

# The World in 2022

The geopolitical conflict in Europe has led to the region pivoting away from energy supplied by Russia, which previously accounted for about 40 per cent of Europe's natural gas. As a result, energy prices climbed from lows seen in the previous two years, prompting players to push for higher capacity utilisation to ensure maximum supply to meet user demand.

Amid price volatility in both crude oil and natural gas, PETRONAS successfully managed challenges by driving resilience and operational excellence. Together with commercial agility and discipline, we overcame disruptions in a more demanding operating environment to deliver a strong performance for 2022.

Energy security had become an immediate focus not only in Europe but across the world.

## Bringing Energy Security to the Fore

For energy players, meeting a surge in demand that came amid a re-opening of borders was crucial to ensure uninterrupted availability of energy sources to power economic recovery. In answering the call for energy security, PETRONAS remains steadfast in advancing sustainability in our operations and long-term strategy. Carbon capture and storage (CCS) is a vital solution in the transition to a net-zero carbon future and we are partnering key industry players to deploy CCS while also actively reducing methane and flaring.

In 2022, countries participating in the 27<sup>th</sup> Conference of the Parties of the UNFCCC (COP27) in Egypt agreed to strengthen and affirm commitments to fight climate change despite global headwinds. PETRONAS rose to the challenge, granularising our strategy to thrive in energy transition and towards realising our Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway. Apart from the use of CCS, operational excellence is also key to achieving this goal, where improved efficiency and fast deployment of technology to reduce emissions and lift our ability to quickly anticipate and meet market needs.

Gentari, the cleaner energy solutions arm of PETRONAS, was launched to accelerate the Group's push into renewable energy, hydrogen and green mobility. These will now be part of the portfolio that will catapult PETRONAS into playing a leading role in a fast-changing energy landscape.

## Resilience Through Economic Headwinds

Supply chain disruptions that were still working their way through the system meant that costs remained high. In the oil and gas sector, cost escalation raised concerns that investments today are being channeled to counter inflationary pressures when more investments are needed to ensure sufficient supply to meet future demand. As an energy provider, we will navigate the energy transition in a just and responsible manner to deliver energy that improves lives and benefits communities across the globe. Our strategy towards net zero reflects our drive to provide access to cleaner sources of energy, from natural gas to hydrogen. We aim to do this through partnerships and collaborations that will lift our role in the energy sphere.

Across the world, rising inflation has increased pressure on central banks to tighten monetary policies, heightening concern of a global economic slowdown. The threat of a recession appeared just as borders were reopening and economic activities were picking up. This added to increased volatility in energy markets, which in turn may affect investment decisions. Our commitment to ensuring energy security remains steadfast and we are committed to embedding sustainability in our operations as a progressive energy and solutions partner.

## Navigating Market Volatility

Oil prices were highly volatile in 2022, marking another turbulent year after the pandemic in 2020. After rising steadily amid a post-lockdown resurgence in demand, crude oil prices spiked to a 14-year high following the start of the Russia-Ukraine conflict in February. Prices in the second half reversed the large gains in the first half of 2022 as the mounting risk of an imminent slowdown in demand gathers over the global economy. This led to massive refining capacity closures of around three million barrels per day during the pandemic. Meanwhile, the Russia-Ukraine conflict had constrained petroleum product supply, pushing global refining margins to record levels in 2022.

Spot LNG prices in Asia hit a record high of USD85/mmBtu in March 2022 on heightened concern over a shortage of supply when Europe scrambled for LNG cargoes to make up for Russian piped gas supply. The surge in prices resulted in developing nations especially in South Asia being starved of affordable fuels while making US LNG the biggest winner as Europe sought more shipments of the fuel. As energy security concerns increased, long-term contracting became favoured again.

The commitment to decarbonise the transport sector intensified further. In the aviation sector, airlines and airports were moving towards scaling up sustainable aviation fuel usage, which is mostly bio-based. Governments and sector representatives pledged ambitious sustainable aviation fuel blend targets by 2030 to achieve net zero goals by 2050. In the shipping sector, countries, ports and shipping companies made more than 40 major announcements on issues such as innovations for ships, expansion in low or zero-emission fuels and policies to help promote the uptake of next-generation zero-emission vessels. The year 2022 kick-started with the ports of Los Angeles and Shanghai announcing the world's first green shipping corridor, followed by five Northern European port authorities' announcements to serve Northern Europe and the Baltic region, as well as the Singapore-Rotterdam route for the longest green shipping corridor between Asia and Europe.

## Outlook

A prolonged conflict in Europe will lead to continued disruptions in oil and gas flows, which means energy security remains a key focus for nations. The longer route travelled for oil and gas molecules to reach demand centres will add to costs and keep energy prices volatile. Together with the rising inflation faced by the oil and gas sector, this has raised concerns of insufficient spending on long-term oil and gas development to meet future demand. Global capital expenditure in oil and gas is forecasted to rise for a third year in 2023, exceeding USD500 billion. This is still some 30 per cent below the record USD700 billion that the sector spent in 2014. Industry analysts are also concerned that the coming year's capital expenditure (CAPEX) increases will be mostly channeled to counter cost inflation and not as much on resource finding and development.

### Extended Price Volatility

The volatility in the oil market takes place against a backdrop of weakening global economic outlook, supply disruption from Russia due to European Union sanctions and G7 price cap as well as the Organisation of the Petroleum Exporting Countries (OPEC) alliance output cut. OPEC+ aims for market stability and is seen taking action to prevent a slowing global economy from sending prices down. On the oil refining side, an outlook of an economic slowdown, high natural gas prices and a ramp-up of new greenfield refineries in Asia and the Middle East are expected to drag refining margins lower.

Gas and LNG prices may remain above decades-high levels for several years as demand for LNG outpaces supply growth. The prioritisation of energy security has also improved the prospects of low-carbon fuels such as natural gas. The leaders of the G7 major economies in June 2022 conveyed their support for investments in the gas sector to reduce dependency on Russian gas while COP27 supported the development of low-carbon fuels as the world seeks to achieve climate goals.

### Economic Activities Recover

China's end to COVID-19 lockdowns is a boost for the energy market due to the nation's ranking as the world's largest oil importer. A recovery in travel and economic activities is forecasted to provide support for oil and gas prices, even as global GDP slows. Interest rate increases are also expected to slow or be paused by central banks due to concerns that rate hikes could add to the financial turmoil after several bank failures.

### Greater Push for Climate Action

While nations and corporations are stepping up to fight climate change, the financial sector is also driving action through greater scrutiny over investments in energy, demanding commitments to decarbonise fossil fuel projects and channeling more funds into renewables. Financial institutions are looking to strike a balance between ensuring sufficient financing for projects that will deliver energy security for decades to come and supporting renewable energy (RE) developments for clean sources of energy. The oil and gas sector is making strides with this aim in mind, and in petrochemicals, the evidence is seen in the rising number of bio-based projects. Producers are pouring funds into research and development capabilities and leveraging recycling technologies to lower carbon footprints, as well as reduce waste in their push towards a circular economy.

Electrification, from the upstream sector to downstream petrochemicals, is becoming relevant and prevalent in decarbonisation strategies. For hard-to-abate sectors, natural gas is a cleaner alternative to provide steam and generate the electricity needed. Global leaders are pressuring policymakers for more steadfast net-zero policies as current climate commitments are insufficient in the fight against climate change. Reaching net zero by 2050 requires a 43 per cent reduction in greenhouse gas emissions by 2030 compared to 2019 levels, despite an International Monetary Fund study which estimated that only 11 per cent of the emissions will be cut by 2030, based on current commitments.

# Material Topics

At our core, we believe that sustainable business practices demonstrate our commitments to the Company, our stakeholders and the planet. By constantly reassessing and revalidating our material topics, we are ensuring that our sustainability strategy is informed by the latest data, trends, insights and is responsive to the needs of our stakeholders and the environment.

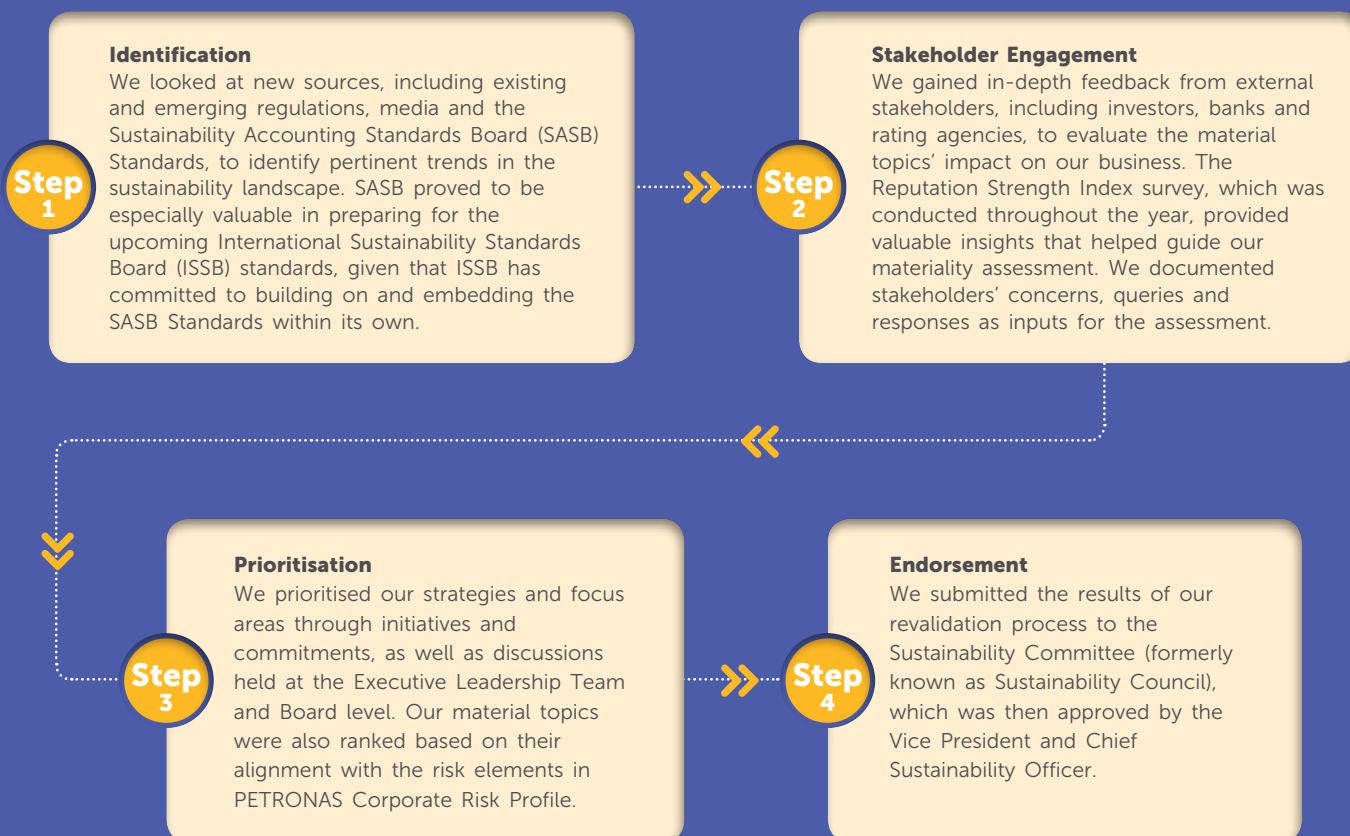
In 2022, we undertook a rigorous reassessment and revalidation of our material topics to ensure that they remain relevant and integral to our sustainability strategy and reporting.

Throughout this process, we recognised the significance of the material topics’ impact on our sustainability-related risks and opportunities, as well as our impact on society and the planet – a concept known as double materiality. As such, we approached our materiality assessment with both an inside-out and outside-in perspective, ensuring that our strategy is fully aligned with the needs of our stakeholders and the environment.

To achieve this, we utilised a data-driven tool to conduct an assessment of our material topics, covering both financial materiality and impact materiality. This allowed us to gain a deeper understanding of the implications of our material topics on our business, society and the planet.

As we move forward, we remain committed to improving our double materiality assessment process by embedding monitoring and risk elements on a continuous basis. This will ensure that our assessment is sufficiently holistic and robust in guiding our company’s sustainability priorities. In addition, we have expanded our horizontal scanning analysis to include new sources, allowing us to identify any potential blind spots in our existing topics.

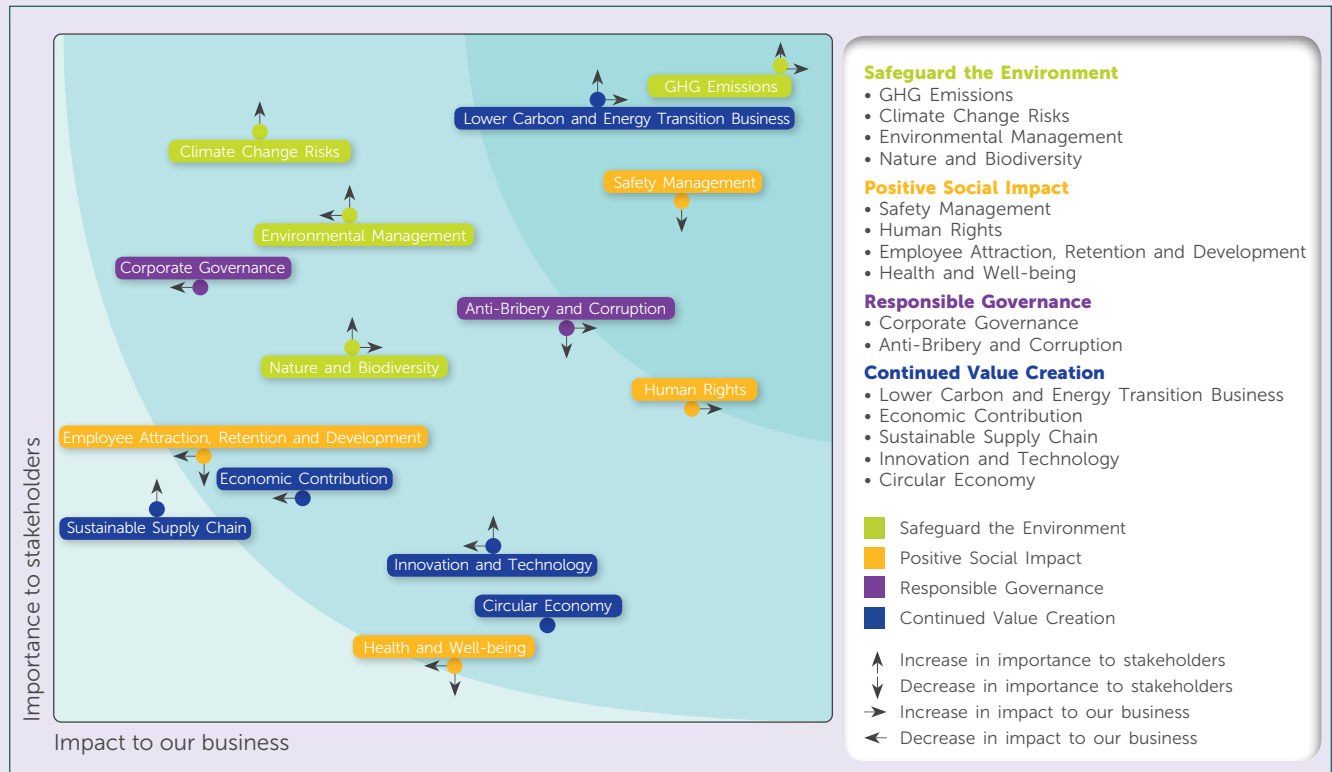
## Materiality Assessment Revalidation



## Materiality Analysis

### 1. Updated Materiality Matrix and Topics

Following the revalidation exercise, we found that all 14 material topics in 2021 are still highly relevant to our business.



However, as we continue to evolve our strategies and priorities, we decided to rename three of these topics to better reflect their impact and importance. Additionally, we recognised the growing focus and resources devoted to one particular area, prompting us to split one of the topics into two more specific and targeted areas of focus.

2021 Materiality Assessment	2022 Materiality Assessment	Reason for Change
Biodiversity and Ecosystem Services	Nature and Biodiversity	<ul style="list-style-type: none"> <li>• Reflects our commitment to conserve, protect and restore nature, with terms better aligned to PETRONAS' Position on Nature and Biodiversity.</li> </ul>
Physical Climate Risk and Adaptation	Climate Change Risks	<ul style="list-style-type: none"> <li>• Emphasises the equal importance of both physical and transition risks and opportunities.</li> <li>• Covers governance systems and processes to manage climate-related risks and opportunities.</li> </ul>
Renewable Energy	Lower Carbon and Energy Transition Business	<ul style="list-style-type: none"> <li>• Highlights our focus on new non-traditional businesses to complement our existing core in oil and gas.</li> <li>• Includes opportunities in natural gas, hydrogen, green mobility, biofuels and specialty chemicals, among others.</li> </ul>
Innovation and Circularity	Innovation and Technology	<ul style="list-style-type: none"> <li>• Emphasises innovation and technology as a strategic differentiator.</li> </ul>
	Circular Economy	<ul style="list-style-type: none"> <li>• Emphasises our increasing commitment in circular economy.</li> </ul>

## Material Topics

### 2. Movement of Material Topics

As we move towards post COVID-19 recovery, we have noticed a shift in priorities for our material topics, with Health and Well-being decreasing in importance. However, it remains as a priority as we continue to focus on the physical and mental well-being of our employees and surrounding communities.

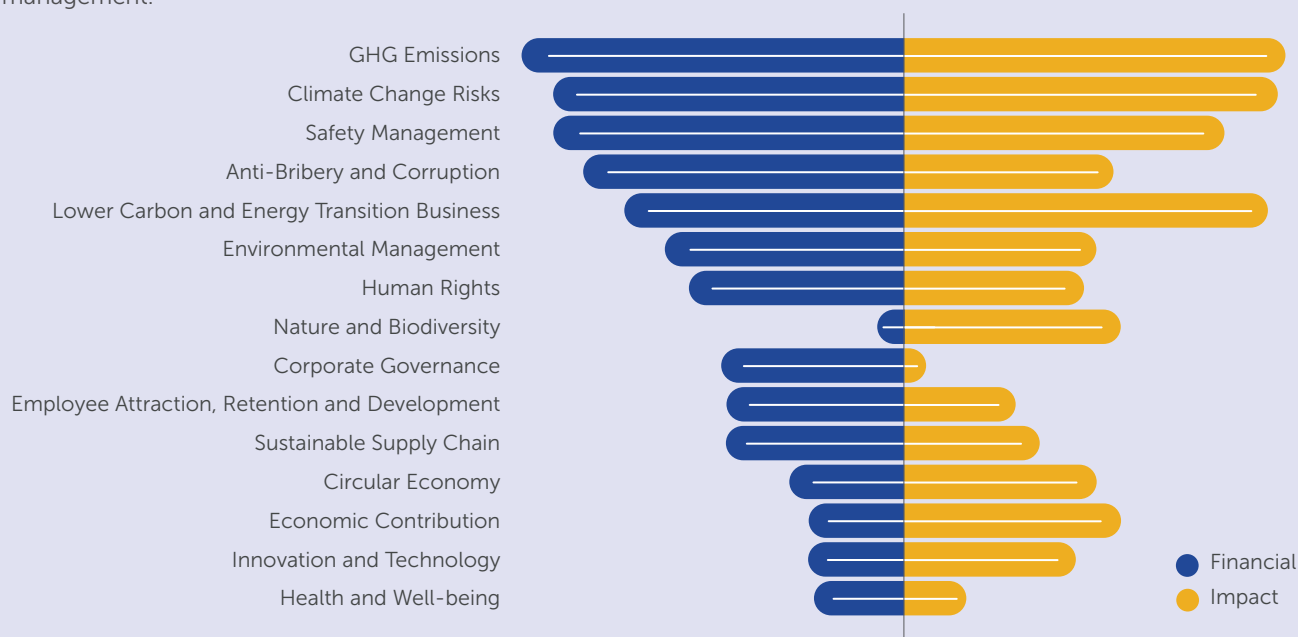
One of the topics that has gained importance in our materiality assessment is GHG emissions. We have set ambitious targets to achieve net zero carbon emissions by 2050 and reducing our GHG emissions is a critical component of this goal.

Another topic that has gained significance is lower carbon and energy transition business. We recognise that the world is transitioning towards cleaner energy sources and we are committed to playing our part in this transition.

### 3. Double Materiality

Through our double materiality approach, we consider both the financial and sustainability impact of our material topics. This approach allows us to understand the financial implications of sustainability risks and opportunities and how they may impact our long-term financial performance.

In our assessments, we found that GHG emissions is the most relevant of all our material topics in both financial and sustainability impact perspectives. This highlights the critical role that reducing our carbon footprint plays in achieving our sustainability goals and maintaining financial stability. Other material topics that are also significant in both perspectives include energy transition business, climate change risks and management and safety management.



### 4. Areas for Improvement

By including new sources in our identification process, we noticed additional areas which were not covered in our existing material topics. However, these were topics that are already embedded in our enterprise risk management and portfolio management, including but not limited to business resilience and continuity in the face of potential catastrophic events; energy security and affordability; cybersecurity and information security; corporate’s core values and guiding principles; and shifting demographics. As part of continuous improvement, we have included these as points of consideration, as we continue to explore better ways of integrating ESG factors into PETRONAS’ Enterprise Risk Management (ERM) process directly.

### Greenhouse Gas (GHG) Emissions

Our approach to realising our NZCE 2050 Pathway is guided by our four main decarbonisation levers – zero routine flaring and venting, energy efficiency, electrification and carbon capture and storage. Additionally, we are continuously improving measurement quantification to mitigate methane emissions from our operations to limit the impact of GHG emissions over a more immediate period. We also pursue collaborative initiatives with industry peers. We are focusing on gaining a clearer understanding of energy consumption within the Company and throughout our value chain to support our emissions mitigation efforts.

Capital: **FC HC IC NC** Risks: **FLR HR TR** Stakeholder: **FD SIC CN IO** SDGs: 

### Climate Change Risks

Our aim is to strengthen PETRONAS' resilience to physical and transition climate change risks, while seizing the opportunities presented in the transition to a lower-carbon economy. We are actively looking into adaptation and resilience measures, as well as the relevant governance systems to manage climate-related risks and opportunities, as per the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD).

Capital: **FC HC IC MC NC** Risks: **MR FLR LR** Stakeholder: **SIC** SDGs: 

### Environmental Management

Protecting and conserving the environment will minimise the impact of our operations on the environment, given our role as an environmental steward. This will also ensure the long-term health of our business and the communities around us. 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.

Capital: **FC HC MC SRC NC** Risks: **HSR HR SR TR ER LR** Stakeholder: **FD SG C CN IO** SDGs: 

### Nature and Biodiversity

An inability to conserve and protect nature and biodiversity may impact our ability to deliver on our business goals and NZCE 2050 Pathway. As climate change is significantly driving biodiversity loss and may cause irreversible damage, we aim to further understand our relationship and dependency on nature in order to improve oversight of our nature and biodiversity footprint.

Capital: **FC HC MC SRC NC** Risks: **HSR SR ER** Stakeholder: **CN** SDGs: 

### Safety Management

Managing the safety of our people continues to remain a top priority as this ensures we protect our employees and contractors from any harm or injuries. In striving towards operational excellence, we conduct proactive risk management practices across our business and operations to provide the safest possible work conditions while ensuring our assets are continuously well maintained.

Capital: **FC HC MC SRC** Risks: **HSR GR SR TR ER LR** Stakeholder: **FD SG C IE SIC IPG CN** SDGs: 

## Material Topics

### Human Rights

We aim to respect human rights across our suppliers, contractors, partners and communities where we operate with the establishment and implementation of human rights policies and practices. Periodically we review our policies and practices to address human rights issues on forced labour, human trafficking, modern slavery, fair working conditions and non-discrimination. We have also started to embed human rights due diligence practices in our systems and functions across our value chain, including remediation actions.

Capital: **FC HC SRC** Risks: **HSR SR LR** Stakeholder: **C IE CN IO** SDGs:

### Employee Attraction, Retention and Development

Given the dynamically evolving landscape and energy transition taking place, we require future-ready talent with the right knowledge and skills to realise our strategies and drive business resilience over the long-term. Investment in high-performing talents is crucial, especially in an environment of increasing competition for skills. Our aim is to continuously attract and retain the best talent by providing flexible work arrangements, creating opportunities to foster individual potential and implementing fair and equitable compensation that is consistent with a rewards-based performance. We also strive to create a fair and inclusive workplace by supporting equal treatment of all employees regardless of gender, age, cultural background, skills, race and religion.

Capital: **FC IC HC SRC** Risks: **HSR GSR** Stakeholder: **IE** SDGs:

### Health and Well-being

We place great emphasis on protecting all employees and contractors from work-related hazards and promoting good health and well-being among our workforce and the wider community. It is imperative to create a safe and conducive work culture, as our employees' health and well-being directly impact our long-term performance. We conduct risk assessments, introduce adequate controls and implement a wide range of health and wellness initiatives that help address the physical and mental health of our employees and their families.

Capital: **FC HC MC SRC** Risks: **HSR HCR SR ER** Stakeholder: **C IE CN** SDGs:

### Corporate Governance

It is important that we practice and uphold the highest standards in corporate governance, a key factor in determining business resilience and long-term growth. Among our key priorities is to ensure the practice of the highest level of governance on structures, policies and strategies in sustainability-related matters. This also covers our strategies and roadmap in realising our NZCE 2050 Pathway.

Capital: **FC HC SRC** Risks: **FLR HSR HCR GR SR TR ER LR** Stakeholder: **FD IE SIC M IPG CN** SDGs:

### Anti-Bribery and Corruption

We believe that creating a strong foundation based on ethics and integrity will drive shared and equitable values among stakeholders. We need to protect our operations and business from any form of corruption and unethical behaviour. Throughout the value chain, we strongly encourage ethical and responsible business practices and compliance with standards and guidelines among employees, business partners, suppliers, contractors and other intermediaries. We do this by closely adhering to PETRONAS' Anti-Bribery and Corruption Policy and the PETRONAS Code of Conduct and Business Ethics (CoBE).

Capital: **FC HC SRC** Risks: **GR ER LR** Stakeholder: **M IPG** SDGs:



### Lower Carbon and Energy Transition Business

In mitigating the effects of climate change, we continue to strengthen our efforts in lower carbon and energy transition business as this allows us to step out beyond our core and develop new businesses to realise our NZCE 2050 Pathway. This includes our focus on natural gas as a fuel with lower carbon intensity than other fuels; and other business growth opportunities such as renewable energy, hydrogen, green mobility, specialty chemicals and biofuels among others. Our efforts are channelled towards achieving balance in energy security, affordability and sustainability, taking into consideration the latest policies, goals, accounting instruments and technologies that facilitate the energy transition.

Capital: **FC HC IC MC SRC NC** Risks: **MR FLR HR HCR** Stakeholder: **FD SG SIC IPG IO** SDGs:

### Economic Contribution

Our ability to drive long-term business growth goes hand-in-hand with the prosperity of the markets and communities in which we operate. Our goal is to contribute to economic development that benefits all segments of society by generating economic value through our products and services, servicing capital payouts and paying wages and taxes while generating social, commercial and working opportunities for local residents. We also provide assistance especially in times of crisis through funds, volunteering efforts and in-kind products or services. We strive to ensure that PETRONAS is responsible and transparent in tax practices, governed by applicable local or regional tax regulations.

Capital: **FC HC IC MC SRC** Risks: **MR FLR HSR HR HCR GR SR TR ER** Stakeholder: **FD SG SIC** SDGs:

### Sustainable Supply Chain

We pay close attention to our overall supply chain management, product stewardship and procurement as this mitigates risks that impact the environment, society and economy. This ensures the sustainability and safety of our products throughout the entire life cycle. To improve supply chain resilience, we continuously strengthen our efforts to nurture and support local suppliers where possible and applicable. We also share global work practices with regional and local entities to enrich the local economy.

Capital: **FC HC IC MC SRC NC** Risks: **MR FLR HSR HR GR SR TR ER** Stakeholder: **C** SDGs:

### Innovation and Technology

We embrace innovation and technology through the implementation of internal frameworks and measures that promote the practice of challenging the status quo in product design and operations to generate new solutions that enhance our competitive advantage and brand reputation. This includes developing and using advanced technologies and digital innovations to generate new business processes, including improving customer and other stakeholders experiences. In terms of approach, we leverage innovation and technology across all operations and services to accelerate our business growth and offerings.

Capital: **FC HC IC MC NC** Risks: **MR FLR HSR HR HCR SR TR** Stakeholder: **C IE M IPG** SDGs:

### Circular Economy

Our long-term ambition is to minimise or eliminate the negative environmental impact of a product by eliminating waste and reducing materials consumption. We also wish to decrease plastic pollution by engaging in recycling and reusing, as this creates opportunities for innovation and lower waste generation. The circular economy model encourages the creation of a closed-loop system where waste from one process becomes an input for another. Our aim is to work towards a low-waste future, steward natural resources and minimise our carbon footprint while creating value.

Capital: **FC HC IC MC SRC NC** Risks: **MR HR HCR TR** Stakeholder: **C** SDGs:



# Risks Linked to Creating Value

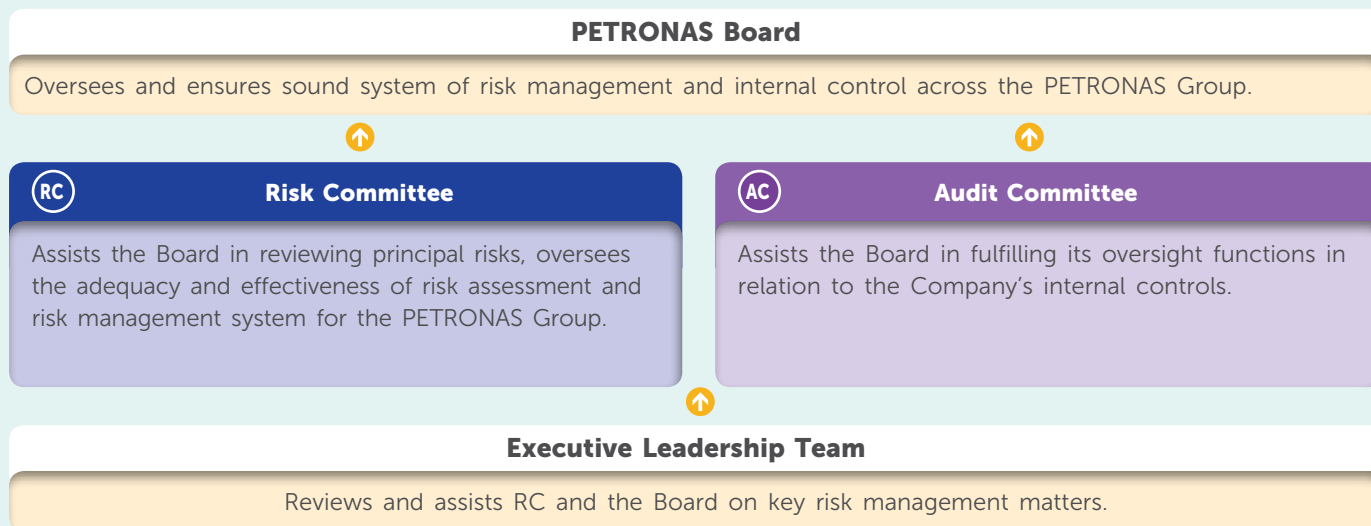
Effective risk management is fundamental to our value creation, especially given the dynamic and volatile landscape following post-pandemic recovery and heightened geopolitical uncertainties in 2022. As we accelerate our progress in energy transition, we are expanding our stepping-out beyond current core business and commitments to develop new business and realise our NZCE 2050 Pathway. We pushed ahead to continuously identify, assess and manage our risks and opportunities to create value while delivering positive outcomes. We strengthened our risk management and internal control system to build resilience, enhance our ability to meet stakeholder demands and deliver our long-term strategic goals.

## Preserving Value Through Effective Risk Management

To create sustainable value, we implement a comprehensive risk management and internal control system that mitigates significant risks. This system is fundamental to delivering long-term stakeholder value as it identifies, assesses, manages and monitors a range of financial and non-financial risks. It is not intended to eliminate risk entirely, but instead to manage our risk exposure across our businesses, while at the same time making the most of any opportunities. This system provides reasonable but not absolute assurance against material misstatement or loss.

Setting the tone from the top and driving our risk management and internal control system is the PETRONAS Board (Board) and its sub-committees, namely the Risk Committee (RC) and Audit Committee (AC), as well as the Executive Leadership Team (ELT). In addition to the above committees, the Risk Management Committee (RMC) and respective Risk Management functions support the risk oversight.

## Roles and Responsibilities



The above risk oversight structure shall be read together with the "Corporate Governance at PETRONAS" section.

### Risk Management Committee (RMC)

RMC serves as a central platform to support PETRONAS' Management and the Board in managing risks and maintaining acceptable levels of risks as well as providing guidance and advisory on Groupwide risk management system and its implementation.

### Risk Management Functions

Risk management functions exist within the PETRONAS Group to drive risk management implementation and provide risk reporting and assurance to PETRONAS Management and the Board that risks are effectively being managed across the PETRONAS Group.

## The Way We Manage Risks

**PETRONAS Risk Policy** outlines the general principles and guidelines for making risk-based decisions. Through this policy, we continuously strive to implement risk management best practices to protect and create value. It ensures a balanced and holistic view of exposures to achieve business objectives, thus strengthening our position as a risk-resilient organisation. Complementing this policy is the PETRONAS Resiliency Model, which provides an integrated and holistic view of the overall strategy for more effective risk management. It focuses on three areas of business resilience, namely Enterprise Risk Management (ERM), Crisis Management (CM) and Business Continuity Management (BCM).

### PETRONAS Risk Policy and PETRONAS Resiliency Model

PETRONAS is committed to becoming a risk resilient organisation.

PETRONAS shall continuously strive to implement:

- Risk management best practices to protect and create value within the set boundaries.
- Risk-based decision-making by providing a balanced and holistic view of exposures to achieve business objectives.

Managing risk is everyone's responsibility.

#### Enterprise Risk Management

Structured and holistic approach to identify, assess, manage and monitor risks. The aim is to REDUCE the likelihood and impact of identified risks to enhance the organisation's ability to achieve its strategic objectives.

#### Crisis Management

Comprehensive set of processes that aims to prepare the organisation to RESPOND and manage crises to protect people, environment, asset and reputation.

#### Business Continuity Management

Holistic management process that aims to build the capability of an organisation to RECOVER and continue delivering products or services at acceptable predefined levels following a prolonged disruptive incident.

## Risks Linked to Creating Value

**Enterprise Risk Management (ERM)** is integral to managing the business. It acts as a guide to systematically identify, assess, treat, monitor and review risks, as outlined in our ERM process. It aims to improve our ability to reduce the likelihood and/or impact of risks that may affect the achievement of our business objectives.

Through the ERM process, risk profiles are established, together with the corresponding risk mitigations and key risk indicators, all of which are monitored at the corporate level and by the respective units across PETRONAS Group.

PETRONAS Risk Appetite articulates the type of risks we are willing to accept to guide strategic decisions at the corporate level. It reflects our position, propensity and acceptability to take risks in various areas, namely strategic, financial, operational and reputational while adhering to legal and regulatory compliance. The risk appetite for each area is determined by its respective tolerance and threshold levels.

At the corporate level, the PETRONAS Corporate Risk Profile and Risk Appetite are monitored and reported quarterly to the RMC, ELT, RC and the Board.

Risk assessments are conducted at key decision points to:

- Ensure decisions that significantly impact our business operations and strategies are made through consideration of risk-reward trade-off; and
- Create risk-reward conversations at respective decision platforms and/or approving authority.

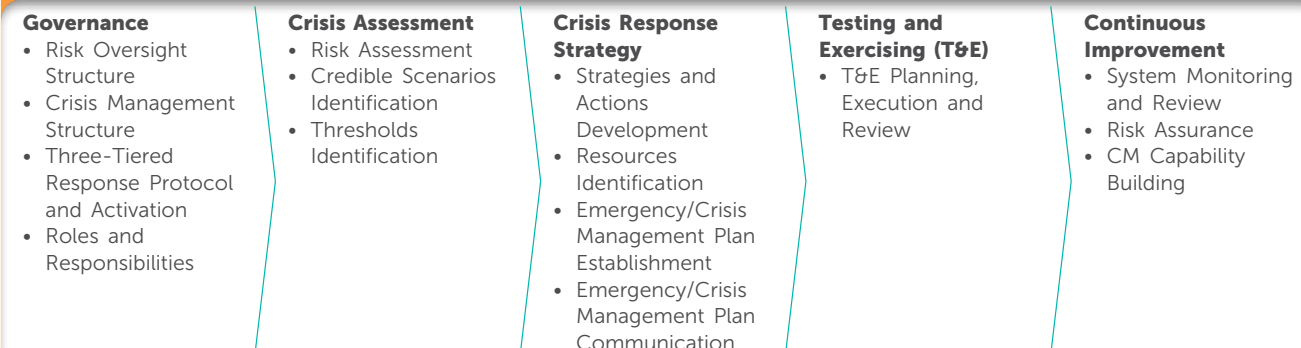
### ERM Framework



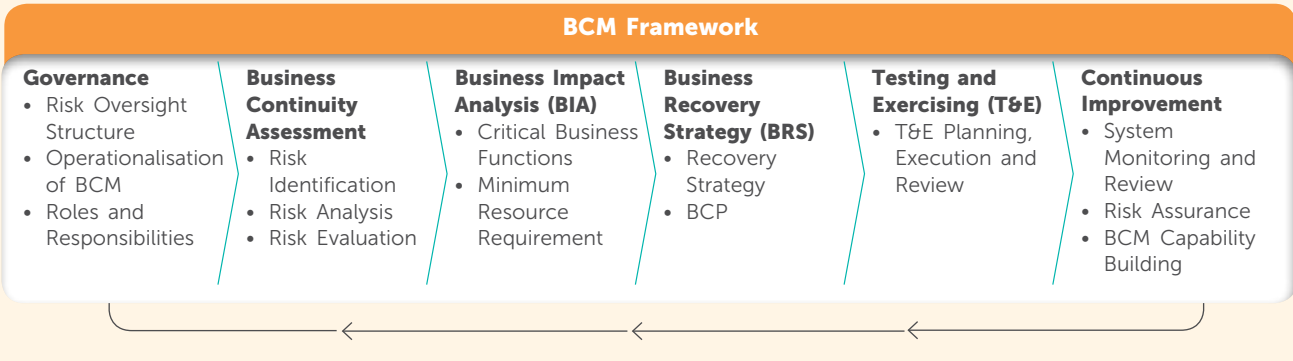
**Crisis Management (CM)** is an integrated process that aims to prepare our domestic and international operations to respond to and manage crises in risk areas, to protect the People, Environment, Assets and Reputation (PEAR).

Under CM, we adopt a three-tiered response protocol that demarcates the roles and responsibilities of the emergency site management, operating unit management, corporate and internal or external response agencies and/or authorities. We also conduct Testing and Exercising (T&E) via simulation of test scenarios to ensure the effectiveness of response strategies and promote continuous improvement, as identified in the Emergency or Crisis Management Plan.

### CM Framework



**Business Continuity Management (BCM)** aims to build our capabilities to recover and continuously deliver products or services at acceptable, predefined levels following any prolonged disruption. The Business Continuity Plan (BCP) is key to this framework, which enhances our preparedness to recover and restore business-critical functions within a reasonable period, sustain activities and minimise disruptions to stakeholders. Through simulation of test scenarios, we also conduct T&E to validate the effectiveness of recovery strategies as well as maintain a high level of competence and readiness as identified in the BCP.



### Managing Our Principal Risks

Our ability to create long-term value is subject to several factors, including those beyond our control. Whether known or unknown, these and other risks may present threats that could adversely impact our operations and our stakeholders. Nevertheless, they may also present opportunities that can be leveraged for strategic benefit to pursue growth opportunities and build the right capabilities for business sustainability. The principal risks are set out below together with the key mitigation measures to manage them. This list is not exhaustive and the order in which we outline these risks does not necessarily reflect the likelihood of occurrence or magnitude of their impact.

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.

In addition, the Risk Management in Action section features our focused efforts in effectively managing selected principal risks against the backdrop of a dynamic and uncertain operating environment.

We are strengthening our risk management efforts and related disclosures to ensure consistency with global sustainability frameworks and standards. Aligning our disclosures with the Taskforce on Climate-Related Financial Disclosures (TCFD) is in progress and can be accessed in the Safeguard the Environment section. Work is also ongoing to ensure alignment of our disclosure with the World Economic Forum’s Stakeholder Capitalism Metrics.

## Risks Linked to Creating Value

### Market Risk

MR

#### What It Means

The Group's financial performance is exposed to risks caused by the volatility of commodity prices, changes in customer demand and fluctuation of the exchange rate, influenced by factors such as macroeconomy, geopolitics, supply demand balance as well as the lingering effects of COVID-19.

Additionally, the energy transition driven by climate change will impact customers' preferences as demand for renewable energy and more sustainably sourced products gain prominence, thus, increasing pressure on us to diversify into new areas beyond our core business.

#### Impact on Value

- The geopolitical situation, particularly the Russia-Ukraine war and the prolonged impact of COVID-19 have influenced the fluctuation of commodity prices and customers' demand leading to implications on areas such as our project viability, financial performance and returns to shareholders.
- It also impacts the ability of our counterparties such as vendors, partners and contractors to fulfil their contractual obligations to the Group as commercial arrangements are pegged to commodity prices. Consequently, this could impede our growth prospects and have a long-term impact on the sustainability of our business operations.
- Meanwhile, changes in customer preferences brought about by the energy transition result in increased competition in the energy industry, indirectly affecting our value chain.
- Fluctuations in exchange rate stemming from our global operations and the difference between reporting currency in Ringgit Malaysia and transactions that are dealt in US Dollar may lead to increased cost of operations and revenue erosion.

#### Impact on Capitals

##### Financial Capital:

External uncertainties resulting from changes in market conditions can undermine our capacity to realise consistent returns and may impact the Group's capability to sustain business operations and pursue growth.

##### Manufactured Capital:

Identifying assets that form the core engine to support current and future operating models may also be at risk of changing market demands and external regulations.

##### Intellectual and Human Capitals:

Existing intellectual capital required to support the business can be made redundant in the face of rapid changes in technology and the market environment.

##### Natural Capital:

Prospective oil and gas investments and efforts to prolong existing assets and economic life of reserves may become uneconomical should there be changes in the market environment and outlook.

### Mitigation Strategies

1. Undertake regular reviews of strategies, prioritise resources to areas of the highest importance for the organisation and conduct rigorous efforts to secure new demand within the core and new business in response to the wide-ranging market risks and the corresponding challenges in generating value from our business.
2. Undertake regular monitoring and review of our portfolio composition and counterparty performance to identify critical issues and specific interventions to limit the exposure to PETRONAS, for example securing new demand aligned to the strategic thrusts, business diversification requirements and identified building blocks to realise NZCE 2050 targets.
3. Manage market risk exposures namely commodity price and foreign exchange exposure through hedging activities to protect value and margins.
4. Implement prudent financial governance through PETRONAS Financial Policy (PFP), supported by the PETRONAS Financial Standards (PFS) which outlines the principles and requirements that promote effective implementation of financial management including financial risk management practices to ensure financial resilience over the long term. PETRONAS Financial Risk Appetite was implemented across the Group with specific financial thresholds to ensure that business decisions are undertaken within the approved thresholds.
5. Ensure continuous engagements with targeted stakeholders to advocate our business strategies and instil awareness, ensure buy-ins and obtain support from the relevant stakeholders.

### Risk Movement

Concerns regarding the supply security following the Russia-Ukraine war underpins the global oil price volatility, adding further pressure to an already tightening crude market with OPEC+ producing lower than planned. Upward price momentum is also partially tempered by China's continued Zero-COVID policy, global recession fears and strong US dollar. These concerns led to increased exposures on market risk and are managed through the approved mechanism and risk appetite.

### Opportunities

1. 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, including establishment of Gentari as our clean energy solutions entity.
2. The uncertain geopolitical situation provides opportunities to enter new markets, explore new supply bases and establish new partnerships across the supply chain.
3. The volatile commodity market provides opportunities for PETRONAS to actively pursue trading opportunities and provide additional value by capturing pockets of favorable volatility. Furthermore, heightened ESG awareness provides an opportunity for the inclusion of ESG-linked products in hedging and trading activities in line with the Global Energy Market's trajectory towards sustainability.
4. Accelerating the utilisation of digital tools and technology, enhancing trading and supply chain models, as well as pursuing cost management tools enable us to counter the short term impact of volatility.

Link to:

Material Topics:



Stakeholders:



Capitals:



SDGs:



# Risks Linked to Creating Value

## Financial Liquidity Risk



### What It Means

Our business activities require significant capital investments, sufficient operating cash flows and/or sufficient external financing for operations and growth projects.

Various factors impacting our liquidity position include market risk, successful execution of our strategy with a focus on ESG and climate change, changing operational requirements and stakeholder management.

### Impact on Value

- Deterioration in liquidity position impacts affordability and capital availability, thus limiting future growth. This may lead to an inability to meet shareholders' requirements in a timely and sustainable manner.
- Downgrade of our credit rating and non-compliance to ESG and climate change requirements could lead to higher borrowing costs and limited capacity to access the capital market.
- High CAPEX concentration in energy transition and decarbonisation efforts may impact our revenue stream due to delays in return realisation, ability to attain the right talent and timely deployment of technology.

### Impact on Capitals

#### Financial Capital:

The ability to hold a strong financial and liquidity position can be affected by changing regulations, unfavourable market conditions and unexpected stakeholder demands, thus limiting our ability to secure financing.

### Mitigation Strategies

1. Establish the Asset Liability and Liquidity Management Committee (ALCO) as the oversight body to oversee, deliberate, review and monitor asset and liability management strategies in managing foreign exchange, interest rate and liquidity risks. This includes overall liquidity management strategies to achieve financial objectives and support the Group's business growth. Review and monitor our liquidity position regularly aligned to the risk appetite established for liquidity and indebtedness levels.
2. Execute the following to manage Liquidity Risk, similar to managing Market Risk:
  - The PFP and PFS guide us to ensure that adequate financial management and risk management practices are implemented.
  - The Portfolio Commodity Hedging Programme protects value and margin against adverse price movement.
3. Establish a Liquidity Risk Contingency Protocol (LRCP) which will act as a liquidity crisis management plan to ensure PETRONAS' responsiveness in safeguarding the Group's financial sustainability.
4. Establish a trust fund (Decarbonisation Fund) and continuous contribution to safeguard the availability of funds for its intended utilisation for decarbonisation and clean energy in achieving NZCE 2050 targets.
5. Engage key stakeholders regularly, including banks, current and potential investors and counterparties to ensure the readiness for external funding and borrowing including ESG related funding, should it be required. Where needed, conduct ongoing assessments on credit position and review of counterparties to ensure their creditworthiness in fulfilling their financial obligations.

### Risk Movement

Against the backdrop of a volatile market and in pursuing business growth, liquidity key risk indicators' trends remain stable with the existing controls and mitigations.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:





## Legal and Regulatory Risk



### What It Means

As a global energy company, our exposure to changes in the legal and regulatory landscape can come from various causes. We must comply with legal and regulatory requirements unique to each country where we operate, covering critical legal areas like international sanctions, anti-trust, anti-bribery, anti-corruption, anti-money laundering and data protection laws with extra-territorial effects.

We are also exposed to various claims, suits and legal proceedings involving shareholders, labour, intellectual property, tax and other matters.

Our large workforce may unintentionally or intentionally not comply with regulatory and compliance requirements, impacting the broader organisation. Climate change-related enforcement may also lead to additional legal and regulatory measures, increasing compliance costs and potential claims.

### Impact on Value

- The inherent uncertainties in the litigation and dispute resolution process may have an adverse outcome and impact our business operations, financial condition and/or reputation.
- Rising concerns over climate change could lead to additional legal and regulatory measures, including higher compliance costs.

### Impact on Capitals

#### Financial Capital:

Legal and regulatory breaches can result in financial penalties and reduce access to external financing.

#### Social and Relationship Capital:

Relationships with key stakeholders will be damaged due to loss of trust and credibility, should there be legal and regulatory breaches.

#### Human Capital:

Reputational damage to our position as a favourable employer due to legal and regulatory breaches.

### Mitigation Strategies

1. Establish appropriate governance, compliance and legal frameworks, including the PETRONAS Code of Conduct and Business Ethics (CoBE) and the Legal Compliance Framework (LCF).
2. Conduct regular 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.
3. Regularly review and monitor compliance levels of the workforce and business, aligning to the risk appetite established for compliance with critical laws and anti-corruption measures. We emphasise strict compliance with legal and regulatory measures Groupwide.
4. Establish zero tolerance for non-compliance to legal and regulatory standards as a Risk Appetite, including acts of bribery and corruption.
5. Establish a pathway to NZCE 2050. The Group's approach to sustainability supports our efforts to reduce greenhouse gas emissions and manage other environmental, social and governance impact from our business operations.

### Risk Movement

Legal and Regulatory Risk remains inherent in the organisation. Nonetheless, PETRONAS has established the Legal Compliance Controls via the Legal Compliance Framework, effectively mitigating legal and regulatory risk across PETRONAS Group. Legal Compliance Controls are reviewed regularly to ensure it remains up-to-date and relevant with the latest laws and regulations.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



# Risks Linked to Creating Value

## Sustainability Risk

SR

### What It Means

The Group recognises the risks and opportunities brought about by climate change as reported by the Intergovernmental Panel on Climate Change (IPCC). The IPCC reports that limiting global warming to 1.5°C above pre-industrial levels is needed to avert the worst effects of climate change. The IPCC highlights the effects of human activities on the global climate system, leading to increased pressure on businesses to take actions such as riding the energy transition wave and adapting to new regulations and standards. As a result, the oil and gas industry is under scrutiny, creating risks for PETRONAS.

Delivery of Net Zero Carbon Emissions by 2050 is crucial and relies heavily on transformational change within the organisation, government policies and regulations and customer demand for energy products and services.

### Impact on Value

- Limited access to debt capital markets as financial institutions have incorporated ESG considerations in their financing decision, which may impact our competitive edge and growth.
- We may lose our competitive standing in the energy industry due to ineffective ESG management which could have a cascading impact on the value chain.
- Inability to introduce competitive low-carbon energy solutions may impact the implementation of national energy transition initiative towards a lower carbon system, leading to imbalances in energy security, affordability and sustainability.

### Impact on Capitals

#### Financial Capital:

Unpreparedness for climate change-related risks can lead to a higher cost of capital.

#### Manufactured Capital:

Physical climate change impact may result in asset damage, low worker productivity and loss of production.

#### Social and Relationship Capital:

Inability to demonstrate credible climate action may lead to a loss of trust and reputational damage among key stakeholders.

#### Human Capital:

Transitioning into renewable energy and lower carbon businesses may require upskilling and reskilling of the current and future workforce to help them adapt to new technologies and processes to develop new energy solutions.

#### Natural Capital:

Inability to incorporate nature and biodiversity in NZCE 2050 pathway can reduce our ability to deliver our long-term business ambitions, which may affect the Company's long-term business resilience.

### Mitigation Strategies

- Introduce steps to translate our NZCE 2050 Pathway into short-, medium- and long-term targets to reduce GHG and methane emissions.
- Establish our 2030 ambitions in renewables, hydrogen and green mobility via Gentari.
- Allocate 20 per cent of total capital expenditure from 2022 to 2026 to scale up decarbonisation efforts and grow low-carbon energy solutions.
- 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.
- Set up a centralised Carbon Management Division within Upstream operations to drive CCS and decarbonisation at pace.

### Risk Movement

Continuous heightened expectations on the private sector's role and scrutiny among investors, customers, lawmakers and regulators for energy companies to demonstrate tangible emission reductions and business model changes have led to us intensifying our focus on accelerating our energy transition journey. In 2022, we established our NZCE 2050 pathway and strengthened our nature and biodiversity position for our long-term business resilience.

### Opportunities

- While we have established Gentari to offer clean energy solutions via renewable energy, hydrogen and green mobility, PETRONAS is also exploring other lower carbon opportunities for business growth including biofuels, specialty chemicals, circular economy and nature-based climate solutions.
- A wide range of technologies and approaches are required to reduce emissions. We anticipate an increase in partnerships, collaboration and investments in technology and innovation to scale up and accelerate the deployment of emissions reduction solutions.
- With higher demand, we are exploring high-quality nature-based climate solutions in line with our position on nature and biodiversity.

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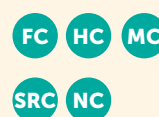
#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



## Health, Safety, Security and Environmental (HSSE) Risk



### What It Means

Our business operations expose us to various risks related to health, safety, security and the environment. These risks include plant disruptions, equipment failure, attacks, criminality, unrest and maritime threats, among others.

Additionally, the prolonged threat of COVID-19 and the emergence of new strains continue to affect our people's health and business operations.

### Impact on Value

- Any incidents during business operations could result in injury or loss of life, environmental damage, resulting in rectification costs as well as damage to our equipment and facilities. A shutdown of the affected facilities could disrupt production and increase production costs.
- Security threats may adversely affect our business operations, the safety of our people and assets, as well as cause environmental damage.

### Impact on Capitals

#### Financial Capital:

HSSE incidents will result in penalties, damaged assets and disrupted business operations, impacting the Group's financial position.

#### Social and Relationship Capital:

HSSE incidents can lead to loss of trust and reputational damage among key stakeholders.

#### Natural Capital:

The consequences of HSSE incidents will affect the natural environment where we operate, undermining our efforts to be responsible stewards of natural resources.

#### Human Capital:

HSSE incidents can cause reputational damage to our status as a favourable employer.

#### Manufactured Capital:

HSSE incidents can cause significant damage to key assets.

### Mitigation Strategies

1. Strengthen HSSE governance through dedicated HSE and Security Management Systems, supported by HSE Mandatory Control Framework (MCF) and Minimum Mandatory Security Standards (M2S2) to manage HSE and security risks effectively.
2. Reinforce competency and assurance levels, supported by digital and focused technologies to strengthen operational discipline.
3. Establish Security Academy to enhance capacity development and management for security practitioners.
4. Optimise our security readiness through continuous protective security monitoring and predictive analysis.
5. Proactively manage the COVID-19 crisis through the Pandemic Preparedness and Response Team (PPRT).

### Risk Movement

HSSE risk remains inherent in the energy business, but we are taking steps to manage health, safety and security risks. We improved how we manage processes to prevent major incidents and comply with legal requirements to address health and safety concerns. We also consider new security risks brought about by evolving technology such as drones, as well as geopolitical instabilities that can disrupt our operations and supply chains.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



# Risks Linked to Creating Value

## Geopolitical Risk



### What It Means

PETRONAS' global presence exposes the company to political, legal and fiscal developments that could impact our operations and financial condition.

Our global business activities are subjected to regulations and directives of national and host governments concerning limitations on production volumes and exports, pricing and trade policies, environmental protection controls and possible nationalisation of assets, expropriation and cancellation rights. Governments may intervene directly or indirectly in our commercial and operational affairs.

### Impact on Value

- Potential changes in contractual terms, laws and regulations due to global operations with differing degrees of political, legal and fiscal stability coupled with geopolitical crises such as international sanctions and trade restrictions may lead to business disruptions, which negatively impact our financial position and limit our capacity for growth.

### Impact on Capitals

#### Financial Capital:

Inability to monitor geopolitical issues may lead to disruptions that lower returns from critical assets.

#### Social and Relationship Capital:

Inability to manage key relationships in foreign countries may deteriorate trust among key stakeholders.

#### Manufactured and Human Capitals:

Escalation of geopolitical incidents can compromise the safety of employees and assets.

### Mitigation Strategies

1. Conduct risk assessment and due diligence to support decision-making concerning international investments including pre-entry, in-country and exit management to ensure country risks are managed effectively and holistically across the Group.
2. Set up crisis and business continuity plans in each country where we have operations to ensure management and recovery from incidents and/or crises. These plans are regularly tested and exercised to ensure readiness for execution as and when required.
3. Review and monitor the geopolitical landscape and investment concentration in the countries we are in regularly to ensure it aligns with the risk appetite established for our international investments. We review our investment portfolio regularly to optimise the value generated from the overall portfolio.
4. Execute social programmes in key areas that contribute to improving the quality of life and socio-economic outcomes for communities nationwide and in the countries where we operate.

### Risk Movement

The geopolitical risk in countries where PETRONAS operates remains uncertain. However, controls and various interventions and mitigations are in place to address risks, issues and challenges arising in specific countries.

### Opportunities

Changes in the political landscape have altered energy flows, which means non-traditional markets may be in need of new suppliers to meet the supply-demand gap as energy security comes to the fore for nations.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



## Hydrocarbon Reserves and Resources Risk



### What It Means

Our ability to supply oil and gas depends on finding and managing sufficient reserves and resources to meet our commitments to stakeholders. This will depend on exploration success, project maturation, reservoir or field performance, asset acquisition or relinquishment and commercial factors.

However, our exploration activities face uncertainties like technical challenges and limited information. Meanwhile, fields already in production also face challenges like declining pressure and equipment reliability issues. Changes in government policies can also affect the value of our assets.

### Impact on Value

- Insufficient supply will result in either the need to source new supply from external or inability to meet contracted customers' demands leading to non-performance of contract, loss of customers' trust and erosion of market share and value throughout the value chain.
- Ineffective management of exploration, project, field performance and asset acquisition or relinquishment may result in delayed, deferred or cancelled projects leading to higher business costs which will reduce revenue, cash generation and returns.

### Impact on Capitals

#### Financial Capital:

Inability to monetise resources can compromise the financial stability of the Group as it is the core activity.

#### Manufactured and Intellectual Capitals:

Inability to develop new technologies and innovations will result in low-value assets that may not perform to the required standards.

### Mitigation Strategies

1. Annual Review of Petroleum Resources (ARPR) process independently reviewed as per PETRONAS Reserves and Resources Management System (PRrMS) requirements. Execute Area Development Plan (ADP) and prioritisation of prospects/projects to improve the path to monetisation with reference to the Exploration Venture Plan and ARPR.
2. Accelerate maturation of resources and increase in reserves base across the funnel.
3. Manage production sustainability, including the development of carbon capture and storage (CCS) technology for the development of high carbon dioxide (CO<sub>2</sub>) fields.
4. Execute operational excellence programmes such as Frontline Excellence, Remote Operations, Infrastructure Excellence, Logistics Excellence, Turnaround Excellence and Asset Integrity Modernisation (AIM) to improve reservoir and/or field performance. For field development, undertake value-improving practices, namely cost compression through innovative technology and digitalisation.

### Risk Movement

Hydrocarbon reserves and resources indicators remain stable with the proactive interventions and mitigations focusing on ensuring effective management of reserves and resources to meet commitments to our stakeholders.

### Opportunities

1. Establish strategic partnerships with industry players to co-create solutions and share risk and reward to spur the local economy.
2. Leveraging fit for purpose technologies may create opportunities to improve project value.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



# Risks Linked to Creating Value

## Technology Risk



### What It Means

We are expanding our digital footprint to enable new opportunities and business processes. However, this also increases the risk of cyberattacks due to evolving techniques and actors that constantly disrupt business. There has been an increase in sophisticated ransomware attacks, cyberattacks that exploit deeply embedded vulnerabilities within the digital and business supply chains as well as attacks through identity theft and third-party access.

Additionally, innovative practices and new technology are essential for our long-term competitiveness. However, new technology is itself at risk of becoming obsolete, particularly where technological advancements exceed the pace of investment and deployment.

We must enable proactive and resilient practices across the organisation to remain resilient in the face of emerging threats resulting from technological and digital shifts.

### Impact on Value

- Cyber attacks can have severe consequences, including disrupting the safety of our operations, people, environment and sensitive information. This threat may also result in legal and regulatory violations and harm our reputation. While we strive to deliver excellence in business operations, there could still be an adverse material impact on the delivery of our strategy and our licence to operate, resulting from ineffective development and deployment of technology and innovation.

### Impact on Capitals

#### Financial Capital:

Failure to adopt innovative technologies may negatively impact our competitiveness and projected returns.

#### Manufactured and Intellectual Capitals:

The Group's physical and intellectual assets may become obsolete due to a lack of innovation, while inadequate cyber defence measures can make these assets vulnerable to attacks.

### Mitigation Strategies

- Practice strong Digital and Information and Communications Technology (ICT) governance across the Group in Cyber Security, Enterprise Architecture and Enterprise Data.
- Establish an IT Disaster Recovery Plan and Cyber Security Incident Response Procedure for identified critical business applications and the Cyber Security Incident Response Procedure for cyber incident recovery strategies, covering all business units.
- Implement an Enterprise Cyber Security Governance Framework (ECSGF) to provide a single consolidated view of the framework, standards and guidelines required to govern and manage cyber security across PETRONAS.
- Strengthen Cyber Security governance via various measures, including enforcement of PETRONAS Enterprise Cyber Security Framework, PETRONAS Cyber Security Incident Response Procedure and Cyber Security Ransomware Crisis Management.
- Execute dynamic in-house research and innovation solutions to strengthen competitive advantage, leveraging PETRONAS Technology Management System (PTMS) to mitigate and manage risks.
- Maintain a strong position in mitigating risks on the Intellectual Property (IP) front with a robust IP Policy at the enterprise-level to protect our innovations.
- Establish a strict recruitment policy for our research and development arm by hiring best-in-class experts to help develop and deploy technology and continuously upskill our researchers.

### Risk Movement

Technology Risk remains uncertain. Nonetheless, we continue to strengthen our Cyber Security posture to minimise the impact of cyber security risk. This effort requires the adoption, compliance and execution of Cyber Security best practices across all PETRONAS entities. We regularly conduct testing and monitoring to ensure our defense mechanism is adequate to contend with the evolving cyber threats.

### Opportunities

- Innovative practices and new technology will nurture an ecosystem which could create value for the organisation, accelerate growth efforts and support decarbonisation initiatives.
- The pace of technological advancements could create potential demand that can be captured through commercialisation of matured technologies and innovative solutions.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



## Execution Risk



### What It Means

Our overall business, financial performance and operational results depend on the successful delivery of complex, long-term, capital-intensive projects, asset portfolio optimisation and product marketing.

Given the complex nature of oil and gas projects, we rely on technology, the technical capabilities of our talent and their capacity to undertake the required capital investments as well as market conditions at the point of the investment decision.

The security of our supply chain is also essential as this impacts our partners' ability to deliver contractual obligations on time and within agreed commercial terms.

### Impact on Value

- Delayed delivery of capital-intensive projects could adversely impact our business strategy, operations and financial condition.
- Uncertainties in the supply of parts and services may lead to non-performance of vendors, delayed delivery of project schedule, cancellation of projects and suspension of plant production and operations, impacting PETRONAS' financial condition.

### Impact on Capitals

#### Financial Capital:

PETRONAS' long-term financial position may be affected if the execution of our Energy Transition strategy is unsuccessful.

#### Intellectual Capital:

Lack of innovation in executing targets may lead to outdated intellectual property.

Improper application of in-house technology during project execution may result in economic or commercial loss.

#### Social and Relationship Capital:

Failure to deliver supply chain requirements may damage the reputation of PETRONAS with stakeholders and the public.

### Mitigation Strategies

1. Establish and implement relevant frameworks and standards to effectively manage PETRONAS' plant and procurement activities. This includes the implementation of project, plant and facilities risk management according to relevant system guidelines and processes such as PETRONAS Group Project Management System (PGPMS), PETRONAS Asset Management System (P-AMS), PETRONAS Technical Standard (PTS), PETRONAS Technical Guideline (PTG) and Plant, Facility Risk Management (PFRM) Guideline to reduce the risk of unexpected technical and/or commercial factors significantly affecting the project's viability and plant operations.
2. Establish procurement standards that streamline procurement governance across business units and vendors.
3. Establish crisis management and business continuity frameworks within respective businesses assessing the criticality of all products and services. Based on the critical levels, the required actions are identified, planned and tested for effectiveness.
4. Establish Group Project Delivery (GPD) to provide oversight on capital, technical deployment and plant change projects, in addition to its role as Asset Owner Representative, where we are the major shareholder.
5. Develop innovative partnerships with Malaysian financial institutions to facilitate Access to Financing (A2F) for vendors via Vendor Financing Programme (VFP) and establish PETRONAS Vendor Development Programme which focuses on nurturing vendors for product manufacturing and/or services for the oil and gas industry.
6. Implement capability development programmes to equip personnel with the required technical knowledge. We also collaborated with peers or partners within the oil and gas industry to facilitate technical knowledge transfer.

### Risk Movement

The supply chain disruptions brought about by the Russia-Ukraine war and the lingering effects of COVID-19 resulted in a high-cost and high-price environment, increasing the exposure to Execution Risk. This leads to increased project costs, delays and cancellations. We have implemented and will continue to monitor various actions and signposts across projects and throughout the supply chain keeping risk levels within reasonable thresholds.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:





# Risks Linked to Creating Value

## Human Capital Risk



### What It Means

We value our people as the most valuable asset for achieving business goals and ensuring success in volatile and uncertain environments.

Adapting the approach to managing, attracting and retaining talent is essential to create the right mix of capable individuals with the mindset and behaviour to achieve long-term ambitions.

The key success factors include increased productivity, building exceptional teams and inspiring employees by creating a conducive work environment.

However, various challenges such as talent competition, capability development, mindset and behaviour reinforcement and the creation of the right ecosystem, must be addressed to ensure the success of these efforts.

### Impact on Value

- Inability to attract and retain the right skilled talents will adversely impact our talent pipeline and ability to remain competitive.
- This risk may affect the delivery of our strategies and aspirations at pace, including potential opportunity loss in mature and developing markets, impacting our long-term sustainability.

### Impact on Capitals

#### Human and Social and Relationship Capitals:

Failure to establish PETRONAS as the employer of choice may negatively impact our reputation, erode stakeholder confidence and impede our capacity to attract and retain essential talent.

#### Intellectual and Manufactured Capitals:

Inability to effectively recruit, train and align talent with business objectives may result in suboptimal execution of strategies, leading to lower quality intellectual and manufactured capitals.

### Mitigation Strategies

1. Recruit at pace through a differentiated hiring approach and retain talents through our repositioned Employee Value Proposition to attract and retain the best talents to meet the changing needs of our traditional and non-traditional business activities.
2. Intensify upskilling and reskilling efforts to future-proof our talents with new skills and capabilities in key strategic areas, namely agile way of working, innovation, digital and sustainability. We equip senior leaders to lead and navigate the business and the workforce to achieve organisational goals through our signature programmes.
3. Continuously build a pipeline of leaders and talents to ensure sustainable bench-strength succession.
4. Strengthen efforts to create and sustain the right environment for our people to thrive through our PETRONAS Cultural Beliefs anchored on Shared Values and fostering Diversity and Inclusion.

### Risk Movement

Recruitment and attrition rate remain stable within the threshold with proactive interventions and mitigations in place to address the talent requirement for core and new business areas related to energy transition as part of the business strategy.

### Opportunities

Establish talent partnerships with government agencies and learning institutions to build a sustainable talent pipeline.

Link to:

#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



## Risk Management in Action

### PETRONAS' Post-Pandemic Recovery Efforts

Globally, 2022 saw a period of continued recovery from the lingering impact of the COVID-19 pandemic. Combined with geopolitical uncertainties, global demand and supply were negatively impacted leading to a high-cost and high-price environment. A shortage of raw materials and services as well as increased demand consequently led to competition for these limited resources.

From a human capital perspective, the global workforce evolved rapidly post-pandemic and demand for flexibility in the work environment was heightened. The pandemic disrupted the organisation's usual way of working and accelerated ongoing evolutions such as telework and digitalisation.

As part of our post-pandemic recovery efforts, we focused on managing the implications of supply chain disruptions and facilitating our workforce to adapt to the new way of working.

#### 1. Managing global supply chain disruptions

The oil and gas industry faced a limited supply of key resources leading to competition for resources such as marine vessels, fabrication yards, drilling rigs and skilled talents. Combined with the scarcity of vendors in the market as well as financial challenges faced by some vendors, these factors may adversely impact the pace and cost of project delivery for PETRONAS.

In managing the associated implications, we closely monitored the progress of project delivery to enable relevant intervention on project cost and schedule to be undertaken in a timely manner, while ensuring project compliance with internal standards and requirements in delivering project quality. These efforts culminated in projects delivered according to On Time, On Budget, On Scope (OTOBOS) while some were completed ahead of schedule, ultimately delivering value to PETRONAS through cost reduction, operational efficiency and cash generation.

In addition, targeted efforts to strengthen supply chain resiliency, focusing on vendor and contract management have been implemented. These efforts include establishing strategic collaborations with government bodies and other industry players in shaping the Oil and Gas Services and Equipment (OGSE) industry. We extended support to vendors by enhancing capacity and capability development as well as facilitating access to financing from Malaysian financial institutions. We also identified alternative reliable supply points to diversify access to key materials and services. Lastly, we also developed innovative contracting strategies to enhance contract efficiency and promote a competitive market.

#### 2. Adapting to a new way of working

The pandemic has challenged and transformed the idea of a conventional workplace and hybrid working has become the new norm. While we continued to deliver business targets and preserved operational efficiency during these extraordinary circumstances, some employees have struggled to adapt, leading to a deterioration in employees' mental well-being.

In addressing this, key initiatives were introduced, such as the Flexible Working Arrangement (FlexiWork) to support work-life balance for employees to manage their professional and personal commitments, empowering them to achieve productivity and continue delivering for the organisation.

We also strengthened the Employee Assistance Programme (EAP) 2.0 by extending its benefits to employees' direct family members as a proactive measure to address mental health concerns among our employees, as we recognise family members as their strongest support system.

The pandemic has also accelerated the adoption of digital technologies and PETRONAS has adapted. The increased reliance on digital technologies as part of the new way of working has expanded the digital footprint. This expansion, coupled with the evolution of digital threats has increased our exposure to cyberattacks.

In response, we focused on establishing specific key cybersecurity capabilities to ensure employees can work safely and securely, regardless of location or device they are working from.

On top of the requisite security governance, infrastructure, processes and cyber defensive capability, we ramped up efforts to strengthen security of Internet access and device, with around-the-clock support from the Security Operations Centre. We increased communication and awareness activities around behaviours of working remotely in a secure manner, keeping staff updated with the latest threats. These efforts were key in supporting both organisational and employee resilience in the face of new emerging threats, resulting from technological and digital shifts across the business and in adapting to the hybrid working arrangement as a new norm.

# PETRONAS Energy Transition Strategy

## PETRONAS Energy Transition Strategy

Energy transition is happening and is gaining momentum.

The energy transition journey is not linear given many moving parts – evolving policies and regulations, changing customer preferences for low-carbon energy solutions and increasing expectations of investors and financiers.

PETRONAS as a leading global energy company aims to play a key role in the energy transition, focusing on energy security and at the same time delivering energy solutions responsibly.

We have developed our Energy Transition Strategy centred on creating value for our customers and stakeholders. 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 NZCE 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. We will allocate our capital resources with discipline and nurture a strong talent bench to deliver this strategy.

We will remain resolutely progressive to ensure a sustainable future.



**Core Business**  
*More Energy, Less Emissions*

The world needs more energy to support a growing population and economic expansion, but this demand must be met with reduced emissions for a sustainable future.

Oil and gas will continue to be relevant in the energy mix until 2050, with gas playing a major role as a transition fuel, given growing demand for gas to fulfil global energy security needs.

PETRONAS is in an advantageous position in this energy transition as two-thirds of its hydrocarbon portfolio is made up of gas. PETRONAS will continue to serve global LNG demand as one of the leading LNG players in the world.

PETRONAS' efforts to strengthen its Core Business will help sustain the vibrancy of the oil and gas integrated value chain, local Oil and Gas Services and Equipment (OGSE) ecosystem and adjacent industries.

Our Core Business continues to be an anchor for PETRONAS as it is expected to generate steady cashflows to help finance our decarbonisation efforts and investments in new businesses.

We will produce oil and gas in a differentiated manner, safely, reliably, with focus on reducing carbon emissions and at a competitive cost.

We will continue to strengthen our Downstream assets to capitalise on the favourable commodities outlook and expand product offerings with a focus on customer-centricity.



### Priority Areas

- **Upstream Malaysia:** Intensify oil and gas exploration, development and monetisation in Malaysia to serve domestic energy demands, maximise integrated value chain and sustain the vibrancy of the domestic oil and gas ecosystem.
- **Upstream International:** Sustain production levels and high-grade international oil and gas portfolio towards being low-cost, low-carbon.
- **Gas:** Maintain LNG market leadership by maximising value from existing assets as well as pursuing new supply nodes.
- **Downstream:** Strengthen operational excellence, commercial excellence and value extension to fully capture the market.



**New Business**  
*Capturing New Growth Opportunities*

The energy transition presents many opportunities for PETRONAS.

PETRONAS has identified and pursued various New Businesses to future-proof our portfolio in response to changing customer preferences and to offer clean energy solutions. Each of these businesses are expected to progress at varying pace and trajectories depending on technological advancements and market demand.

We will pursue both organic and inorganic growth and seek opportunities to collaborate with partners across the globe to provide customers with cleaner and more affordable energy solutions.

Gentari, our clean energy solutions arm was established to focus on delivering PETRONAS' ambitions in Renewable Energy, Hydrogen and Green Mobility with pace.

To deliver sustainable results from our New Businesses, we will rely on new technologies and synergies within the Group, leveraging existing expertise as well as developing new capabilities to manage new ventures.



**Priority Areas**

- 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.
  - **Carbon capture and storage (CCS):** Mature CCS to decarbonise PETRONAS' portfolio and design for regional demand to position Malaysia as a leading CCS hub in the region.
  - **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.



**Net Zero Carbon Emissions**  
*Pathway to Zero*

Decarbonising our portfolio is not an option, but a must.

PETRONAS has charted a more granular pathway for NZCE 2050. We have identified key abatement levers and their abatement potential to decarbonise PETRONAS' Scope 1 and Scope 2 emissions.

PETRONAS will responsibly manage GHG emissions to future-proof our Core Business and reduce the carbon intensity of our product offerings to customers. We will continue to support Malaysia's commitment to reduce its global carbon footprint through its Nationally Determined Contributions.

We are committed to meeting the short- and medium-term targets to ensure we deliver meaningful progress towards NZCE 2050. To achieve this, we have allocated resources to ensure focused delivery.

PETRONAS has also elevated our GHG accounting and reporting approach to fully adhere to the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (2004), Ipeica Climate Change Reporting Framework (2011) and ISO 14064-1 GHG-Part 1 (2018). Additionally, we have adopted the Taskforce on Climate-related Financial Disclosures (TCFD) framework to enhance our sustainability reporting from 2023 onwards.



**Priority Areas**

- Intensify efforts in zero routine flaring and venting, energy efficiency, electrification including digital solutions, operational excellence and equipment optimisation.
- Mature CCS as a key decarbonisation lever for our assets.
- Electrify PETRONAS operations, wherever feasible, through asset modification, infrastructure development and sourcing for renewable energy where feasible.



# PETRONAS Energy Transition Strategy



## Immediate Priorities

- **Upstream Malaysia:** Intensify domestic oil and gas exploration to maximise integrated value chain, while expediting appraisal programmes to replenish our resources.
- **Upstream International:** Continue to sustain production and high-grade oil and gas portfolio towards low-cost, low-carbon molecules.
- **Gas:** Maximise LNG value from existing assets and pursue new supply nodes, maturing opportunities in Canada and Argentina to meet growing demand.
- **Downstream:** Preserve integrated margins through continuous operational and commercial excellence.



- **Specialty Chemicals:** Leverage acquired platforms to drive market and product expansion.
- **Carbon Capture & Storage:** Achieve Kasawari CCS first injection by 2026 and study new storage sites.
- **Bio-based Value Chain:** Establish pathways into biofuels production through co-processing in existing facilities and establishing greenfield refineries.
- **Renewable Energy:** Pursue organic growth from existing platforms while seeking inorganic growth opportunities.
- **Hydrogen:** Invest in early positions and set up local teams especially in priority markets.
- **Green Mobility:** Expand charging points across Asia Pacific, starting with Malaysia and India.

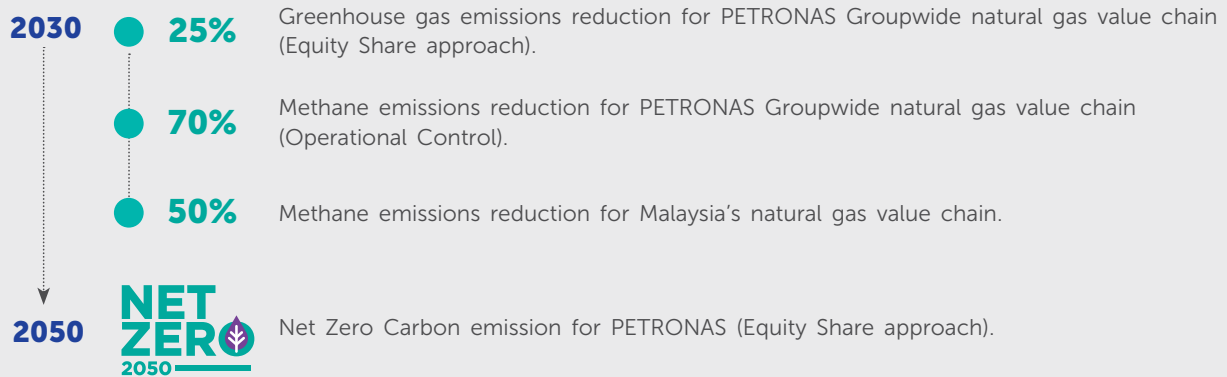
**2024** Intensify GHG emissions reduction efforts to meet capping of emission to 49.5 Million tCO<sub>2</sub>e in Malaysia (Operational Control).

**2025** Fifty per cent Methane emissions reduction for PETRONAS Groupwide natural gas value chain<sup>2</sup> (Operational Control).



### Long-Term Ambitions

- **Upstream Malaysia:** Strengthen and future-proof Upstream Malaysia business to meet growing energy demand and sustain the vibrancy of integrated value chain and domestic oil and gas ecosystem.
  - **Upstream International:** Continue to sustain production and high-grade oil and gas portfolio towards low-cost, low-carbon molecules.
  - **Gas:** Maximise and grow LNG portfolio globally and maintain leadership position in LNG.
  - **Downstream:** Diversify the offerings of Downstream business with differentiated and lower carbon footprint products.
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- **Specialty Chemicals:** Scale up specialty chemical offerings and expand markets to fulfil changing customer needs.
  - **Carbon Capture & Storage:** Key decarbonisation lever for PETRONAS and to design for regional demand.
  - **Bio-based Value Chain:** Expand bio-based products and offerings to meet market demand.
  - **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 EV charging points across key markets in Asia Pacific.



**Note:**

From 2019 levels.

Operational Control approach accounts for 100% of the GHG emissions occurring from operations in, which the company has operational control. Equity Share approach accounts for GHG emissions from reporting units according to its interest in the assets managed by the reporting unit.

<sup>1</sup> GHG emissions predominantly are Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>) and Nitrous Oxide (N<sub>2</sub>O) measured in CO<sub>2</sub>e.

<sup>2</sup> Natural gas value chain definition is aligned with the Oil and Gas Climate Initiative's (OGCI) reporting parameters, which includes production processing and storage, transportation, distribution and end-use of natural gas.

<sup>3</sup> Targets are for Scope 1 and Scope 2.

<sup>4</sup> We are working on establishing a better understanding of our Scope 3 emissions and their impact to our operations.