Berhad

Primary activity
Oil & gas refining

Select the unique identifier(s) you are able to provide for this subsidiary
Another unique identifier, please specify (Registration number under the Companies Commission of Malaysia (CCM))

ISIN code – bond
<Not Applicable>

ISIN code – equity
<Not Applicable>

CUSIP number
<Not Applicable>

Ticker symbol
<Not Applicable>

SEDOL code
<Not Applicable>

LEI number
<Not Applicable>

Other unique identifier
198301006447 (101671-H)

Scope 1 emissions (metric tons CO2e)
4655100

Scope 2, location-based emissions (metric tons CO2e)
49697

Scope 2, market-based emissions (metric tons CO2e)

Comment

Subsidiary name
PETRONAS Dagangan Berhad

Primary activity
Oil & gas marketing & retailing

Select the unique identifier(s) you are able to provide for this subsidiary
Another unique identifier, please specify (Registration number under the Companies Commission of Malaysia (CCM))

ISIN code – bond
<Not Applicable>

ISIN code – equity
<Not Applicable>

CUSIP number
<Not Applicable>

Ticker symbol
<Not Applicable>

SEDOL code
<Not Applicable>

LEI number
<Not Applicable>

Other unique identifier
198201008499 (88222-D)

Scope 1 emissions (metric tons CO2e)
63800

Scope 2, location-based emissions (metric tons CO2e)
93300

Scope 2, market-based emissions (metric tons CO2e)

Comment

C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7

(C-CE7.7/C-CH7.7/C-CO7.7/C-MM7.7/C-OG7.7/C-ST7.7/C-TO7.7/C-TS7.7) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Scope 2, market-based (if applicable), metric tons CO2e	Comment
Cement production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Chemicals production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Coal production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Metals and mining production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Oil and gas production activities (upstream)	64749		
Oil and gas production activities (midstream)	1109241		Scope 2 is negative value for midstream, as they are generating and providing power to few downstream plants.
Oil and gas production activities (downstream)	1600000		
Steel production activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport OEM activities	<Not Applicable>	<Not Applicable>	<Not Applicable>
Transport services activities	<Not Applicable>	<Not Applicable>	<Not Applicable>

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?
Increased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change in emissions	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption		<Not Applicable>		
Other emissions reduction activities		<Not Applicable>		
Divestment		<Not Applicable>		
Acquisitions		<Not Applicable>		
Mergers		<Not Applicable>		
Change in output		<Not Applicable>		
Change in methodology		<Not Applicable>		
Change in boundary		<Not Applicable>		
Change in physical operating conditions		<Not Applicable>		
Unidentified		<Not Applicable>		
Other	2950000	Increased	5.78	Generally due to increase in production and change of organisational boundary during re-baselining activities conducted in FY2022. Changes in scope since 2021 disclosures cover the inclusion of VESTIGO* and Iraq operations and removal of Myanmar because of divestment.

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?
Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

Don't know

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	No
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	Please select			
Consumption of purchased or acquired electricity	<Not Applicable>			
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>		<Not Applicable>	
Total energy consumption	<Not Applicable>			

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	Yes
Consumption of fuel for co-generation or tri-generation	Yes

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Sustainable biomass

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

Other biomass

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

Other renewable fuels (e.g. renewable hydrogen)

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

Coal

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

Oil

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

Gas

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

Other non-renewable fuels (e.g. non-renewable hydrogen)

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

Total fuel

Heating value

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

MWh fuel consumed for self-generation of cooling

MWh fuel consumed for self- cogeneration or self-trigeneration

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity				
Heat				
Steam				
Cooling				

C8.2g

(C8.2g) Provide a breakdown by country/area of your non-fuel energy consumption in the reporting year.

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description
Waste

Metric value
76485

Metric numerator
Tonnes

Metric denominator (intensity metric only)

% change from previous year
29.14

Direction of change
Increased

Please explain
Protecting and conserving the environment will minimise the impact of our operations on the environment, given our role as an environmental steward. We identify and assess the environmental impact of our operations and focus on managing our resources sustainably. This includes, but is not limited to, decreasing the impact of emissions, creating responsible waste and water management strategies, preventing spills and decommissioning our assets in a safe and sustainable manner.

Waste management is a major challenge for society, as the overproduction of waste negatively impacts the environment, health, and economic growth. Effective waste management can reduce operational costs and environmental impact while improving reputation and stakeholder trust.

In 2022, PETRONAS generated 144,620 tonnes of hazardous waste, an increase of 19,736 tonnes from 124,884 tonnes in 2021. The higher amount of waste generated in 2022 was contributed by scheduled maintenance and tank cleaning activities. The total amount of waste recycled or recovered during the year in review was 73,643 tonnes of which 63,133 tonnes were attributed by operations in Malaysia. These are equivalent to waste recycling and recovery rates of 51 per cent for the Group or 77 per cent for Malaysia operations.

C-OG9.2a

(C-OG9.2a) Disclose your net liquid and gas hydrocarbon production (total of subsidiaries and equity-accounted entities).

	In-year net production	Comment
Crude oil and condensate, million barrels	313.54	For Upstream business, total daily production average of 2,434 thousand barrels of oil equivalent (boe) per day in FY2022, comprising 859kboe/d of Crude Oil and Condensate and 1,575kboe/d of natural gas. With 365 days in a year, 859 kboe * 365days = 313.54 million boe
Natural gas liquids, million barrels		
Oil sands, million barrels (includes bitumen and synthetic crude)		
Natural gas, billion cubic feet	3248.04	For Upstream business, total daily production average of 2,434 thousand barrels of oil equivalent (boe) per day in FY2022, comprising 859kboe/d of Crude Oil and Condensate and 1,575kboe/d of natural gas. 1575kboe/d * 365days * 5.65 (conversion factor from boe to mmscf) / 1000 = 3,248.04 billion scf

C-OG9.2b

(C-OG9.2b) Explain which listing requirements or other methodologies you use to report reserves data. If your organization cannot provide data due to legal restrictions on reporting reserves figures in certain countries/areas, please explain this.

C-OG9.2c

(C-OG9.2c) Disclose your estimated total net reserves and resource base (million boe), including the total associated with subsidiaries and equity-accounted entities.

	Estimated total net proved + probable reserves (2P) (million BOE)	Estimated total net proved + probable + possible reserves (3P) (million BOE)	Estimated net total resource base (million BOE)	Comment
Row 1	9250	12260	24750	We do not disclose our prospective resources, hence the net total resource base figure here does not include prospective resources and is a sum of 2P and 2C.

C-OG9.2d

(C-OG9.2d) Provide an indicative percentage split for 2P, 3P reserves, and total resource base by hydrocarbon categories.

	Net proved + probable reserves (2P) (%)	Net proved + probable + possible reserves (3P) (%)	Net total resource base (%)	Comment
Crude oil/ condensate/ natural gas liquids	23	23	22	Only inclusive of oil and condensate. We do not disclose our prospective resources, hence the net total resource base figure here does not include prospective resources and is a sum of 2P and 2C.
Natural gas	77	77	78	We do not disclose our prospective resources, hence the net total resource base figure here does not include prospective resources and is a sum of 2P and 2C.
Oil sands (includes bitumen and synthetic crude)	0	0	0	Not applicable.

C-OG9.2e

(C-OG9.2e) Provide an indicative percentage split for production, 1P, 2P, 3P reserves, and total resource base by development types.

C-OG9.3a

(C-OG9.3a) Disclose your total refinery throughput capacity in the reporting year in thousand barrels per day.

	Total refinery throughput capacity (Thousand barrels per day)
Capacity	

C-OG9.3b

(C-OG9.3b) Disclose feedstocks processed in the reporting year in million barrels per year.

	Throughput (Million barrels)	Comment
Oil		
Other feedstocks		
Total		

C-OG9.3c

(C-OG9.3c) Are you able to break down your refinery products and net production?

No

C-OG9.3e

(C-OG9.3e) Please disclose your chemicals production in the reporting year in thousand metric tons.

Product	Production, Thousand metric tons	Capacity, Thousand metric tons
Other, please specify (Olefins, Glycols & Derivatives)	2330	
Other, please specify (Polymers)	521	
Other, please specify (Aromatics & MTBE)	726	
Other, please specify (Methanol)	1854	
Other, please specify (Ammonia)	2166	
Other, please specify (Urea)	2370	

C-OG9.5a/C-CO9.5a

(C-OG9.5a/C-CO9.5a) Break down, by fossil fuel expansion activity, your organization's CAPEX in the reporting year and CAPEX planned over the next 5 years.

	CAPEX in the reporting year for this expansion activity (unit currency as selected in C0.4)	CAPEX in the reporting year for this expansion activity as % of total CAPEX in the reporting year	CAPEX planned over the next 5 years for this expansion activity as % of total CAPEX planned over the next 5 years	Explain your CAPEX calculations, including any assumptions
Exploration of new oil fields				CAPEX for Upstream business accounted for 47 per cent of the the Group's total CAPEX with a total spending of RM23.7 billion, an increase of RM9.0 billion as compared to FY2021. Upstream's CAPEX for FY2022 was predominantly spent on exploration, development and production activities aimed at sustaining and growing production in Malaysia and international operations.
Exploration of new natural gas fields				See comment above. There is no disclosure on breakdown of Upstream spent during the year.
Expansion of existing oil fields				See comment above. There is no disclosure on breakdown of Upstream spent during the year.
Expansion of existing natural gas fields				See comment above. There is no disclosure on breakdown of Upstream spent during the year.
Development of new coal mines	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Expansion of existing coal mines	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>

C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6

(C-CE9.6/C-CG9.6/C-CH9.6/C-CN9.6/C-CO9.6/C-EU9.6/C-MM9.6/C-OG9.6/C-RE9.6/C-ST9.6/C-TO9.6/C-TS9.6) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
Row 1	Yes	

C-CO9.6a/C-EU9.6a/C-OG9.6a

(C-CO9.6a/C-EU9.6a/C-OG9.6a) Provide details of your organization's investments in low-carbon R&D for your sector activities over the last three years.

Technology area	Stage of development in the reporting year	Average % of total R&D investment over the last 3 years	R&D investment figure in the reporting year (unit currency as selected in C0.4) (optional)	Average % of total R&D investment planned over the next 5 years	Explain how your R&D investment in this technology area is aligned with your climate commitments and/or climate transition plan
Hydrogen	Please select				-Memorandum of Understanding (MoU) with Sarawak Economic Development Corporation (SEDC) Energy to develop green hydrogen technologies. -Signed an MoU with Tenaga Nasional Berhad (TNB) to collaboratively study the development of a green hydrogen ecosystem. - Gentari's hydrogen collaborations are in various stages of development in Malaysia, India, East Asia and the Middle East. These cover initiatives to explore the development of green hydrogen projects and its transportation, advocacy on policy and regulations to support the hydrogen industry and studies on a low carbon ammonia supply chain, among others.
Energy efficiency in transport	Please select				- Strengthened the EV ecosystem in India and Malaysia through the growth of our EV charging network, expansion of our EV fleet operations, as well as through ongoing strategic partnership. As of FY22, in India, delivered 382 three-wheel EV, 161 charge points and clocked in 2 million clean kilometers while in Malaysia, delivered 151 charge points,Southeast Asia's first public 350kW super charger in X Park Malaysia in Sunway Serene charging hub. - Partnership with Mercedes-AMG PETRONAS F1 team to develop advanced sustainable fuel for the sport and consumers - In keeping with PETRONAS Dagangan Berhad (PDB) commitment to our approach to sustainability and enhancing customer experience, PDB is actively exploring collaborations with prominent players in the electric vehicle industry. In this pursuit, PDB entered into two tripartite Memoranda of Understanding (MoU) with Gentari Green Mobility Sdn Bhd, EP Blueshark Sdn Bhd, Blueshark Holding Limited and Handal Indah Sdn Bhd for the installation of battery swap stations for electric two-wheelers and charging infrastructure for electric buses at PETRONAS stations. -Continued innovating next-generation e-fluids with the PETRONAS Iona range after we took a pioneering step in the industry to introduce a range of automobile fluids for electric vehicles. PRPC signed an MoU with Gentari to collaborate on the deployment of a zero emissions vehicle fleet supported by EV charging points, and explore the potential for hydrogen fuel cell vehicles in PIC, in line with PETRONAS' groupwide decarbonisation efforts - PRPC signed an MoU with Gentari to collaborate on the deployment of a zero emissions vehicle fleet supported by EV charging points, and explore the potential for hydrogen fuel cell vehicles in PIC, in line with PETRONAS' groupwide decarbonisation efforts -Gentari has also initiated several partnerships with PETRONAS Group, Original Equipment Manufacturers (OEM), property developers and bus operators to support the EV ecosystem development covering both infrastructure development and vehicles. Gentari continues to advocate and support new policy development and is a key voice in Malaysia's EV Taskforce as well as a key member of the Zero Emission Vehicle Association (ZEVA).Gentari signed an MoU with Thailand's Evolt Technology Company Limited, marking its inauguralforay into regional EV infrastructure development in Southeast Asia, in line with its aspirations to expand across key markets in Asia Pacific
Other, please specify (Renewable Energy)	Please select				-Entered Australia's renewable energy market with Gentari's acquisition of WIRSOL Energy, a leading renewable energy solutions provider with integrated solar and battery energy storage system capabilities. -In 2022, we achieved 1.6 GW of global renewable energy capacity in operations and under development, entered into new partnerships to support the growth of the hydrogen industry and strengthened our green mobility footprint in Malaysia, India and regionally to explore potential developments in Thailand and Indonesia.
Other, please specify (Carbon capture and storage (ccs))	Please select				- Signed an MoU with Tenaga Nasional Berhad (TNB) to collaboratively study the development of CCS technology - Forged 14 strategic commercial partnerships in Carbon Capture and Storage (CCS) value chain with energy players, cross-industry partners and institutions to establish a viable ecosystem positioning Malaysia as a CCS solutions hub for the region. - Signed two Project Development Agreements (PDAs) with ExxonMobil to jointly pursue CCS activation projects in Malaysia, including the maturation of technical scopes for the CCS value chain and more.
Other, please specify (Biofuels)	Please select				-Ongoing development of a greenfield biorefinery as well as co-processing at existing facilities. The biorefinery will be positioned to produce Sustainable Aviation Fuel (SAF) with operational flexibility to generate Hydrogenated Vegetable Oil (HVO) or renewable diesel with expected commencement in 2025. By 2027, it is anticipated that SAF will be produced at our current facilities through co-processing. In the interim, Phase 1 of co-processing will produce SAF by the end of 2023 (before further expansion under Phase 2 in 2027), giving PDB and PETCO volume to trade and sell SAF in the domestic and export markets, respectively

C-OG9.7

(C-OG9.7) Disclose the breakeven price (US$/BOE) required for cash neutrality during the reporting year, i.e. where cash flow from operations covers CAPEX and dividends paid/ share buybacks.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place
Triennial process

Status in the current reporting year
Underway but not complete for reporting year – previous statement of process attached

Type of verification or assurance
Limited assurance

Attach the statement
PETRONAS_2017-19 GHG Verification_ERM CVS Assurance Statement_FINAL_31 MARCH 2021.pdf

Page/ section reference

Relevant standard
ISO14064-1

Proportion of reported emissions verified (%)

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach
Scope 2 location-based

Verification or assurance cycle in place
Please select

Status in the current reporting year
No verification or assurance of current reporting year

Type of verification or assurance
Please select

Attach the statement

Page/ section reference

Relevant standard
Please select

Proportion of reported emissions verified (%)

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category
Please select

Verification or assurance cycle in place
Please select

Status in the current reporting year
Underway but not complete for current reporting year – first year it has taken place

Type of verification or assurance
Please select

Attach the statement

Page/section reference

Relevant standard
Please select

Proportion of reported emissions verified (%)

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?
In progress

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

BC carbon tax

C11.1c

(C11.1c) Complete the following table for each of the tax systems you are regulated by.

BC carbon tax

Period start date

Period end date

% of total Scope 1 emissions covered by tax

Total cost of tax paid

Comment

We have been complying with the carbon tax on regulated countries. For BC carbon tax Canada, the price is at C$35/tCO2e for 2022.

Carbon price in British Columbia comprehends a 2% annual escalation.

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

PETRONAS acknowledges and encourages the development of carbon pricing instruments. In order to assess the resilience of our portfolio we are considering the potential costs associated with operational GHG emissions. Therefore, PETRONAS consider carbon pricing estimates from the main carbon pricing instruments in which we operate which allow us to obtain short, medium and long-term estimates of future costs of carbon. Currently, we are not subjected to EU emission trading system.

We keep track of our GHG emissions in countries where we operate, measuring and closely monitoring emission trends from our operations to identify hotspots where abatement measures are required to be deployed in the short-term

PETRONAS focuses on reducing GHG from our operations through the implementation of our decarbonization levers such as zero venting and flaring, electrification, energy efficiency, and carbon capture and storage.

PETRONAS is working to ensure that GHG emissions that cannot be avoided are captured or offset using technology and nature. In this regard, our nature-based strategy constitutes another pillar to contribute to environmental welfare. In the case of hard to abate emissions, we are developing our own strategy to implement nature-based projects that can provide high-quality carbon credits post 2030. We will offset our emissions only after exhausting our abovementioned decarbonization levers.

We are also scaling up our efforts in offering clean energy solutions through the establishment of Gentari Sdn Bhd in September 2022, to deliver energy solutions such as renewable energy, hydrogen and green mobility.

C11.2

(C11.2) Has your organization canceled any project-based carbon credits within the reporting year?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

Yes

C11.3a

(C11.3a) Provide details of how your organization uses an internal price on carbon.

Type of internal carbon price

Shadow price

How the price is determined

Price/cost of voluntary carbon offset credits
Benchmarking against peers

Objective(s) for implementing this internal carbon price

Drive low-carbon investment
Identify and seize low-carbon opportunities

Scope(s) covered

Scope 1
Scope 2

Pricing approach used – spatial variance

Other, please specify (Differentiated.PETRONAS applies an internal carbon price for developed countries and a lower carbon price for developing countries.In countries where carbon pricing instruments are in place,we apply the carbon price according to national regulations.)

Pricing approach used – temporal variance

Other, please specify (Static pricing. PETRONAS continuously evaluates the appropriate internal carbon price according to changes in markets and regulations.)

Indicate how you expect the price to change over time

<Not Applicable>

Actual price(s) used – minimum (currency as specified in C0.4 per metric ton CO2e)

Actual price(s) used – maximum (currency as specified in C0.4 per metric ton CO2e)

Business decision-making processes this internal carbon price is applied to

Opportunity management

Mandatory enforcement of this internal carbon price within these business decision-making processes

Yes, for some decision-making processes, please specify (PETRONAS uses the internal carbon price (shadow price) for sensitivity analysis at investment decision only.)

Explain how this internal carbon price has contributed to the implementation of your organization's climate commitments and/or climate transition plan

We are currently moving from sensitivity only to base case economics for new investments occurring in places that do not have a carbon price instrument in place.

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers
Yes, our customers/clients
Yes, other partners in the value chain

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement
Engagement & incentivization (changing supplier behavior)

Details of engagement
Run an engagement campaign to educate suppliers about climate change

% of suppliers by number

% total procurement spend (direct and indirect)

% of supplier-related Scope 3 emissions as reported in C6.5

Rationale for the coverage of your engagement
Our external engagement is conducted to be fully aligned with our net zero carbon emission by 2050 aspiration and support our statement of purpose. This is done as we continue to strengthen our overall sustainability governance, raise awareness, deliver education programmes and define our positions on various climate sustainability-related aspects.

Impact of engagement, including measures of success
We organised the 101 Sustainability Awareness session, in collaboration with Yinson Holdings Berhad and SOLS Energy Sdn Bhd to strengthen our vendors' understanding and responsiveness towards sustainability. 342 participants attended the 101 Sustainability Awareness programme to strengthen the awareness of PETRONAS' pool of vendors on our approach to sustainability.

We conducted a second sustainability awareness session titled Shifting Towards Sustainability, later in the year in collaboration with our Strategic Research division, Sustainability Energy Development Authority (SEDA) and Kenanga Suria Sdn Bhd. 383 participants attended the second sustainability awareness session – Shifting Towards Sustainability.

In addition, Strategic Dialogue was conducted with 20 key vendors to understand key challenges and readiness for Malaysian vendors to become ESG compliant.

Our activities included hosting the Vendor Financing Programme (VFP) Conversation Day in collaboration with Malaysian Oil, Gas and Energy Services Council (MOGSC) and Malaysia OSV Owners' Association (MOSVA) at Putrajaya to help develop Malaysian OGSE players by presenting opportunities for funding. 127 participants attended the VFP Conversation Day. RM1.7 billion in financing was awarded to 281 successful applications under the VFP since 2018. 270 participants attended the Fostering Green Financing Solutions – From Financial Institutions to Vendors programme to learn about funding opportunities to diversify into clean energy value chains and adopt sustainability practices. This session was held in collaboration with five financial institutions: Bank Muamalat, CIMB, HSBC, Kumpulan Modal Perdana, and Malaysian Industrial Development Finance (MIDF).

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement & Details of engagement

Collaboration & innovation	Collaborate with customers in creation and review of your climate transition plan

% of customers by number

% of customer - related Scope 3 emissions as reported in C6.5

Please explain the rationale for selecting this group of customers and scope of engagement
Through collaborations with our customers, PETRONAS can leverage their experience and expertise, to establish Malaysia as a leading CCS solutions hub in the region.

Impact of engagement, including measures of success
PETRONAS has signed a Memorandum of Understanding (MoU) with Mitsui & Co., Ltd. (Mitsui & Co.) for the conceptual and feasibility studies on carbon capture and storage (CCS) value chain, including the evaluation of carbon dioxide (CO_2) storage sites in Malaysia. Under the MoU, both parties will evaluate potential CO_2 storage sites offshore Peninsular Malaysia. The scope of collaboration covers the evaluation of other CCS value chain, capturing and gathering strategy of CO_2 from various industries, competitive transportation of the CO_2 and emerging technology in direct air capture.

PETRONAS has also signed a Memorandum of Understanding (MoU) with six South Korean companies to undertake conceptual and feasibility studies towards establishing a full value chain related to carbon dioxide (CO_2) capture, transport and storage. The MoU will also involve the evaluation of potential CO_2 storage sites in Malaysia and exploration of other areas across the CCS value chain, including the strengthening of cross-border CO_2 transportation. The feasibility studies undertaken through this collaboration will identify suitable technologies for the CCS and transportation value chain, bringing PETRONAS closer towards establishing Malaysia as a leading regional CCS solutions hub.

C12.1d

(C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.

- Supported Sarawak's adoption of hydrogen and renewable oil as alternative fuels through collaboration between PETRONAS Technology Ventures Sdn Bhd (PTVSB) and SEDC Energy.

- Signed an MoU with Tenaga Nasional Berhad (TNB) to collaboratively study the development of a green hydrogen ecosystem and CCS technology.

C12.2

(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?

No, but we plan to introduce climate-related requirements within the next two years

C12.3

(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?

Row 1

External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers

Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?

Yes

Attach commitment or position statement(s)

PETRONAS' Pathway to Net Zero Carbon Emissions 2050
PETRONAS Pathway to Net Zero Carbon Emissions 2050 Booklet_2022.pdf

Describe the process(es) your organization has in place to ensure that your external engagement activities are consistent with your climate commitments and/or climate transition plan

The challenge of achieving net zero carbon emissions is too complex for any organisation to deliver on its own. To create momentum on the need to accelerate and scale up sustainable business models, we have continued to elevate our engagement with a broad set of discussion partners nationally and internationally.

Primary reason for not engaging in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate

<Not Applicable>

Explain why your organization does not engage in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate

<Not Applicable>

C12.3a

(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?

Specify the policy, law, or regulation on which your organization is engaging with policy makers

Dasar Tenaga Negara 2022-2040 (DTN2040)

Category of policy, law, or regulation that may impact the climate

Climate change mitigation

Focus area of policy, law, or regulation that may impact the climate

Climate-related targets
Climate transition plans
Renewable energy generation

Policy, law, or regulation geographic coverage

National

Country/area/region the policy, law, or regulation applies to

Malaysia

Your organization's position on the policy, law, or regulation

Support with no exceptions

Description of engagement with policy makers

As a national oil company and an integrated energy company, what we produce, how we produce, the energy transition strategies that we pursue all will potentially make a big impact on the world. With this view of oil and gas will continue to play an important role in the energy mix for Malaysia, this must be delivered in a way that is safe, responsible, low cost and low carbon. PETRONAS can never do this alone what more without the support from the Government from the angle of enabling the relevant policies, law or regulations to drive the growth of the industry. With regards to this, PETRONAS has been working closely with the Government in shaping and driving the energy sector for the country while ensuring we are doing it responsibly towards the environment.

In 2022, Ministry of Economy (formerly known as Economic Planning Unit-EPU) has launched the Dasar Tenaga Negara 2022-2040 (DTN2040), which strategically charts the way forward and outlines key priorities for the energy sector in the coming years. The DTN2040 will position the energy sector as a catalyst for socioeconomic development with climate agenda for the country as one of the key levers.

An extensive study was performed in coming up with the policy where PETRONAS was appointed as the strategic partner in providing advisory, shaping and influencing in relevant areas, leveraging our internal resources. More than 100+ engagements/syndications took place with key Federal and State Government stakeholders, multiple ministerial syndications between key energy related Ministries i.e. EPU, KeTSA, KASA, MITI, MOT and MOSTI.
PETRONAS NEP team continues to actively pursue the setting-up of project delivery unit with EPU to ensure seamless execution of NEP action plans and initiatives, as well as promoting and safeguarding national interests.

PETRONAS is again contributing to the same initiative by the Government this year, where MOE is operationalizing the DTN2040 through National Energy Transition Roadmap 2050, which will be completed in Q3 this year.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation

<Not Applicable>

Have you evaluated whether your organization's engagement on this policy, law, or regulation is aligned with the goals of the Paris Agreement?

Please select

Please explain whether this policy, law or regulation is central to the achievement of your climate transition plan and, if so, how?
<Not Applicable>

Specify the policy, law, or regulation on which your organization is engaging with policy makers
Towards a Low Carbon Emissions Pathway

Category of policy, law, or regulation that may impact the climate
Climate change mitigation

Focus area of policy, law, or regulation that may impact the climate
Climate-related reporting
Climate-related targets
Climate transition plans
Low-carbon, non-renewable energy generation
Renewable energy generation
Other, please specify (Carbon capture and utilisation, carbon accounting and disclosure)

Policy, law, or regulation geographic coverage
National

Country/area/region the policy, law, or regulation applies to
Malaysia

Your organization's position on the policy, law, or regulation
Support with no exceptions

Description of engagement with policy makers
CAN is a Malaysian closed-door peer-to-peer informal network of CEOs and Board members focused on sustainability advocacy, capacity building, action and performance. PETRONAS is one of the CAN members and Datuk Tengku Muhammad Taufik, President and Group CEO of Petronas, is a Chairman of CAN. Climate Governance Malaysia and the CEO Action Network have been collaborating closely to organise this series of round table engagements with key ministries within the government and private sector, structured as a platform to discuss policies to strengthen our national climate ambition.
Malaysian Energy Sector to focus on ongoing challenges in balancing the energy trilemma of energy security, energy equity and environmental sustainability.
In April 2022, the CAN has announced the kick-off of the 2022 Roundtable series. There are 3 roundtable held in FY2022 in regards to waste sector.

Below are report of proceedings from the 2021 Roundtable series with key ministries and regulators:

1. Increase share of renewables in energy mix - Increase penetration of renewables. Consider the best long-term power market structure to enable penetration of renewable energy/greener generation.
2. Electrify the economy, with transport as key focus – Increase electrification and efficiency of road transport.
3. Accelerate development and uptake of new low or zero-carbon fuels - Develop and leverage new technologies e.g. hydrogen, bioenergy, biofuels, and circular economy.
4. Remove remaining emissions through engineered solutions or nature - Scope and develop Carbon Capture and Utilisation (CCU) alongside Carbon Capture and Storage (CCS) industry.
Other Recommendations:
5. Fully leverage public private partnerships.
6. Introduce carbon pricing to incentivise low-carbon solutions.
7. Intensify transparent Communication, Engagement and Public Awareness (CEPA).
8. Introduce mandatory carbon accounting and disclosure.

Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation
<Not Applicable>

Have you evaluated whether your organization's engagement on this policy, law, or regulation is aligned with the goals of the Paris Agreement?
Yes, we have evaluated, and it is aligned

Please explain whether this policy, law or regulation is central to the achievement of your climate transition plan and, if so, how?
<Not Applicable>

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication
In mainstream reports, incorporating the TCFD recommendations

Status
Underway – this is our first year

Attach the document
PETRONAS-Integrated-Report-2022.pdf

Page/Section reference
Sustainability Statement, page 155-159;
Safeguard the Environment, page 161-167;
Five-Year Sustainability Key Performance Data, pages 248-251

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets
Other metrics

Comment

C12.5

(C12.5) Indicate the collaborative frameworks, initiatives and/or commitments related to environmental issues for which you are a signatory/member.

	Environmental collaborative framework, initiative and/or commitment	Describe your organization's role within each framework, initiative and/or commitment

	Environmental collaborative framework, initiative and/or commitment	Describe your organization's role within each framework, initiative and/or commitment
Row 1	Task Force on Climate-related Financial Disclosures (TCFD) World Business Council for Sustainable Development (WBCSD) Other, please specify (CEO Action Network, APEC Business Advisory Council, International Emissions Trading Association, Methane Guiding Principles, Zero Routine Flaring by 2030 initiative, Oil & Gas Methane Partnership, IRENA Alliance for Industry Decarbonization)	Task Force on Climate-related Financial Disclosures (TCFD): -PETRONAS has expressed public support for the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) to ensure greater transparency around how we approach climate risk. We are incorporating the TCFD framework into our disclosures from 2023 onwards. WBCSD: - PETRONAS joined WBCSD in 2020 to inform sustainability strategy and positioning and to broaden global outreach. PETRONAS is also a member of Business Council for Sustainable Development (BCSD) Malaysia. - PETRONAS is represented in WBCSD through our President & Group CEO, Datuk Tengku Muhammad Taufik as the Council member, and involving other Executive Leadership Team members through direct participation in WBCSD's CFO Network and The Business Commission to Tackle Inequality, in addition to working level participation across the breadth of WBCSD's programmatic activities. CEO Action Network (CAN): - CAN is a peer-to-peer network of CEOs and Board members focused on sustainability advocacy, capacity building, action and performance. CAN includes 62 leading businesses, representing more than 20 business sectors in Malaysia -President and Group CEO of PETRONAS, Datuk Tengku Muhammad Taufik chaired CAN during the period 2021-2022. -In 2022, under PETRONAS' chairmanship and in collaboration with Climate Governance Malaysia (CGM), CAN ran a roundtable series to define policy recommendations aimed at improving the nation's sustainability and climate ambitions. Asia-Pacific Economic Cooperation (APEC) Business Advisory Council (ABAC): -President and Group CEO of PETRONAS, Datuk Tengku Muhammad Taufik is a member of ABAC, which plays a role in presenting recommendations to APEC Leaders in an annual dialogue and advises APEC officials on business-sector priorities and concerns. -As a co-chair to the Sustainability Working Group, PETRONAS President and Group CEO proposed recommendations on building small and medium-enterprises (SMEs) resilience in low carbon economy, which among others, were included in the 2022 Annual Report from APEC Business Advisory Council (ABAC) to APEC Economic Leaders. International Emissions Trading Association (IETA): -PETRONAS became a member of IETA in June 2022. Through our participation in IETA's working groups, taskforces and initiatives, PETRONAS is strengthening our internal capacity and building capability on carbon markets and carbon pricing instruments. Methane Guiding Principles (MGP): -In 2020, PETRONAS became a signatory member of Methane Guiding Principles (MGP). In 2022, PETRONAS publicly reported our progress in accordance with the five (5) MGP principles on our approach to effective methane management. World Bank's Zero Routine Flaring by 2030 Initiative: -PETRONAS endorsed the global pledge of zero routine flaring by 2030, in November 2021, with the aim to avoid routine flaring in new oil field developments; and for existing field, to seek implementation of economically viable solutions to eliminate this legacy flaring as soon as possible, by 2030. PETRONAS contributes with gas flaring and venting data towards the compilation of the World Bank's annual global gas flaring report. United Nations Environment Programme (UNEP)'s Oil & Gas Methane Partnership (OGMP 2.0): -PETRONAS became a signatory member to the OGMP2.0 in November 2022. Efforts are taken to systematically enhance PETRONAS' approach in accordance with the framework on methane emissions measurement, quantification, reporting, and implementation of our decarbonisation levers particularly zero routine flaring and venting, and energy efficiency. World Economic Forum (WEF) Partnering Against Corruption Initiative (PACI) Signatories: -PETRONAS became a signatory of PACI in July 2021, joining 90 other signatories across different sectors worldwide. In doing so, we strengthen our zero tolerance on corruption in all its forms and join collective action initiatives to increase public trust in business, deliver fair markets and level the playing field by fighting corruption. World Economic Forum Stakeholder Capitalism Metrics: -PETRONAS has adopted the Metrics as part of its annual performance reporting practice. International Renewable Energy Agency (IRENA) Alliance for Industry Decarbonization: -PETRONAS joined the Alliance for Industry Decarbonisation in November 2022 with the aim to foster action for decarbonisation of industrial value chains and enhance understanding of renewables-based solutions and their adoption by industry Ipieca - PETRONAS is an active member of the International Petroleum Industry Environmental Conservation Association (IPIECA), the global oil and gas industry association for environmental and social issues, and contributes to collaborative learning projects on human rights. - PETRONAS was involved as one of the companies in a case study by ipieca in preparation for Flaring management guidance.

C15. Biodiversity

C15.1

(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues	Description of oversight and objectives relating to biodiversity	Scope of board-level oversight
Row 1	Yes, both board-level oversight and executive management-level responsibility	In 2022, the PETRONAS' ELT and Board approved the PETRONAS Position on Nature and Biodiversity, which outlines the 5 key areas of actions: 1. Establishing voluntary exclusion zones - Ensure no new operations or projects are conducted in UNESCO World Heritage Sites commencing 2024, in recognition of the Universal Values of these sites. 2. Managing nature and biodiversity risk - For new projects identified in Protected Areas and Key Biodiversity Areas, to develop a Biodiversity Action Plan to achieve net positive impact (NPI) on nature and biodiversity starting from 2024. For existing operations, Biodiversity Action Plan shall be developed for "Very High" and "High Risk" sites, which is identified through Biodiversity and Ecosystem risk profiling. 3. Promoting nature and biodiversity through partnership and collaborations – Support and participate in local nature and biodiversity conservation, restoration and enhancements to safeguard and protect ecosystems, habitats and endangered species in Malaysia and the countries where we operate, while partnering with credible international organisations to leverage global best practices, international frameworks and standards. 4. Supporting public policy that aims to protect nature and biodiversity - We support the implementation of the Kunming-Montreal Global biodiversity Framework and Malaysia's National Policy on Biological Diversity. We also recognise policies and ambitions on nature and biodiversity in the countries where we operate. 5. Promoting high-quality nature-based climate solutions - Actively explore and invest in opportunities in high-quality nature-based climate solutions, anchoring on credible, internationally recognised certification standards, to support nature-based carbon offsets.	<Not Applicable>

C15.2

(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity	Biodiversity-related public commitments	Initiatives endorsed
Row 1	Yes, we have made public commitments only	Commitment to Net Positive Gain Commitment to respect legally designated protected areas Other, please specify (For more details, please refer to the commitments in the 5 areas of action in 15.1.)	<Not Applicable>

C15.3

(C15.3) Does your organization assess the impacts and dependencies of its value chain on biodiversity?

Impacts on biodiversity

Indicate whether your organization undertakes this type of assessment
Yes

Value chain stage(s) covered
Direct operations

Portfolio activity
<Not Applicable>

Tools and methods to assess impacts and/or dependencies on biodiversity
IBAT – Integrated Biodiversity Assessment Tool

Please explain how the tools and methods are implemented and provide an indication of the associated outcome(s)
The tool helps us assess the proximity of our direct operations to the nearest Protected Areas and Key Biodiversity Areas and identify IUCN Red List of Threatened Species within 50km of our assets.

Dependencies on biodiversity

Indicate whether your organization undertakes this type of assessment
Yes

Value chain stage(s) covered
Direct operations

Portfolio activity
<Not Applicable>

Tools and methods to assess impacts and/or dependencies on biodiversity
Other, please specify (Biodiversity and Ecosystem Services Risk Assessment (BESRA))

Please explain how the tools and methods are implemented and provide an indication of the associated outcome(s)
The dependencies on biodiversity are assessed through the Biodiversity and Ecosystem Services Risk Assessment (BESRA), guided by our internal guidance document, i.e. PETRONAS Technical Guide (PTG) on Biodiversity and Ecosystem Services (BES) Management.

C15.4

(C15.4) Does your organization have activities located in or near to biodiversity- sensitive areas in the reporting year?
Yes

C15.4a

(C15.4a) Provide details of your organization's activities in the reporting year located in or near to biodiversity -sensitive areas.

Classification of biodiversity -sensitive area
Other biodiversity sensitive area, please specify (IUCN Protected Areas Category I-VI, nationally designated Protected Areas (e.g., Marine parks, National parks etc.) and Key Biodiversity Area (KBAs))

Country/area
Malaysia

Name of the biodiversity-sensitive area

Proximity
Up to 10 km

Briefly describe your organization's activities in the reporting year located in or near to the selected area
PETRONAS operates a fully integrated value chain covering Upstream, Gas, Downstream and clean energy. Across PETRONAS' integrated value chain, PETRONAS has identified 5 assets that fall within the boundary of IUCN Protected Area Category, while 29 assets are near (less than 10km) of the nearest Protected Area. For Key Biodiversity Area, PETRONAS has identified 1 asset that fall within the boundary, while 2 assets are near (less than 10km) of the nearest Key Biodiversity Area.

This information is also part of the input to PETRONAS' Biodiversity and Ecosystem Services (BES) Risk Profiling, which was completed for Malaysia's operations in 2020. As outcome of the risk profiling, 9 per cent of PETRONAS' Malaysia's operations were categorised as "very high" to "high" risk for BES. For these operations, PETRONAS conducted Biodiversity and Ecosystem Services Risk Assessment (BESRA) and prepared the Biodiversity Action Plan (BAP).

Indicate whether any of your organization's activities located in or near to the selected area could negatively affect biodiversity
Please select

Mitigation measures implemented within the selected area
<Not Applicable>

Explain how your organization's activities located in or near to the selected area could negatively affect biodiversity, how this was assessed, and describe any mitigation measures implemented
<Not Applicable>

C15.5

(C15.5) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?	Type of action taken to progress biodiversity- related commitments
Row 1	Yes, we are taking actions to progress our biodiversity-related commitments	Land/water protection Land/water management

C15.6

(C15.6) Does your organization use biodiversity indicators to monitor performance across its activities?

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	No, we do not use indicators, but plan to within the next two years	Please select

C15.7

(C15.7) Have you published information about your organization's response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
In voluntary sustainability report or other voluntary communications	Content of biodiversity-related policies or commitments	PETRONAS Integrated Report 2022 (Pages 184-185)
In voluntary sustainability report or other voluntary communications	Content of biodiversity-related policies or commitments	PETRONAS' Pathway to Net Zero Carbon Emissions 2050 Booklet (Page 17)

C16. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

C16.1

(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Executive Vice President and Group Chief Financial Officer	Chief Financial Officer (CFO)

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms