

# 2022

Integrated  
Report



PETRONAS

# Resolutely Progressive



## Passionate about Progress

### Driving Cleaner Energy Solutions

Intensifying efforts to achieve  
net zero carbon emissions by 2050

### Contributing to Sustainable Growth

Delivering our commitment to meet society's  
growing energy needs and contributing to a  
better tomorrow



# Resolutely Progressive

The world is rapidly changing and global energy demand is increasingly growing to fulfil the demands of population and economic growth. As a global energy company, PETRONAS is on a dedicated journey to provide customers with the energy they need today in a differentiated way in line with our Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway to support their aspiration for a lower carbon future.

With an integrated energy portfolio, we will deliver our core business with reduced carbon emissions and at competitive cost. We are also expanding our offerings with cleaner energy solutions.

Innovations, technology and upskilling our talents will be key for us to progress with agility and pace.

At the same time, PETRONAS also recognises that while the energy transition poses great challenges, it also brings many opportunities for the industry.

PETRONAS is driven to tap into cross-industry expertise through increased collaborations and partnerships to unlock new frontiers of what the energy industry can offer.

We are confident that with our robust and integrated energy portfolio and clear strategy, we will succeed together, as we are resolutely progressive.

We Aspire to Deliver  
Our Purpose:  
**A Progressive  
Energy and  
Solutions Partner  
Enriching Lives  
for a Sustainable  
Future**

Welcome to  
the **PETRONAS**  
**Integrated Report 2022**



### Three-Pronged Growth Strategy

Maximising Cash Generators  
Expanding Core Business  
Stepping Out

The Three-Pronged Growth Strategy (3PGS) 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.

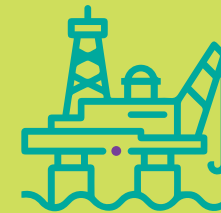
As the momentum for the energy transition accelerates, we have crystallised the 3PGS into the **PETRONAS Energy Transition Strategy**.

With the strategy in place, we are determined to thrive in the energy transition and continue **delivering energy to our customers in a just and responsible manner.**

## Statement of Purpose

**A Progressive Energy and Solutions Partner  
Enriching Lives for a Sustainable Future**

## PETRONAS Energy Transition Strategy



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



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



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





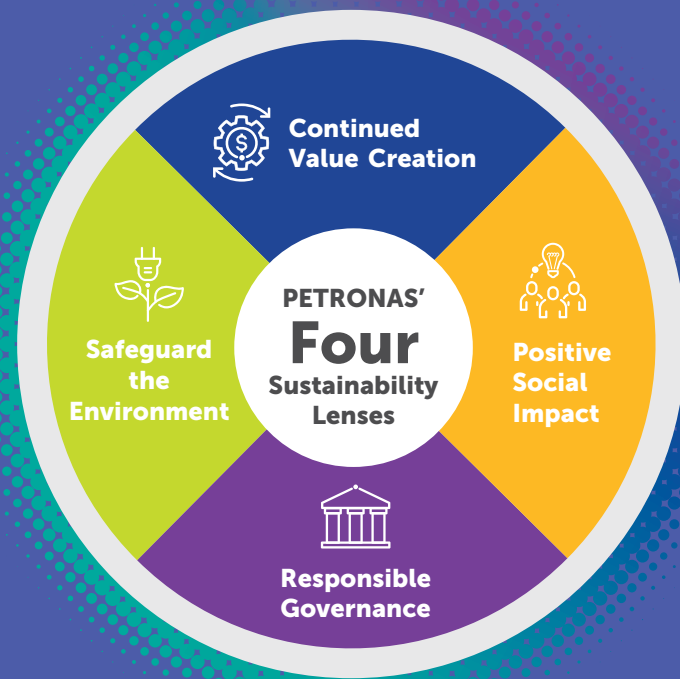
# Our Approach to Sustainability

Our actions are framed by our four Sustainability Lenses

We use a non-financial materiality assessment to inform our sustainability priorities and disclosures that identify topics that are most important to our stakeholders and have the most impact on our business

In 2022, we declared our Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway

Our activities aim to contribute towards the United Nations' Sustainable Development Goals (SDGs)



## Material Topics

### Safeguard the Environment

- GHG Emissions
- Climate Change Risks
- Environmental Management
- Nature and Biodiversity

### Positive Social Impact

- Safety Management
- Human Rights
- Employee Attraction, Retention and Development
- Health and Well-being

### Responsible Governance

- Corporate Governance
- Anti-Bribery and Corruption

### Continued Value Creation

- Lower Carbon and Energy Transition Business
- Economic Contribution
- Sustainable Supply Chain
- Innovation and Technology
- Circular Economy

### Continued Value Creation

Drive long-term business value creation through responsible investments.

### Safeguard the Environment

Collaboratively reduce environmental impact by transitioning to lower carbon energy solutions and deploying innovative operations and technologies.

### Positive Social Impact

Create positive alliances with the communities in which we operate by protecting and adding value to the well-being of employees, partners and society.

### Responsible Governance

Safeguard the organisation's commitment through strong governance mechanisms and ethical business practices.

## Our Greenhouse Gas Emissions Reduction Targets (Scope 1 and Scope 2)\*

2024 & 2025	2030	2050
<p><b>49.5 Million tCO<sub>2</sub>e</b> Cap emissions at 49.5 million tonnes of carbon dioxide equivalent (Million tCO<sub>2</sub>e) from PETRONAS Malaysia operations by 2024.</p>	<p><b>25% Reduction</b> in PETRONAS Groupwide emissions, including:</p> <ul style="list-style-type: none"> <li>➤ <b>70% Reduction</b> in methane emissions from PETRONAS Groupwide natural gas value chain.</li> <li>➤ <b>50% Reduction</b> in methane emissions from Malaysia's natural gas value chain.</li> </ul>	<p><b>NET ZERO 2050</b> Net zero carbon emissions.</p>

## Renewables and Clean Energy Ambitions by 2030



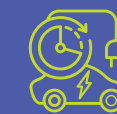
Leading next generation utility-scale renewable energy developer

**30 - 40 Gigawatts**



Large-scale hydrogen producer and go-to industry partner

**Up to 1,200,000 tonnes per annum of hydrogen**



Preferred green mobility solutions provider

**10% market share** (circa 25,000 charging points) across key markets in Asia Pacific

\* Scope 1 covers direct emissions from our owned and controlled resources. Scope 2 covers indirect emissions from the generation of energy we buy.

- We have set 2019 as the base year for Scope 1 and Scope 2 emissions reduction.
- We recognise the importance of Scope 3 emissions, which refers to the emissions from our value chains not included in Scope 2. We are taking a progressive approach to measure, report and understand our impact prior to establishing our position and strategy.



We have prioritised seven of the 17 United Nations' SDGs that we believe we can contribute most effectively towards as part of our sustainability efforts.



# What's Inside

<p><b>About This Report</b></p> <p><b>PETRONAS an Overview</b></p> <p>10 Our Shared Values PETRONAS Cultural Beliefs</p> <p>11 Competitive Advantage</p> <p>12 2022 Key Highlights</p> <p>12 Financial Highlights</p> <p>12 Business Highlights</p> <p>14 Sustainability Highlights</p> <p>16 Awards and Recognitions</p> <p>20 Event and Conference Highlights</p> <p>22 Business Snapshots</p> <p>24 Our Integrated Value Chain</p> <p>26 PETRONAS Around the World</p> <p>28 Corporate Structure</p> <p><b>Key Messages</b></p> <p>40 Letter from the Chairman</p> <p>46 Letter from the President and Group Chief Executive Officer</p> <p>54 Letter from the Executive Vice President and Group Chief Financial Officer</p> <p>58 Letter from the Vice President and Chief Sustainability Officer</p>	<p><b>Value We Create</b></p> <p>64 Our Integrated Approach to Value Creation</p> <p>66 Value Creation Model</p> <p>68 Performance by Capitals</p> <p>70 Engaging with Stakeholders</p> <p><b>Strategic Progress</b></p> <p>78 The World in 2022</p> <p>80 Material Topics</p> <p>86 Risks Linked to Creating Value</p> <p>102 PETRONAS Energy Transition Strategy</p> <p><b>Business Review</b></p> <p>106 Upstream</p> <p>118 Gas</p> <p>126 Downstream</p> <p>134 Project Delivery and Technology</p> <p>144 Gentari</p> <p>149 Other Businesses</p> <p><b>Our Sustainability Journey</b></p> <p>155 Sustainability Statement</p> <p>160 Safeguard the Environment</p> <p>188 Positive Social Impact</p> <p>248 Five-Year Sustainability Key Performance Data</p>	<p><b>Commitment to Governance</b></p> <p>259 Board Composition</p> <p>260 Profile of Board of Directors</p> <p>269 Profile of Company Secretaries</p> <p>271 Profile of Executive Leadership Team</p> <p>276 Corporate Governance at PETRONAS</p> <p><b>Financial Review and Other Information</b></p> <p>294 Group Financial Results and Position</p> <p>294 Analysis of Financial Results</p> <p>301 Analysis of Financial Position</p> <p>303 Analysis of Cash Flow</p> <p>306 Five-Year Key Financial Indicators</p> <p>308 Appendix</p> <p>308 Ipieca Sustainability Reporting Guidance for the Oil and Gas Industry</p> <p>311 Global Reporting Initiative (GRI) Standards</p> <p>316 World Economic Forum's (WEF) Stakeholder Capitalism Metrics</p> <p>318 Task Force on Climate-Related Financial Disclosures (TCFD)</p> <p>319 Glossary of Terms</p>
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## Navigation Icons

**PETRONAS Energy Transition Strategy**

Core Business    New Business    Net Zero Carbon Emissions

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**Key Stakeholders**

FD: Federal/Host Governments    ST: State Governments    C: Customers    IE: Internal/Employees    M: Media

SIC: Shareholders/Investors/Rating Agencies    IPG: Industry Partners and Government-linked Companies    CN: Communities/Non-Governmental Organisations    IO: International Organisations

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**Seven Prioritised areas under United Nations' Sustainable Development Goals**

3: Good Health and Well-being    4: Quality Education    7: Affordable and Clean Energy    8: Decent Work and Economic Growth    9: Industry, Innovation and Infrastructure    12: Responsible Consumption and Production    13: Climate Action

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**Material Topics**

GHG Emissions    Climate Change Risks    Environmental Management    Nature and Biodiversity    Safety Management    Human Rights    Employee Attraction, Retention and Development

Health and Well-being    Corporate Governance    Anti-Bribery and Corruption    Lower Carbon and Energy Transition Business    Economic Contribution    Sustainable Supply Chain    Innovation and Technology    Circular Economy

**Six Capitals**

FC: Financial Capital    MC: Manufactured Capital    IC: Intellectual Capital

HC: Human Capital    SRC: Social and Relationship Capital    NC: Natural Capital

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**Key Risks**

MR: Market Risk    FLR: Financial Liquidity Risk    LR: Legal and Regulatory Risk    HSR: Health, Safety, Security and Environmental Risk

GR: Geopolitical Risk    HR: Hydrocarbon Reserves and Resources Risk    TR: Technology Risk    ER: Execution Risk

HCR: Human Capital Risk    SR: Sustainability Risk

### Cover Rationale

As a global energy and solutions provider, PETRONAS has been resolutely pursuing sustainability initiatives over the years. The cover design features our core oil and gas business as well as various elements of nature and cleaner energy that reflect PETRONAS' commitment towards creating a sustainable future for generations to come.



### Cross References

- You can find more information within the report
- You can find more information online on our corporate website: [www.petronas.com](http://www.petronas.com)
- Additional information about PETRONAS on our corporate website is accessible via QR Code



This report is supplemented by the PETRONAS Activity Outlook 2023-2025 which can be accessed online via [www.petronas.com](http://www.petronas.com)



# About This Report

**The PETRONAS Integrated Report is our primary annual report.**



**PETRONAS Integrated Report 2022**



Scan the QR code to access our **Integrated Report 2022** and **Audited Financial Statements 2022**

## Dear Stakeholder,

We are pleased to present the PETRONAS Integrated Report 2022. In this report, we cover the challenges we faced, our strategic progress, financial and operational performance during the year as well as our future direction. Our aim is to provide a comprehensive and balanced view of our value creation process as we strive to fulfil our role as a progressive energy and solutions partner, committed to building stakeholder trust through transparency.

## Scope and Boundaries

This PETRONAS Integrated Report covers the full calendar year from 1 January to 31 December 2022, unless stated otherwise. The report includes all our operations and activities across PETRONAS and its subsidiaries (PETRONAS Group), joint operations and associates.

Following our integrated approach to value creation, this report extends beyond financial reporting. It also covers:

- Non-financial information, including data from our owned and operated businesses in line with industry best practices.
- Details in areas we do not have operational control over are included in disclosures of the management approach.
- Our financial reporting includes the above mentioned data, following the accepted and relevant financial reporting standards.
- Our greenhouse gas emissions (GHG) data is reported for operated assets and those in which we have an equity share.

## Reporting Frameworks

We are guided by the following national and international guidance, frameworks and standards to ensure that our report is accurate, reliable and comprehensive:

- The International Integrated Reporting Council (IIRC) <IR> Framework
- International Financial Reporting Standards (IFRS)
- Malaysian Financial Reporting Standards (MFRS)
- Ipieca/API/IOGP Sustainability reporting guidance for the oil and gas industry
- Global Reporting Initiative (GRI) Standards
- World Economic Forum's Stakeholder Capitalism Metrics
- Task Force on Climate-Related Financial Disclosures (TCFD)

## Sustainability Reporting

We aim to integrate Environmental, Social and Governance (ESG) principles throughout our business strategies and decisions. We view ESG as an integral part of delivering long-term stakeholder value. Therefore, this report accounts for our sustainability aspiration and performance. Additionally, where relevant, the information disclosed makes reference to the United Nations' Sustainable Development Goals (SDGs).

## Connectivity of Information

To provide an overview of how we create value for long-term sustainability, we conducted a high-level integrated capitals assessment of this integrated report to determine the linkages, impact and synergies between our financial and non-financial capitals, material topics, stakeholder expectations, strategic objectives, risks and opportunities.

## Forward-Looking Statements

This report contains forward-looking statements, with words such as "believe", "anticipate", "intend", "seek", "will", "plan", "could", "may", "endeavour" and similar expressions used to represent our judgements and future expectations. These statements involve risk and uncertainty because they relate to future events and circumstances and should be considered in light of the various important factors.

The key factors that could cause our actual performance or achievements to differ materially from those in the forward-looking statements include changes to IFRS and associated interpretations, applications and practices as they apply to past, present and future periods; ongoing and future acquisitions; changes to domestic and international businesses and market conditions such as exchange rate and interest rate movements; changes in domestic and international regulatory and legislative environments; changes to domestic and international operational, social, economic and political conditions; any labour disruptions and industrial action; and the effects of both current and future litigations.

## Assurance

The financial information contained in this report has been extracted from the consolidated Audited Financial Statements for the financial year ended 31 December 2022 and was audited by KPMG PLT. KPMG PLT has reviewed this report and did not note any material inconsistencies with the said financial statements.

We have also completed third-party verification for the PETRONAS Contractors Code of Conduct on Human Rights (CoCHR); for contractors in Malaysia by Bureau Veritas (M) Sdn Bhd.

## Approval by the Board

The PETRONAS Board of Directors acknowledges its responsibility in ensuring the integrity of this Integrated Report which in the Board's opinion, addresses the Group's ability to create value and fairly presents the Group's integrated performance.

This report has been prepared in accordance with the International Integrated Reporting <IR> Framework.

Approved by the Board of Directors and signed on behalf of the Board.

**Tan Sri Dato' Seri Mohd Bakke Salleh**  
Chairman

**Datuk Tengku Muhammad Taufik**  
President and Group Chief Executive Officer

## Point of Contact

We are always seeking ways to improve our integrated reports. Therefore, we welcome all suggestions and inquiries from our stakeholders and readers. Please send your feedback to:

**Group Strategic Communications**  
**Level 70, Tower 1, PETRONAS Twin Towers**  
**Kuala Lumpur City Centre**  
**50088 Kuala Lumpur**  
**Malaysia**



[www.petronas.com](http://www.petronas.com)



# PETRONAS An Overview

Petroleum 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.

We remain committed to produce oil and gas in a differentiated manner, with focus on reducing carbon emissions and at competitive cost. Our hydrocarbon portfolio today is two-thirds gas, which puts us in an advantageous position as gas and Liquefied Natural Gas (LNG) will continue to play a vital role even as the energy system evolves. As one of the leading LNG players in the world, PETRONAS will continue to serve the global LNG demand.

As a responsible and conscientious global energy player, sustainability is at the heart of our business and how we operate. Our commitment to responsible business growth and positive contributions to society and the environment remains unwavering. Fuelled by our passion to be a partner for our customers in the journey towards a lower carbon energy future, every step we take brings us closer towards achieving our aspiration of Net Zero Carbon Emissions by 2050 (NZCE 2050).



## Our Shared Values

- Loyalty**  
Loyal to corporation
- Integrity**  
Honest and upright
- Professionalism**  
Strive for excellence
- Cohesiveness**  
United, trust and respect for each other

## Competitive Advantage

### Our long-standing track record as a global energy and solutions partner



Having transformed PETRONAS from a domestic-based national oil and gas company into a fully integrated global energy player, we have gained valuable experience that enable us to navigate the energy transition and further contribute to societal progress.

### with extensive reach



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 became Southeast Asia's first oil and gas company to declare our aspiration to achieve NZCE 2050. We see our role as a catalyst to speed up the transition to net zero specifically in Malaysia and Southeast Asia, drawing on our experience and reach as a global energy company. Strengthening our core business will sustain the vibrancy of the local Oil and Gas Services and Equipment (OGSE) ecosystem.

### is driven by a dedicated team of people



Our people are our greatest asset and growth partners. They fuel our passion for innovation to advance towards sustainable energy solutions. Across the globe, our employees lead the way in executing our strategic goals, armed with the knowledge and capabilities to thrive in a lower carbon future.

### and underpinned by responsible governance



We strive for the utmost integrity in all aspects of our business and operations, implementing robust policies, systems and protocols to uphold ethical business practices and good governance. We ensure our employees and contractors work together in creating a safe working environment for all.

### that supports our expanding business and portfolio.



With a proven track record in oil and gas exploration, development and production both in Malaysia and internationally and supported by our strong financial performance, we are broadening our portfolio to encompass clean energy solutions in three core offerings – renewable energy, hydrogen and green mobility to align with changing customers needs.



# 2022 Key Highlights

## Financial

Revenue  
**RM375.3**  
billion

2021: RM248.0 billion

Cash Flows from Operations (CFFO)  
**RM135.3**  
billion

2021: RM78.5 billion

Profit After Tax  
**RM101.6**  
billion

2021: RM50.9 billion

Total Assets  
**RM710.6**  
billion

2021: RM635.0 billion

Return on Average Capital Employed (ROACE)  
**19.9%**

2021: 11.4%

## Business

### Upstream

Recorded a total daily production average of **2,434 thousand** barrels of oil equivalent (boe) per day, a **7% increase** in comparison to 2021.

Achieved first hydrocarbon for **37 projects** in Malaysia (30), Indonesia (six) and South Sudan (one).

Reached Final Investment Decision (FID) for **26 projects** covering Malaysia (16), Indonesia (four), South Sudan (four) and Brazil (two).

Made **9 exploration discoveries** in Malaysia (six), Brazil (two) and Suriname (one).

Signed **6 Production Sharing Contracts (PSCs)** with new and existing players in Malaysia.

Reached FID for the development of the **Kasawari CO<sub>2</sub> Sequestration (CCS)** project offshore Sarawak.

### Gas

**Overall Equipment Effectiveness (OEE)** for Gas business stood at **96.6%** across all business segments.

**405** total LNG cargoes delivered from PETRONAS LNG Complex.

**43** LNG cargoes delivered from PFLNG SATU and PFLNG DUA.

**2,619** Virtual Pipeline System (VPS) and LNG Bunkering deliveries completed.

**136 MMscfd** of natural gas supply deals secured with non-power customers.

Achieved FID for **Sabah's first nearshore LNG facility**. The Engineering, Procurement, Construction and Commissioning (EPCC) contract for the project was awarded to a consortium comprising Japan's JGC and South Korea's Samsung Heavy Industries.

### Downstream

**OEE** of **85.9%** across all business segments.

Overall marketing sales volume of **24.9 billion litres**.

**89.0%** petrochemical plant utilisation (Nexant).

**10.0 million** metric tonnes of petrochemicals production volume.

PETRONAS Dagangan Berhad collaborated with Gentari Sdn Bhd and other industry players to provide electric mobility services by rolling out **battery swap stations for electric two-wheelers and charging infrastructure for electric buses** at PETRONAS stations.

### Project Delivery and Technology

**RM5.1 billion** value realised through enterprise and business digital solutions.

Project Delivery and Technology (PD&T) managed projects recorded over **37 million** manhours with a Full Time Equivalent of **12,800** personnel at the work site. **13 projects** achieved on time, on budget and on scope (OTOBOS), while **11** were completed ahead of schedule.

Achieved over **RM150 million** in revenue from the commercialisation of technology and digital solutions.

### Gentari

**1.6 GW** of global renewable energy capacity in operations and under development.

**13 MoUs** for hydrogen collaborations with international partners and customers. In November 2022, delivered first cargo of low carbon ammonia from Malaysia to Thailand.

In India, delivered **382 three-wheel** Electric Vehicles (EVs), **161** charge points and clocked in **2 million** clean kilometers.

In Malaysia, delivered **151 charge points, Southeast Asia's first public 350kW super charger** in X Park Malaysia in Sunway Serene charging hub, the first hub to be licensed by Malaysia's Energy Commission.

### Other Businesses

#### Maritime and Logistics

MISC is the only Malaysian transportation sector company and one of the three Malaysian companies listed on **DJSI Emerging Market Index** globally.

MISC secured over **USD1.1 billion** in long-term contracts, expanded its supplier base and raised **USD1.0 billion** in funding under the Global Medium Term Notes programme.

#### Property

KLCC Group as a whole also achieved a commendable **119** sustainability targets, showcasing its commitment to a better future.

Installed **35 EV chargers** at car parks within KLCC Precinct in 2022, bringing the total to 57.



## Key Highlights

### Sustainability

#### GHG Emissions

- **10.86%** of Scope 1 and Scope 2 GHG emissions reduced from 2019 based on Operational Control (Malaysia operations i.e., cap of 49.5 Million tCO<sub>2</sub>e) approach.
- **8.49%** of Scope 1 and Scope 2 GHG emissions reduction from 2019 based on Equity Share approach.
- **20%** reduction in flaring and venting emissions in our Malaysia operated assets in 2022 including four fields achieving Zero Routine Venting of Hydrocarbon.
- Estimated reduction of **49.88%** in absolute methane emissions from PETRONAS Groupwide natural gas value chain since 2019.

#### Climate Change Risks

- Established the **Enterprise Climate-related Risk Profile** to expressly incorporate climate-related risks into the PETRONAS Corporate Risk Profile.

#### Environmental Management

- Recycled **63,133 tonnes** of hazardous waste from Malaysia operations, which is equivalent to **77%** of the total waste generated.

#### Nature and Biodiversity

- Established the **PETRONAS Position on Nature and Biodiversity** to improve oversight on our nature and biodiversity footprint at enterprise level and strengthen our commitment to achieve NZCE 2050.

#### Safety Management

- Reduced **30%** of Tier 1 Process Safety Events (PSE) with 81% reduction in Operational Integrity-related Loss of Primary Containment (LOPC) compared to 2021.
- A total of **1,209** participants trained in Generative Culture in 2022.

#### Human Rights

- **100%** completion of Human Rights compliance assessment for 22 contractors identified with high Human Rights exposure based on set criteria.
- **100%** grievance cases were closed in 2022.
- **81%** of employees completed Human Rights Management e-learning module.

#### Employee Attraction, Retention and Development

- Recorded **5,210** new hires.
- Employees spent an average of **39.1 hours** on training.
- **RM264 million** invested in training and development.

#### Health and Well-being

- **33 MIND-A-CARE facilitators and 169 MIND-A-CARE ambassadors** were trained through an in-house programme for early detection and intervention of psychosocial risk factors.
- Upskilled **885 leaders** on **psychological safety** and ways to create a psychosocially safe work environment.
- Achieved **99.8%** primary COVID-19 vaccine uptake and booster uptake.
- **282 employees** engaged in the Employee Assistance Programme (EAP), where **70%** found the counselling received to be effective.

#### Corporate Governance

- Established extensive Board onboarding programme for new Directors with the aim that Board members can make meaningful contribution in the Company's approach to sustainability and roadmap.
- Broadened the Board's engagement and oversight of sustainability-related matters.

#### Anti-Bribery and Corruption

- PETRONAS' Executive Leadership Team signed the "*IkRAR Bebas Rasuah*", or Corruption-Free-Pledge to demonstrate Top-level commitment to the 'TRUST' principle of adequate procedure as one of the defenses against Corporate Liability.
- Published the **PETRONAS Organisational Anti-Corruption Plan 2022-2023** to strengthen commitment to zero tolerance for corruption in the pursuit of a corruption-free organisation.

#### Lower Carbon and Energy Transition Business

- Achieved **1.6 GW** of global renewable energy capacity in operations and under development.
- Signed **13 Memoranda of Understanding (MoUs)** for hydrogen collaborations with international partners and customers and delivered first cargo of low carbon ammonia from Malaysia to Thailand.
- More than **300** charge points for EVs were delivered for Malaysia and India.

#### Economic Contribution

- **RM93.1 billion** contributed to the Federal Government of Malaysia and state governments.
- Invested **RM579 million** in technology delivery and research and development (R&D).
- More than **RM174.5 million** invested in the PETRONAS Education Sponsorship Programme (PESP) benefitted **587** students.
- PETRONAS Groupwide (including Yayasan PETRONAS) invested close to **RM900 million** for Social Impact activations.
- Invested over **RM30 million** to train **1,760** new graduates under Graduate Employability Enhancement Scheme (GEES) programme.

#### Sustainable Supply Chain

- Conducted two sustainability awareness programmes to strengthen vendors' awareness on our approach to sustainability, with a total of **725** participants.

#### Innovation and Technology

- Achieved the **first steel cut milestone** for our Offshore Low-Speed Wind Turbine project.
- Bio-MEG pilot plant became the first GPM360-certified green project.
- Conducted the **first field deployment** of floating solar photovoltaic (PV) technology for open sea application at Pulau Redang and Tok Jembal, Terengganu.
- **Collaborated with Tenaga Nasional Berhad (TNB)** to drive innovative solutions for decarbonisation.

#### Circular Economy

- PETRONAS approved the **Position on Single-Use Plastics**, which centres on our strategic focus on phasing out single-use plastics in our operations.
- PETRONAS Syntium Bag-In-Box (BIB) new 20-litre format reduced plastic quantity up to **92%** compared to traditional 20-litre packs.

## Key Highlights

# Awards and Recognitions

We are delighted with our numerous accomplishments over the year. These awards and accolades are a strong testimony to our continuous pursuit of excellence across the PETRONAS Group.

## Branding and Marketing



### Putra Brand Awards

#### PETRONAS Dagangan Berhad

- Automotive Fuel, Lubricant and Accessories – Gold

#### Universiti Teknologi PETRONAS

- Education and Learning – Gold



Universiti Teknologi PETRONAS (UTP) has been awarded its first Gold Award for Education and Learning category, recognising the university as the consumer's choice of brand for universities in higher education.

## Communications

### PR Awards 2022

#### Group Strategic Communications

- Best COVID-19 Related Campaign – Gold

Awarded PETRONAS with Gold in PR Awards 2022 for Best COVID-19 Related Campaign category titled *Tunggu Sekejap* Campaign. This campaign which ran during the Movement Control Order 2.0, aimed to inspire Malaysians to not give up and keep fighting on.



## Corporate Reporting

### National Annual Corporate Report Awards (NACRA) 2022

#### Petroleum Nasional Berhad (PETRONAS)

- Excellence Awards (Non-Listed Organisations) – Platinum

#### PETRONAS Dagangan Berhad

- Best Designed Annual Report – Gold Special Awards

#### PETRONAS Chemicals Group Berhad

- Best Sustainability Reporting – Gold Special Awards
- Best Designed Annual Report – Platinum Special Awards
- Companies with more than RM10 billion in Market Capitalisation – Gold Excellence Awards



PETRONAS and two of its public listed subsidiaries, PETRONAS Chemicals Group Berhad and PETRONAS Dagangan Berhad, won the Platinum and Gold awards from the National Annual Corporate Awards (NACRA) 2022 for excellence and improvement in corporate reporting. These awards acknowledge the quality of corporate reporting by PETRONAS and its listed subsidiaries.

## Sustainability

### The Edge Billion Ringgit Club (BRC) Awards 2022

PETRONAS Chemicals Group Berhad won the Best CR (Corporate Responsibility) Initiatives under Super Big Cap Companies More Than RM40 Billion Market Capitalisation for its Net Zero Carbon Emissions (NZCE) roadmap, which aligns with PETRONAS' pathway to NZCE 2050.



#### PETRONAS Chemicals Group Berhad

- Super Big Cap Companies More Than RM40 Billion Market Capitalisation – Best CR Initiatives

### CSR China Education Award

PETRONAS China was honoured with three awards in CSR China Education Award; for a series of activities in 2022 targeting the youth. This is a strong recognition for PETRONAS' CSR efforts in China towards encouraging young minds to embrace a net zero carbon future through creative thinking and self-expression.



#### PETRONAS China

- CSR China SDG Special Award
- CSR China Public Recognition Special Award
- CSR China TOP100 Rank



## Key Highlights

### Awards and Recognitions

## Governance

**12<sup>th</sup> Institutional Investor Corporate Awards 2022**

**PETRONAS Dagangan Berhad**

- Best Senior Management Investor Relations (IR) Support – *1<sup>st</sup> Place*
- Most Consistent Dividend Policy – *1<sup>st</sup> Place*

**PETRONAS Gas Berhad**

- Most Organised Investor Relations – *2<sup>nd</sup> Place*
- Most Consistent Dividend Policy – *3<sup>rd</sup> Place*
- Best Strategic CSR – *3<sup>rd</sup> Place*

**PETRONAS Chemicals Group Berhad**

- Best Annual Report in Malaysia – *Winner*
- Strongest Adherence to Corporate Governance – *1<sup>st</sup> Place*

## Talent and Capability

**Malaysia's 100 Leading Graduate Employers Awards**

**Group Human Resource Management**

- Graduate Employer of the Year – *Winner*
- Energy, Oil and Gas, Utilities – *Winner*

**GRADUAN Brand Awards**

**Group Human Resource Management**

- Malaysia's Most Preferred Employers 2022 – *Top 5*
- Energy category – *Winner*

**2022 Egypt Petroleum Show (EGYPS)**

**Project Delivery and Technology**

- Nex-Gen Female of the Year (Irene Lock Sow Mei) – *Winner*

**Asian Downstream Summit**

**Group Digital**

- Young Engineer of the Year – *Lee Kian Seng*

**International Project Management Association (IPMA) Malaysian Individual Achievement Award 2022**

**Project Delivery and Technology**

- Project Manager of the Year – *Goh Hwei Hou*

**Asian Oil and Gas Awards**

**Group Digital**

- Data Initiative of the Year
- Digital Transformation Initiative of the Year
- Innovation Technology Initiative of the Year

## Technology and Innovation

**Malaysia Technology Excellence Awards (MTEA) 2022**

**Project Delivery and Technology**

- AI – Oil and Gas Category: PETRONAS Machinery Monitoring and Prescriptive Diagnostics – *Winner*
- Analytics – Engineering Category: PETRONAS Intelligent Substations – *Winner*
- Digital – Oil and Gas Category: Pipeline Engineering Solution – *Winner*

**Gas**

- Winner Information Management – *Oil and Gas Category: GO Dashboard – Winner*

**Project Delivery and Technology**

- Analytics – Oil and Gas Category: Digital Twin – *Winner*

**Brandon Hall Group Technology Excellence Awards**

**Group HR and PETRONAS Leadership Centre**

**Gold**

- Best Advance in Learning Management Measurement/ Business Impact Tools
- Best Advance in Online Coaching Tools

**Silver**

- Best Advance in Emerging Learning Technology
- Best Advance in Social Learning Technology
- Best Advance in Learning Management Technology (LMT)
- Best Advance in Unique Learning Technology

**Asian Oil and Gas Awards**

**Group Digital**

- Data Initiative of the Year
- Digital Transformation Initiative of the Year
- Innovation Technology Initiative of the Year

**Asian Experience Awards 2022**

**Upstream**

Won the Malaysia Digital Experience of the Year – Oil and Gas for its one-stop integrated pipeline integrity management system, Integrated Pipeline Integrity Assurance Solutions (i-PIMS).

**Alpha LNG Award Accenture V360**

**Malaysia LNG Sdn Bhd**

- Alpha LNG – *Digital*

**Asian Downstream Summit**

**Group Digital**

- Downstream Project of the Year: Project ARIES



# Event and Conference Highlights

In 2022, we actively engaged with local and international stakeholders. A number of events provided an avenue for sharing knowledge and ideas, enabling us to contribute towards the progress of both the industry and the nation. Our participation in these events also helped us gain a better understanding of how we can do more in harnessing our abilities to address the energy needs of the future.

## Prime Minister's Visit to PETRONAS Twin Towers

13 January 2022

The 9<sup>th</sup> Prime Minister of Malaysia, Dato' Sri Ismail Sabri Yaakob visited the PETRONAS Twin Towers, where we showcased our business operations and contributions to the nation. Presentations included the challenges of energy transition, developments in the local Oil and Gas Services and Equipment (OGSE) sector, digitalisation of oil and gas operations, human capital development and Social Impact contributions.



## Government-Linked Companies (GLCs) Open Day 2022

11-13 March 2022

The GLC Open Day was an opportunity for the public to gain information on job prospects, scholarships and other relevant information about PETRONAS. GLCs play an important role in supporting the nation's socio-economic development.

## CERAWEEK 2022

7-11 March 2022

We participated as a Strategic Partner and Agora Partner in the conference, enhancing our position as a thought leader advocating views of Asia with insightful sharings by our leadership team.



## World Economic Forum (WEF)

22-26 May 2022

President and GCEO, Datuk Tengku Muhammad Taufik attended the World Economic Forum Annual Meeting 2022 in Davos, where heads of state and government, CEOs and other leaders convene in dialogue on the most pressing global issues. He was also a panelist for the Strategic Outlook on ASEAN, which touched on strengthening regional integration for shared prosperity and energy security as well as the investment opportunities ASEAN has to offer.



## Oil and Gas Asia (OGA) X Malaysia Oil and Gas Services Exhibition and Conference (MOGSEC) 2022

13-15 September 2022

President and GCEO officially launched OGA X MOGSEC which was held alongside the inaugural Petrochemicals Sustainability Conference. We were also the corporate partners for the conference.

## International Greentech and Eco Products Exhibition and Conference (IGEM) 2022

12-14 October 2022

PETRONAS signed two new agreements with technology partners to accelerate the adoption of green tech and support the development of Malaysia's electric vehicle infrastructure.



## International Project Management Conference (IPMC) 2022

12-13 December 2022

More than 1,800 participants from across the globe attended the first in-person IPMC 2022. In his welcome address, PETRONAS Senior Vice President of Project Delivery and Technology (PD&T) Datuk Bacho Pilog reiterated the role of project leaders as flagbearers of sustainable development. The event was jointly launched by the Secretary-General, Ministry of Works, Malaysia, Dato' Wira Wan Ahmad Uzir and PETRONAS President and GCEO, Datuk Tengku Muhammad Taufik and IPMC 2022 Chairman, Noor Ilias Mohammad Idris.



May

Sep

Oct

Nov

Dec

## Gentari Launch

15 September 2022

Gentari Sdn Bhd (Gentari) was established to accelerate the adoption and commercialisation of clean energy in a just and sustainable manner. It focuses on delivering integrated net zero solutions and capturing opportunities across the electron value chain to help customers achieve zero emissions. The launch was officiated by the 9<sup>th</sup> Prime Minister of Malaysia.



## Abu Dhabi International Petroleum Exhibition and Conference (ADIPEC) 2022

31 November-3 December 2022



President and GCEO, Datuk Tengku Muhammad Taufik, spoke at the conference on the topic 'The New Business and Energy Portfolio Model: Managing Geopolitical Uncertainty and the Energy Transition.'

Executive Vice President and CEO, Upstream, Datuk Adif Zulkifli and Vice President and Chief Sustainability Officer, Charlotte Wolff-Bye, respectively spoke on Asia Pacific's journey towards net zero and the important role circular economy will play in the drive to decarbonise the economy.

Jan

Feb

Mar

May

## International Petroleum Technology Conference (IPTC) 2022

21-23 February 2022

The IPTC was held in Riyadh, Saudi Arabia. We participated as an exhibition sponsor. Our Executive Vice President and Chief Executive Officer, Upstream, Datuk Adif Zulkifli, delivered the keynote address during the opening ceremony and participated in the panel session.



## Offshore Technology Conference (OTC) Asia 2022

22-25 March 2022

We were the Principal Sponsor for OTC Asia 2022 where we continued strengthening our relationship and played a leading role with industry peers. Our President and Group Chief Executive Officer (GCEO), Datuk Tengku Muhammad Taufik, delivered the keynote address during the opening ceremony.



## World Gas Conference

17-28 May 2022

Our President and GCEO Datuk Tengku Muhammad Taufik and Chief Operating Officer and Executive Vice President and Chief Executive Officer, Gas, Adnan Zainol Abidin led our delegation at WGC to participate and strengthen ties with partners in South Korea and the region.



# Business Snapshots



## Upstream

Our Upstream business explores and develops hydrocarbon resources and operates oil and gas production assets in Malaysia and over 20 countries. PETRONAS, through Malaysia Petroleum Management (MPM), is the country's oil and gas industry shaper and investment enabler that spearheads the growth and development of the nation's oil and gas industry.

We continue to strengthen our Upstream performance by delivering focused exploration, efficient development of discovered resources and value-driven operations underpinned by a strong focus on Health, Safety and Environment (HSE) and integrity. We continue to adopt digitalisation and technology to deliver business excellence.

We will continue to decarbonise our operations. In 2022, we reduced our greenhouse gas (GHG) emissions by 14.4 per cent. We also pursued solutions such as carbon capture and storage (CCS), as evidenced by achieving Final Investment Decision (FID) for the Kasawari CO<sub>2</sub> Sequestration project, to support PETRONAS' Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway.



## Gas

The Gas business is a one-stop centre for lower carbon energy solutions, providing secure natural gas supply to customers in Malaysia and abroad through our integrated value chain. As a leading provider of natural gas and Liquefied Natural Gas (LNG), we are focused on sustaining world class operational excellence to maximise value from existing assets, pursue new projects and supply modes. This will allow us to create new markets and continue fulfilling the growing energy needs from power and non-power customers.

We are decarbonising our production footprint and delivering innovative solutions for customers.

With natural gas well-positioned as the transition fuel to shift towards a lower carbon economy, we will continue to take deliberate steps in strengthening customer-centricity, operational and commercial excellence, human capital and culture development as well as digital and technological innovations. This will be done in pursuit of realising our growth and NZCE 2050 Pathway, while supporting the energy security of our customers.



## Downstream

The Downstream business focuses on enhancing the value of our energy resources, transforming them into high quality, value-added products that are distributed to over 90 markets worldwide. Our operations consist of refining, marketing and trading crude oil and petroleum products, manufacturing and marketing petrochemical products including derivatives and specialty chemicals.

With an extensive retail network of more than 1,000 PETRONAS stations in Malaysia, we offer high-quality fluids and lubricants as well as innovative non-fuel offerings such as Setel and Kedai Mesra in 800 locations to make our customers' lives simpler and better. We also own and operate more than 40 Café Mesra that are also available beyond PETRONAS retail locations, offering premium quality coffee and pastries for customers on-the-go.

We are expanding our Downstream business by growing in the cleaner energy space with biofuels, circular economy, LNG bunkering as well as next generation fluids with PETRONAS Iona Range and installation of charging facilities at our PETRONAS stations for Electric Vehicles (EV) in line with our NZCE 2050 Pathway to meet the growing demand for lower carbon energy.



## Project Delivery and Technology

Project Delivery and Technology (PD&T) division serves as PETRONAS' Centre of Excellence (CoE). We shape and support the Group's growth strategies and realise our NZCE 2050 Pathway. We do this through best-in-class project delivery, extensive research and development in technology, technical expertise and novel digital solutions.

We continue safeguarding, shaping as well as advancing solutions and positioning future ventures. We are leveraging data as an asset, digital as an accelerator and technology as a differentiator. We strive for progress in decarbonisation, value creation and business expansion through a well-established and expanding innovation ecosystem to go beyond hydrocarbons.



## Gentari

PETRONAS is committed to playing a key role in the energy transition. We are investing in decarbonising our operations to achieve our NZCE 2050 Pathway as well as growing our energy offerings as part of our New Business. To this end, Gentari was established to pursue opportunities in the energy transition.

Gentari offers cleaner energy solutions through three initial core offerings – renewable energy, hydrogen and green mobility, forming a portfolio of solutions cutting across the electron value chain. In the long term, Gentari aims to be an integrated clean energy solutions provider, creating greater value, connecting businesses and accelerating the journey to net zero.



## Other Businesses

Our core businesses are complemented by other businesses, comprising primarily the maritime and logistics segment (MISC Berhad or MISC); and the property segment (KLCCP Stapled Group), comprising KLCC Property Holdings Berhad and KLCC REIT, constituting 32 per cent of the Malaysian REIT industry, is a subsidiary of PETRONAS that owns and manages top-quality assets.

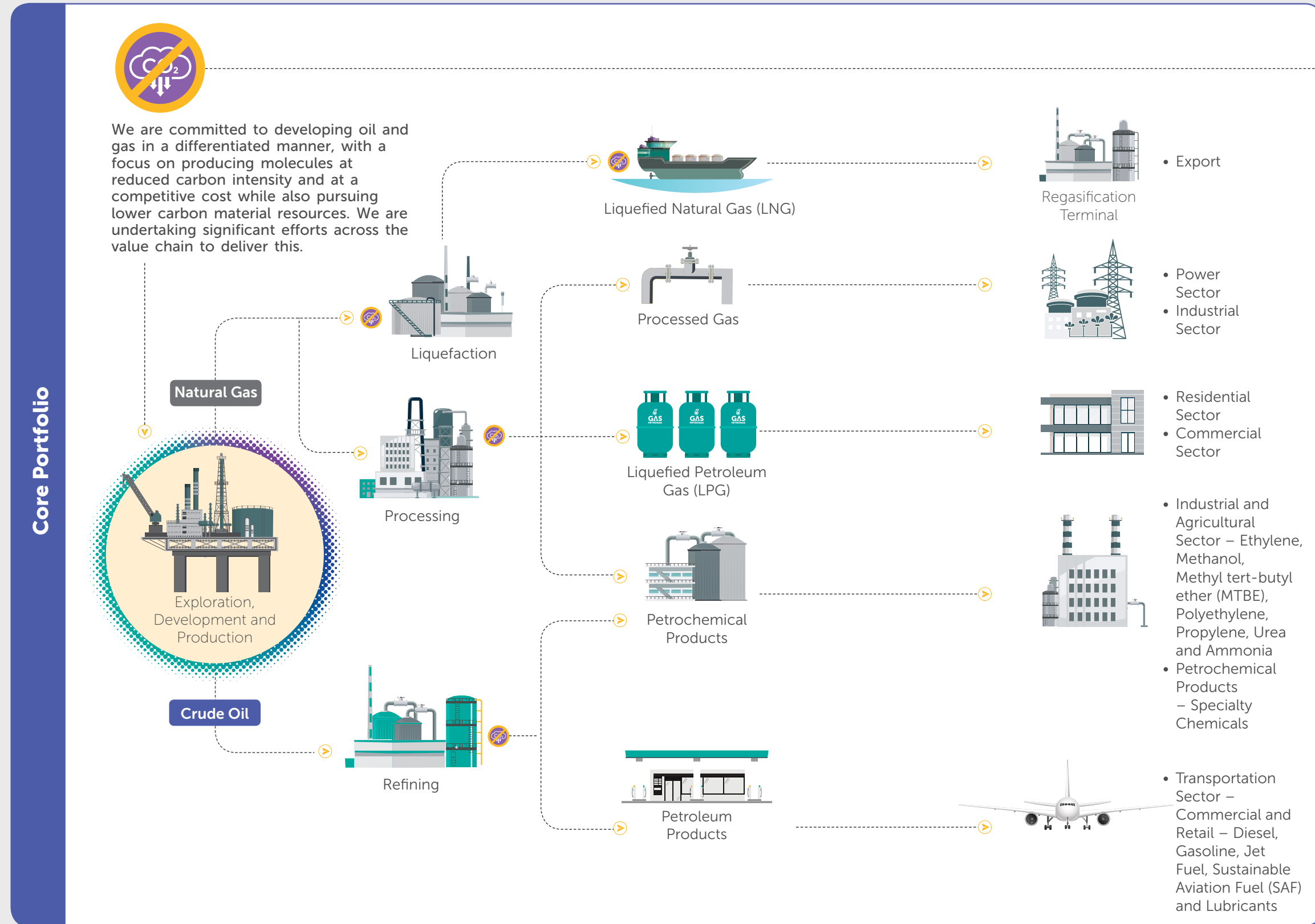
### Maritime and Logistics

MISC is a global leader in energy-related maritime solutions, boasting over 50 years of experience and a modern fleet of over 100 owned and chartered vessels. Our vessels consist of LNG and Ethane carriers, Petroleum and Product vessels, Floating Production System (FPS) and LNG Floating Storage Units (FSUs), with a total capacity of over 13 million dead weight tonnage (dwt).

### Property

KLCCP Stapled Group's iconic and high quality assets generate additional revenue streams for PETRONAS and help diversify its business portfolio beyond oil and gas. KLCCP Stapled Group is also charting the course towards sustainability, moving its properties in alignment with PETRONAS' NZCE 2050 Pathway.

# Our Integrated Value Chain



**Clean Energy Solutions**

- Renewable Energy
- Hydrogen
- Green Mobility

**Other Businesses**

**Maritime and Logistics**

With a modern fleet of more than 100 owned and chartered vessels, MISC stands as a global leader in providing energy-related maritime solutions. Our broad spectrum of services include offshore floating solutions, energy shipping, marine repair and conversion, engineering and construction, integrated marine services, as well as port management and maritime education and training, making us a one-stop solution provider for our customers.

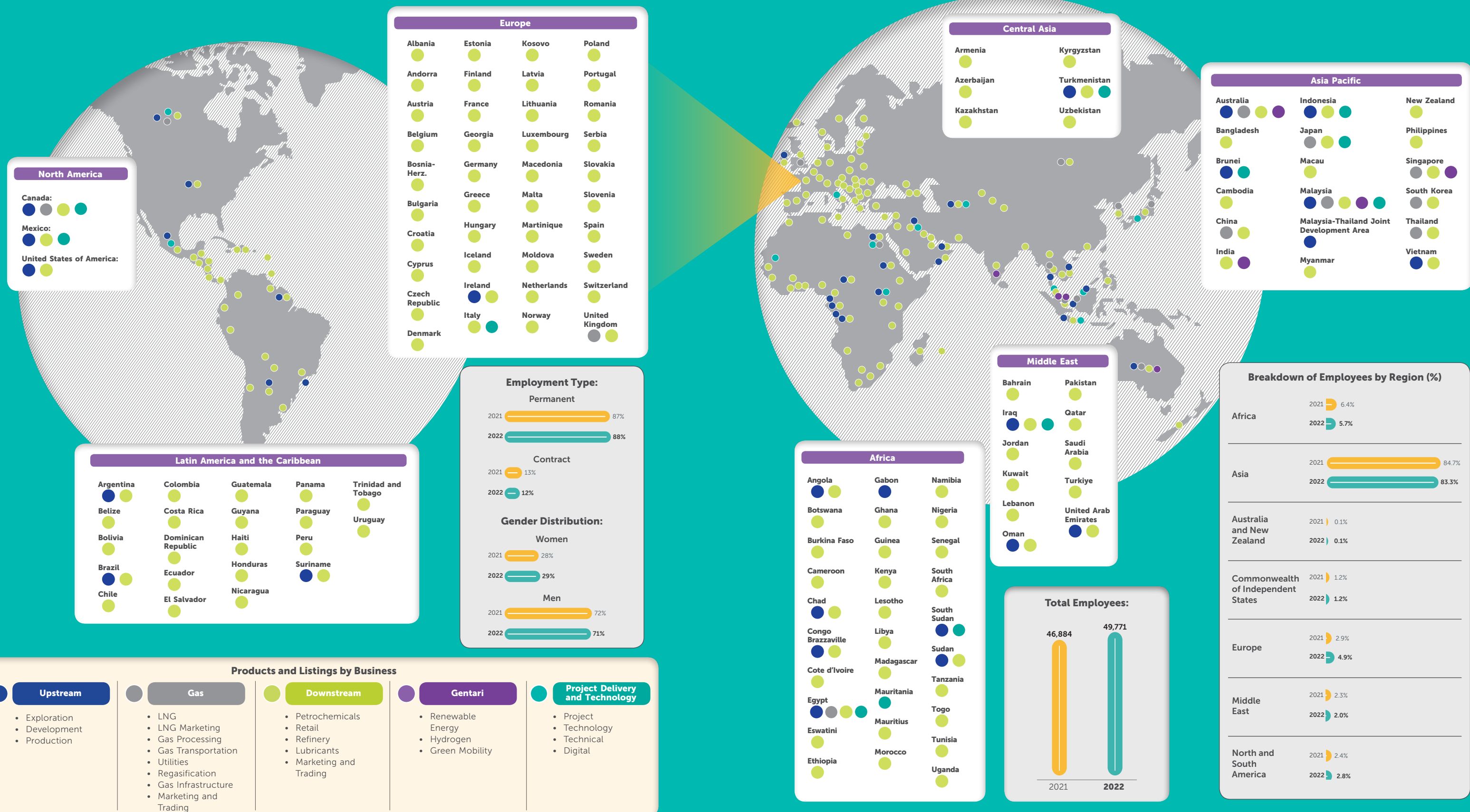
**Property**

Located in the heart of Kuala Lumpur City Centre, KLCC is Malaysia's largest real estate investment trust (REIT) that manages a portfolio of high-quality assets including KLCCP and KLCC REIT. Our focus is on growing our property portfolio across all segments, from office and retail to hotel and management services, ensuring that we continue to provide superior value to our investors and tenants.

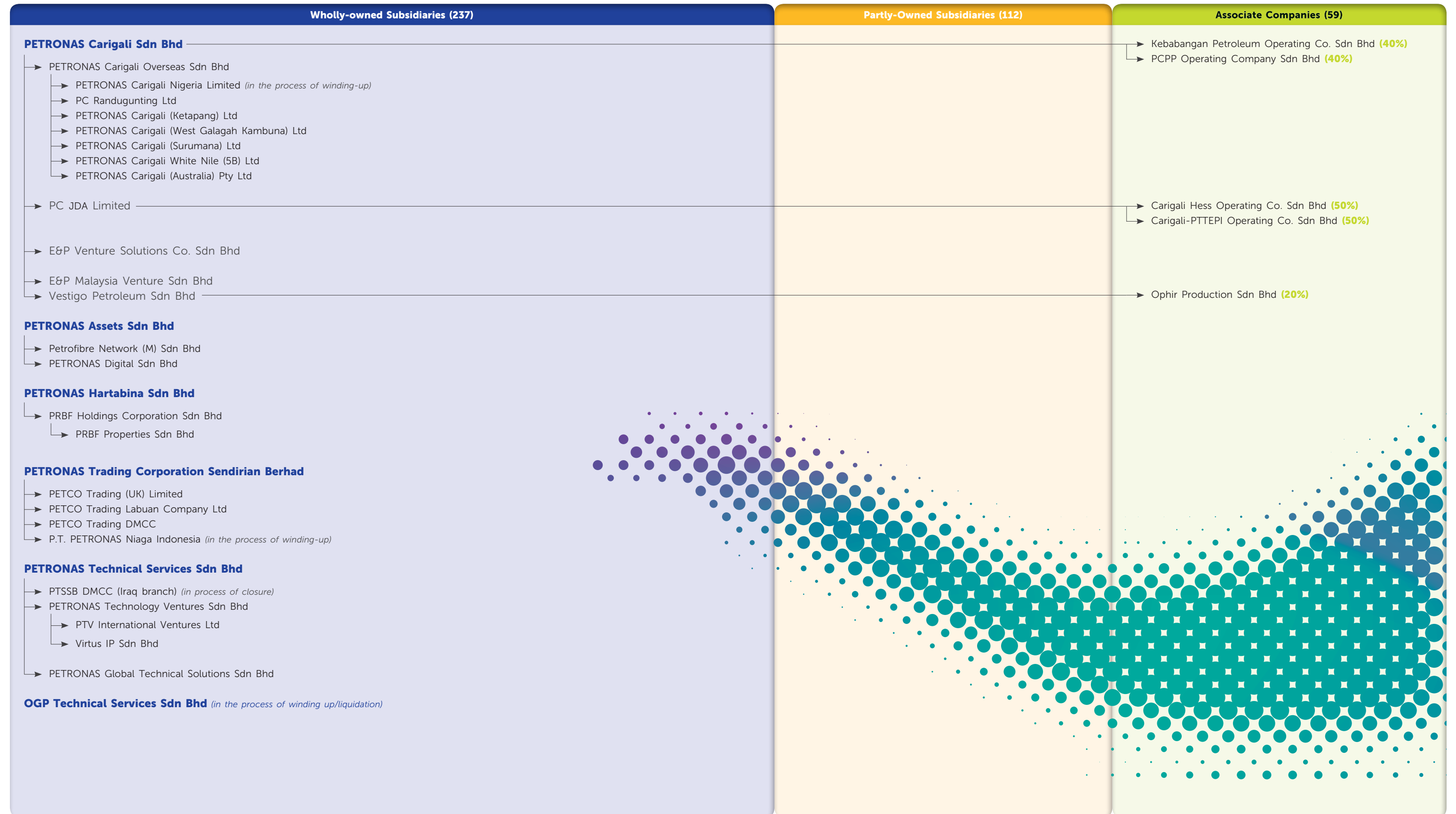


# PETRONAS Around the World

While PETRONAS' assets are predominantly located in Malaysia, more than 70 per cent of our revenue is generated from outside of Malaysia, demonstrating PETRONAS' strong global presence.

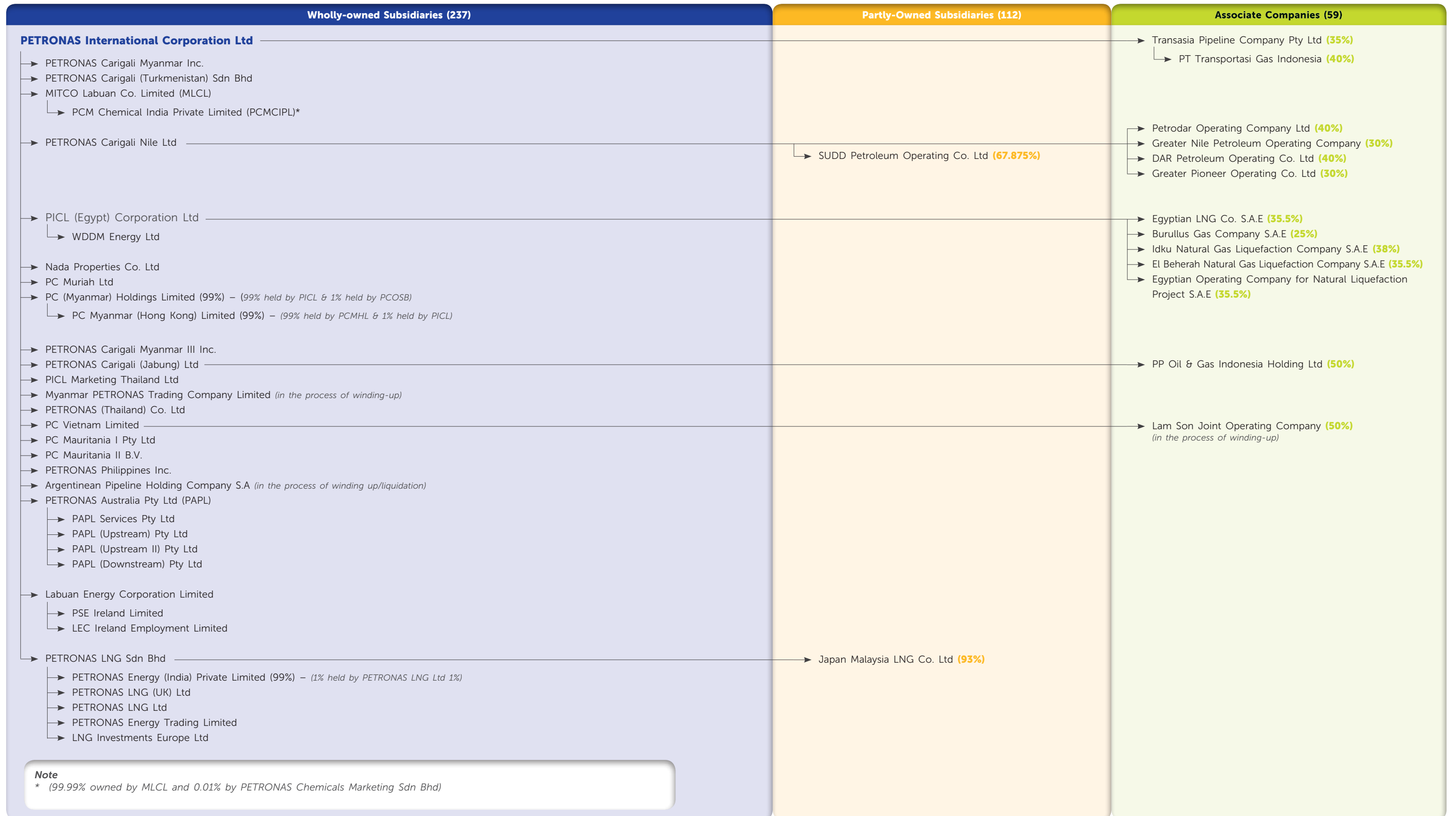


# Corporate Structure





## Corporate Structure

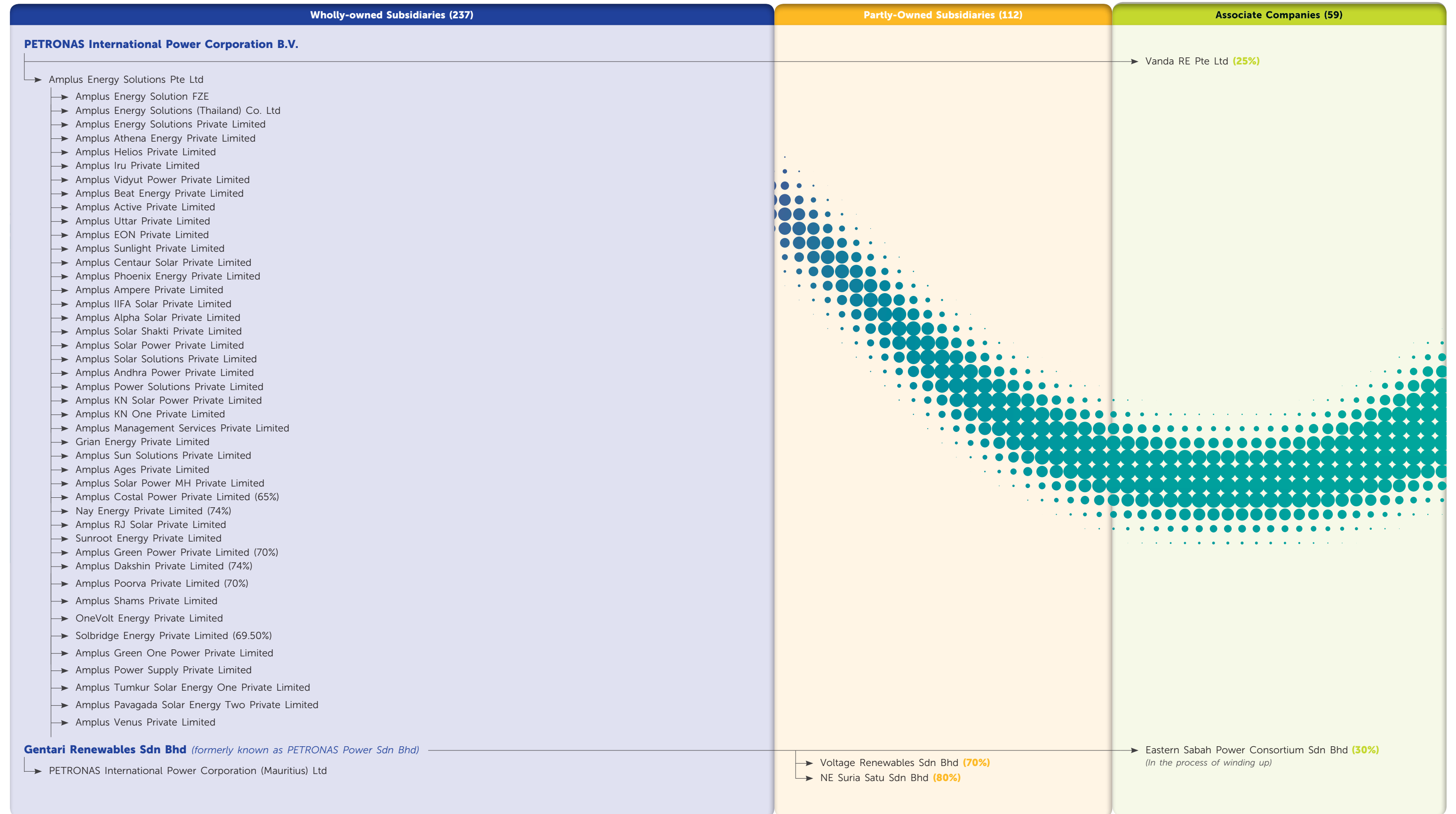


# Corporate Structure

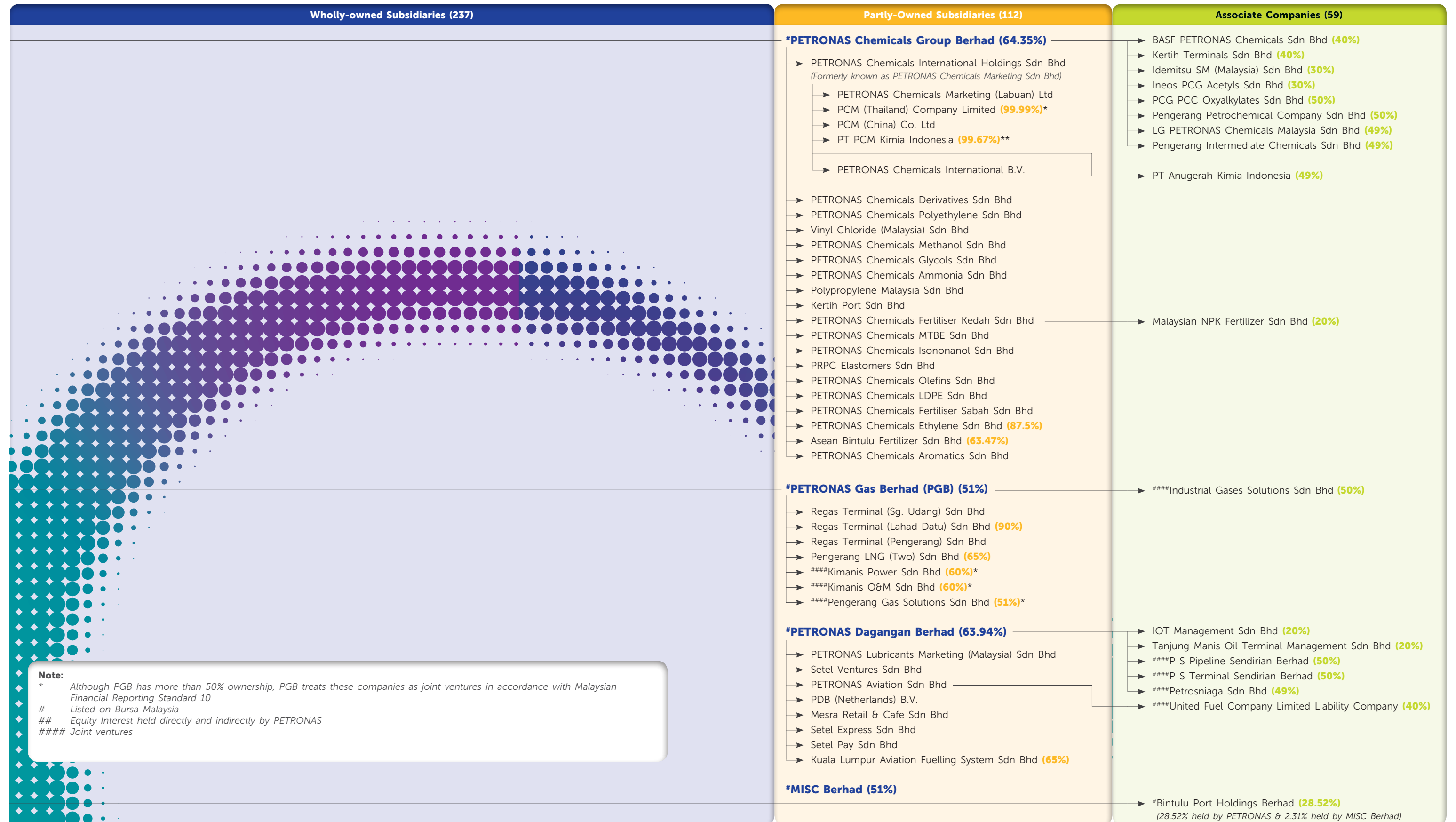




# Corporate Structure



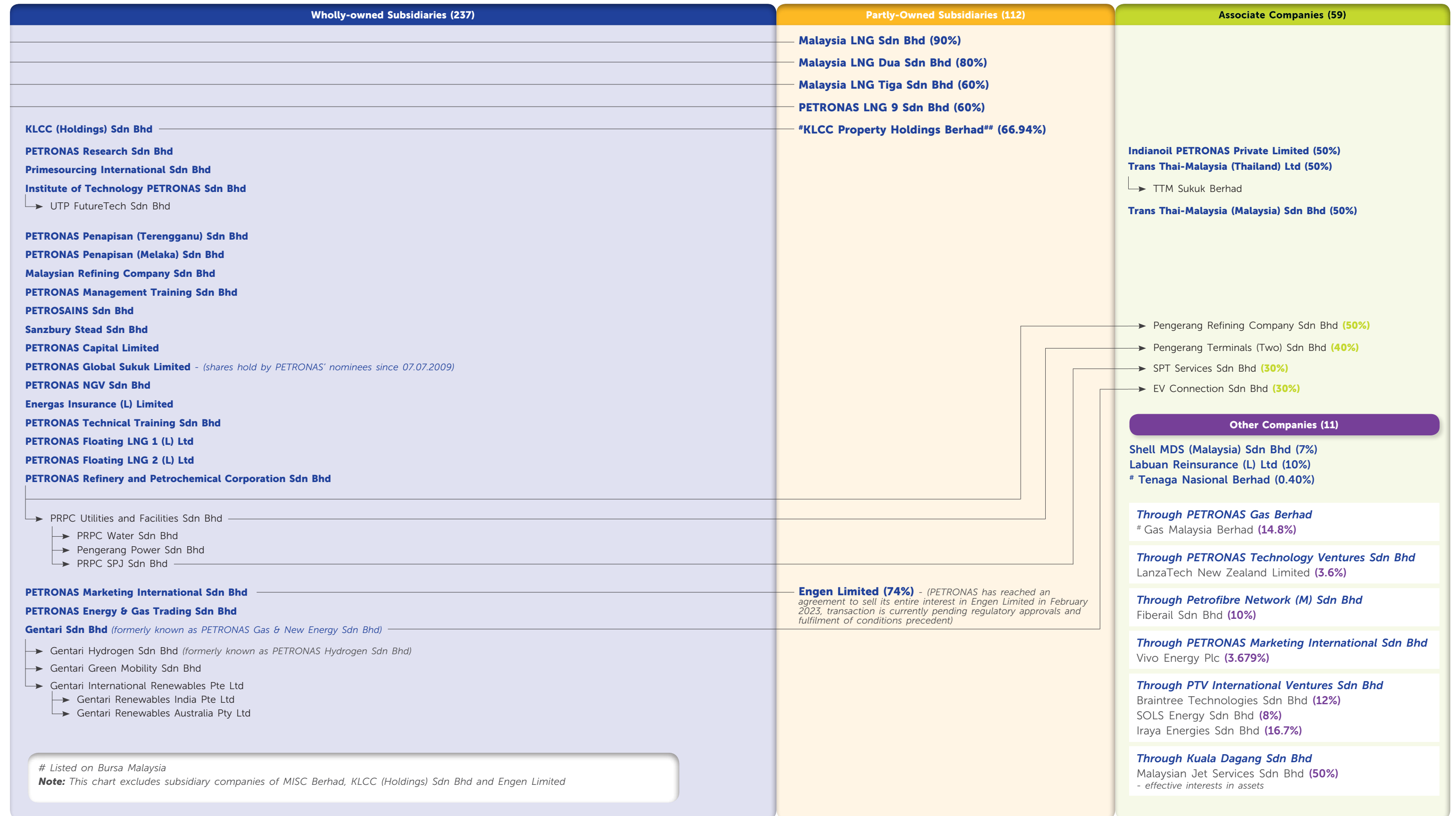
# Corporate Structure



**Note:**  
 \* Although PGB has more than 50% ownership, PGB treats these companies as joint ventures in accordance with Malaysian Financial Reporting Standard 10  
 # Listed on Bursa Malaysia  
 ## Equity Interest held directly and indirectly by PETRONAS  
 #### Joint ventures



# Corporate Structure



# Letter from the Chairman

Tan Sri Dato' Seri  
Mohd Bakke Salleh  
Chairman

## Dear Stakeholder,

The year in review has proven that the challenges faced by the energy industry has never been more uncertain or complex – where heightened volatility is its only constant feature.

The world has emerged gradually from the pandemic, with most economic sectors steadily recovering. However, the Russia – Ukraine conflict has profound implications for the energy industry. The conflict unfurled even as the world contended with an uneven and still-fragile post-pandemic recovery.

Oil and gas supply disruption has pushed up energy prices causing widespread inflation throughout the world. Elevated general prices globally compelled central banks to tighten the monetary policy, even after two years of aggressive stimulus packages.

The convergence of geopolitical instability, economic recovery post-pandemic and accelerated energy transition have shaped the contour of the energy market. Nevertheless, any perceived progress toward energy market equilibrium was observed as short-lived.

As a Group, PETRONAS navigated 2022 with a firm commitment to ensure the security of energy supply for Malaysia and our customers around the world. The responsibility was discharged with focused delivery of PETRONAS' strategy, paired with strong integrated operational performance to maximise our cash generators, and grow the business portfolio.

I am proud to recognise how our people continued to step up and delivered a strong performance for 2022, in line with our strategy of creating long-term sustainable value and achieving Net Zero Carbon Emissions by 2050 (NZCE 2050).



## Letter from the Chairman



PETRONAS contributed close to **RM900 million** in 2022 for Social Impact activations.

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Over **1.5 million** people at home and abroad benefitted from our Social Impact programmes.

PETRONAS recognises its responsibility to also create a positive social impact for Malaysians and the communities in the countries where we operate. In 2022, PETRONAS contributed close to RM900 million for its Social Impact activations efforts under the pillars of education (Powering Knowledge), community well-being and development (Uplifting Lives) and environment (Planting Tomorrow). Over 1.5 million people at home and in the countries where we operate have benefitted from our Social Impact programmes during the year in review.

PETRONAS also continued to contribute to federal and state agencies nationwide to aid flood preparedness efforts in view of the year-end monsoon season. The initiative is part of PETRONAS' RM25 million flood assistance contribution announced in December 2021, to assist thousands displaced by heavy floods in many parts of the country.

PETRONAS' commitment to Malaysians and the communities we serve remains intact, even as we continue to operate in a volatile and uncertain business landscape. Anchored on our Statement of Purpose, as a progressive energy and solutions partner, we recognise the importance of enriching the lives around us.

### Seizing Opportunities in the Energy Transition

PETRONAS recognises the need for a responsible energy transition and the risk of climate change to its business. At the same time, the need to continue investing in reliable sources of energy is infinitely clear from the soaring energy prices that consumers are having to contend with.

While oil and gas will remain as our core portfolio, it will be a key anchor contributor to cash generation which is especially important as the organisation is seizing opportunities to produce oil and gas as well as cleaner energy solutions as differentiated products that are produced safely, responsibly, cost-optimised and emissions-abated.

Therefore, the decision to declare a NZCE 2050 aspiration was both to demonstrate our stronger commitment to sustainability, as well as galvanise us as an organisation towards the necessary shifts and changes that would be needed to achieve such a target.



We were resolute in responsibly managing the hydrocarbon resources entrusted to PETRONAS and growing the size of the value pie for the benefit of our stakeholders.

### Fulfilling Our Amanah to the Nation and the Countries Where We Operate

The PETRONAS Board and Executive Leadership Team were resolute in steering the organisation to responsibly manage the hydrocarbon resources entrusted to PETRONAS and to grow the size of the value pie for the benefit of our stakeholders.

We contributed to our stakeholders in the form of cash payments, tax, export duties, state sales tax and dividends by adopting continued prudent financial management and discipline in reinvesting to generate profitable growth responsibly and sustainably.

In 2022, PETRONAS made the scheduled dividend and additional dividend payment of RM50 billion in total to the Government of Malaysia after careful assessment of the Group's affordability to continue to fund its operations, service its debts and meet its obligations as well as invest for the future growth of the organisation.



## Letter from the Chairman

As a result, the PETRONAS Board has endorsed the PETRONAS Energy Transition Strategy that will see the organisation intensify delivery of its growth strategy with pace, supported by consistent investment allocation to support our NZCE 2050 aspiration:



The Board also focused on strengthening PETRONAS' business resilience for long-term sustainability. Among the sustainability-related governance initiatives approved by the Board include PETRONAS Corporate Risk Profile and endorsement of PETRONAS' position on Nature and Biodiversity.

### Upholding our Shared Values as a Trusted Partner

The PETRONAS Shared Values of Loyalty, Integrity, Professionalism and Cohesiveness have long been the defining qualities that have drawn collaborating parties into genuine partnerships with PETRONAS. We believe in recognising the aspirations of our valued stakeholders from the Federal Government of Malaysia, State Governments and the Governments of our host countries, industry partners and customers.

Over the years, PETRONAS is honoured and grateful to have the strong support of our stakeholders as we strive to continue realising their aspirations through commercial arrangements and contributions.

In this respect, at this time of uncertainty and turbulence with the energy transition rapidly evolving the energy landscape – it is important for PETRONAS to continuously adapt and transform itself to continue becoming the progressive energy and solutions partner our stakeholders would seek.

To this end, the Board remains resolute in its commitment to ensure PETRONAS demonstrates best practices in transparency, governance, reporting frequency and profitability in creating and delivering long-term sustainable value.

In this same stride, PETRONAS will continue to uphold the highest standards of integrity and safety, in discharging our obligations and responsibilities as a national oil company and global energy player. The organisation has in place a Code of Conduct and Business Ethics, the PETRONAS four Sustainability Lenses and other relevant commitments. PETRONAS also has a zero-tolerance approach against bribery and corruption with strict consequence management.

As we continue to expand our presence across the globe, PETRONAS will continue to enhance and safeguard our ability to uphold the trust of our stakeholders by exercising respect and abide by the relevant laws and regulations of Malaysia and the countries where we operate.

### The Year Ahead

As we look ahead to 2023, the oil and gas industry could potentially see prices moderating given an anticipated economic slowdown, on the back of prolonged market volatility. In this environment, PETRONAS will continue to drive operational excellence in our core business while we pursue our growth and sustainability targets.

On the back of the strong performance recorded this year, PETRONAS will no doubt progress with the drive, passion and spirit to provide energy for shared prosperity in a just and responsible approach to energy transition.

2022 is also a year that we bid farewell to a member of our Board of Directors, Puan Zakiah Jaafar. I would like to express my sincere thanks and appreciation for her contribution. Her experience and insights have been valuable for the organisation and we wish her every success in her new undertakings.

At this opportunity, I would like to extend a warm welcome to our new Board members namely, Datuk Seri Asri Hamidon and Datuk Johan Mahmood Merican (Alternate Director). These new additions to the Board collectively bring diversity of perspectives and wealth of experience that will be crucial to PETRONAS.

On behalf of the Board, I would like to extend my heartiest appreciation to Datuk Tengku Muhammad Taufik, President and Group CEO of PETRONAS, and his Executive Leadership Team for delivering our business strategies with pace and agility, whilst strengthening our foundation for future growth. My deepest gratitude also to our employees for their courage and perseverance in fully embracing our statement of purpose, shared values and holding the organisation to high standards of safety and integrity.

Finally, to our valued stakeholders – I would like to express my deep gratitude for the trust and confidence in PETRONAS that will see us pave the way for more shared successes to come. Let us continue to make a positive difference by providing energy for the betterment of societies today and for generations to come.

**Tan Sri Dato' Seri Mohd Bakke Salleh**  
Chairman



# Letter from the President and Group Chief Executive Officer

**Datuk Tengku Muhammad Taufik**  
President and Group Chief Executive Officer



We executed our strategy aligned to our Net Zero Carbon Emissions by 2050 Pathway. The Group is committed to deliver energy for the growing needs of today and develop solutions that will help us move closer to a lower-carbon future.

## Esteemed Stakeholder,

Two years have now passed since the pandemic began, and the world in 2022 grappled with the challenges of an uneven and fragile post-pandemic recovery. Even as you read this, the world continues to remain vulnerable to the combined threat of geopolitical conflict, the rising cost of living, energy and climate crises.

Energy security concerns are still top of mind for leaders globally as chronic underinvestment and shrinking spare capacity continued to roil already-volatile energy markets. At the same time, many countries and companies remained steadfast in their longer-term commitment to the Paris Agreement.

With these realities in mind, PETRONAS responded by executing our strategy aligned to our Net Zero Carbon Emissions by 2050 Pathway. The Group is committed to deliver energy for the growing needs of today and develop solutions that will help us move closer to a lower-carbon future.

PETRONAS sees the energy transition as an opportunity as much as it is a responsibility to produce oil and gas alongside cleaner energy solutions as differentiated products that are safe, responsibly produced, cost-optimised and emission-abated for our customers.

I am proud to share that PETRONAS made substantial progress during the year in review and strengthened our portfolio in order to be well-positioned to continue creating long-term sustainable value.

*Alhamdulillah*, in this stride PETRONAS recorded a strong performance in 2022, encapsulating our commitment to solving the energy needs of our customers as their progressive energy and solutions partner enriching lives for a sustainable future.

With a motivated and passionate workforce driving our efforts, I remain confident that the PETRONAS Group is on track to deliver meaningfully towards a just and responsible energy transition.



## Letter from the President and Group Chief Executive Officer

**PETRONAS is committed to stepping up with our partners and contractors to nurture a generative HSE culture where everyone returns home safely as a shared responsibility.**



### Safety of Our People

PETRONAS' priority is to undertake our business activities with an unwavering focus and emphasis on safety.

For an industry that is unavoidably hazardous and fraught with risks, our employees and partners delivered our strong performance in 2022 with diligence and dedication to upholding safety as our license to operate responsibly and sustainably. However, we also had challenges.

Regrettably, we recorded four incidents which resulted in the loss of lives. The Group responded by identifying its root causes and has undertaken the necessary actions to prevent any recurrence. We aim to do better by strengthening our guidelines and processes to ensure we create a safe working environment. PETRONAS is committed to stepping up with our partners and contractors to nurture a generative health, safety and environment (HSE) culture where everyone returns home safely as a shared responsibility.

### Delivering Excellence: Performance Highlights

In line with our industry peers, in 2022 PETRONAS delivered a robust full-year performance with Profit After Tax registered at RM101.6 billion on the back of RM375.3 billion in revenue. EBITDA stood at RM170.7 billion for the year in review.

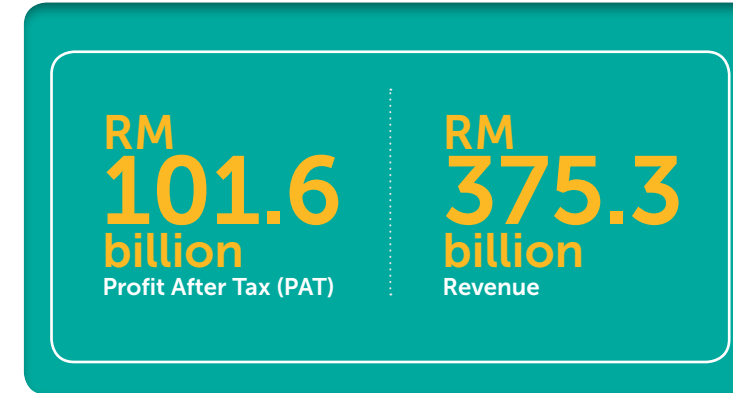
Throughout the year in review, PETRONAS focused on commercial and operational excellence of our integrated value chain, supported by an upward surge in commodity prices in an environment heightened by supply-demand volatility driven by sudden shifts in the market and an accelerated energy transition.

Amid an uncertain and volatile business operating environment, PETRONAS continued to exercise prudent financial management and made every effort to reinvest with discipline to future-proof the portfolio and preserve our ability to deliver profitable growth responsibly and sustainably.

Our priority is in reinvesting towards reshaping and decarbonising our portfolio – which means continuing to explore, develop and produce hydrocarbons that the markets we serve still need, but with greater efficiency and lower emissions.

We intensified our efforts and progressed steadily in our strategy with milestones that include:

- First significant oil discovery in Brazil's Sepia field made with an asset designed with gas and CO<sub>2</sub> reinjection to lower the emissions from its operations. PETRONAS also won the Agua Marinha exploration block in the Campos Basin with our consortium partners.



- Agreement with Abu Dhabi National Oil Company (ADNOC) to explore and appraise its first-ever unconventional oil concession, incorporating plans to manage GHG emissions.
- Expanded PETRONAS Chemicals Group Berhad (PCG)'s future offerings for the market with the acquisition of Perstorp Holding AB, a global leader in specialty chemicals.
- 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.
- Partnership with Mercedes-AMG PETRONAS F1 team to develop advanced sustainable fuel for the sport and consumers.
- Portfolio high grading for our assets in South Sudan, Chad and South Africa are currently ongoing.

In the same stride, it is with pleasure that I also share that PETRONAS pursued more partnerships at home and internationally to capture opportunities in the energy transition.

- Collaboration with Sabah and Sarawak to expand value creation opportunities in lower carbon solutions which include Final Investment Decision for Sabah's first nearshore LNG facility and Memorandum of Understanding (MoU) with Sarawak Economic Development Corporation (SEDC) Energy to develop green hydrogen technologies and renewable oil from algae.

**We have crystallised our Three-Pronged Growth Strategy into the PETRONAS Energy Transition Strategy that will see us grow our business profitably and responsibly with a clear ambition to be a progressive energy and solutions partner for a lower carbon future.**



## Letter from the President and Group Chief Executive Officer

- Signed MOUs with Tenaga Nasional Berhad and Proton to accelerate the development and access to cleaner energy solutions for Malaysia.
- 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 MOU with YPF to collaborate in the potential of an integrated LNG project and other areas, including upstream oil, petrochemicals and clean energy solutions.
- Initiated feasibility study with Eni S.p.A (Eni) and Euglena Co. Ltd. (Euglena) to develop and operate a biorefinery plant in Pengerang Integrated Complex to supply sustainable solutions including Sustainable Aviation Fuel for aircraft and Hydrogenated Vegetable Oil (HVO/Renewable Diesel) for on-road vehicles.
- Launched a novel initiative in the form of Race2Decarbonise, a US\$250 million hackathon to seek out decarbonisation ideas and solutions. The winners have been identified to scale and deploy their innovations within 24 months to accelerate PETRONAS' journey to Net Zero Carbon Emissions by 2050.

PETRONAS is on a stronger footing today, having laid the necessary foundation with our strategy and ambition for Net Zero Carbon Emissions by 2050. We will continue to strengthen our portfolio and pursue new opportunities for growth to provide more energy with lower emissions to remain relevant and resilient in the energy transition.

### Progressing with Purpose: Our Strategic Journey

The frequency and magnitude of energy disruptions seen over the past year indicate the need for a balanced approach to the transition. We have observed the widespread economic implications when an immediate switch from hydrocarbons, **before** an attempt is made to realise an alternative energy system is fully ready to shoulder the heavy burden of global demand.

At the end of the day, PETRONAS believes it is about getting the balance right with secure, affordable and sustainable energy.

For PETRONAS, we intend to seize the opportunities and provide the world with the energy it needs today with consideration for the climate goals of the Paris Agreement. Our priority is to be in step with the progress of the societies we serve.



**The myriad of challenges in energy transition are complex, but it is our duty to take credible actions to chart a viable pathway to net zero carbon emissions.**



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



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



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

PETRONAS is driven to accelerate our efforts towards shaping a just and responsible energy transition with equitable outcomes where nobody is left behind. In this regard, I am pleased to share that we have crystallised our Three-Pronged Growth Strategy into the PETRONAS Energy Transition Strategy that will see us grow our business profitably and responsibly with a clear ambition to be a 'progressive energy and solutions partner' for a lower carbon future.

The myriad of challenges in energy transition are complex, but it is our duty to take credible actions to fulfil our commitment. The Energy Transition Strategy will see PETRONAS take bold yet realistic and deliberate steps with investments undertaken towards:

- Accelerating and intensifying exploration, development and production of Malaysia's oil and gas fields with a focus on becoming a low cost and low emissions producer.
- Providing greater access to gas and LNG as a transition fuel.
- Capitalising on the opportunities of high commodity prices for our Downstream business through continuous operational and commercial excellence.
- Advancing our ambition to establish Malaysia as a carbon capture and storage (CCS) hub for the region.

- Providing customers with cleaner energy solutions such as renewable energy, hydrogen and green mobility under Gentari.
- Offering lower carbon maritime services and solutions.

Delivery of these efforts is anchored to our Net Zero Carbon Emissions by 2050 Pathway which sets out in detail the short, medium and long-term targets to manage emissions from our operations and strengthen the resilience of our business.

As we look ahead, PETRONAS will require significant investments to chart a viable pathway to net zero carbon emissions. To this end, we have committed up to 20 per cent annual CAPEX for the next five years to intensify our decarbonisation efforts and pursuits in cleaner energy solutions.

Consequently, I believe these efforts will continue to support key government stakeholders in shaping a conducive ecosystem for investments in cleaner energy solutions to thrive and contribute long-term to Malaysia's Nationally Determined Contributions to the Paris Agreement.

I look forward to sharing more exciting updates with you in due course.



# Letter from the President and Group Chief Executive Officer

## Nurturing Talent and Shaping an Ecosystem to Thrive

At PETRONAS, our people are our greatest asset.

We recognise that a shifting energy landscape will require significant focus on building a sustainable pipeline of talent equipped to keep pace with change and embrace the energy transition.

In 2022, we invested RM264 million in employee training and development programmes towards improving core competencies and new skills to improve our competitive advantage in delivering the PETRONAS Energy Transition Strategy.

As we position the company for the future, our employees will continue to uphold accountability for the resources entrusted to PETRONAS. Our Shared Values of Integrity, Professionalism, Cohesiveness and Loyalty will continue to guide our actions and conduct as a trusted partner for our stakeholders.

From an ecosystem perspective, we recognise that we can only achieve a lower carbon future with support and effective coordination from our industry partners.

PETRONAS acknowledges its role as a catalyst for Malaysia's Oil and Gas Services and Equipment (OGSE) sector. Accordingly, PETRONAS remains committed to working with our partners, especially as the business environment demands the industry to decarbonise operations as part of the energy transition.

The Group has initiated programmes to elevate the robustness of the OGSE as far back as 1993. The Vendor Development Programme (VDP), VDPx programme, Vendor Financing Programme by Financial Institutions and the Road to Bursa Programme are among the initiatives to improve the resiliency and maintain the stability of the ecosystem at large.

PETRONAS remains committed to increasing domestic investment as outlined in the PETRONAS Activity Outlook on the oil and gas activities planned for the next three years. Nevertheless, our OGSE partners must also pursue innovation in lower-carbon technologies to be competitive globally.

With a resilient OGSE ecosystem, I am confident that the energy industry will continue to effectively contribute to Malaysia's economic growth.

## Forging Ahead

Along with the Board and leadership of PETRONAS, I am grateful that PETRONAS' performance in 2022 has enabled the Company to continue delivering long-term sustainable value with discipline as a national oil company (NOC). In the same stride, the execution of our strategy demonstrates our continued focus on future-proofing the portfolio with a solid foundation to intensify our growth as a global energy player.

We remain committed to growing the value pie for our stakeholders and OGSE partners to thrive alongside PETRONAS. We will also continue to discharge our duty in ensuring the well-being of Malaysians and societies wherever we operate with secure, affordable and sustainable energy.

As the macro environment will continue to be shaped by the events of 2022 – PETRONAS must remain cautious and rigorously ensure prudent financial management while strengthening our integrated value chain with a sharper focus on commercial and operational excellence. Even as we do this, we will also exercise equally firm discipline in reinvesting for our future growth to deliver our Energy Transition Strategy.



As we gear towards seizing opportunities for profitable growth, we will do so responsibly and sustainably with integrity and professionalism.

Permit me to place on record my utmost gratitude to the employees of PETRONAS for their dedication and valuable contribution to the Group's performance. I would also like to extend my appreciation to our Chairman, Tan Sri Dato' Seri Mohd Bakke Salleh and members of the PETRONAS Board of Directors for their stewardship and counsel for the Company to remain resilient amid prolonged marked volatility. I would also like to acknowledge the PETRONAS Executive Leadership for their collective effort in strengthening our portfolio to continue pursuing growth and progress towards our sustainability targets. My sincere thanks to our valued

stakeholders – Federal and State Governments, the Host Governments of our international operations, agencies and authorities, our business partners, vendors and customers for their trust in PETRONAS.

Executing a just and responsible energy transition is an agenda that must progress as we contemplate and accept our responsibility to the next generation. With unwavering commitment, PETRONAS remains resolute in its mission and will drive action across all our stakeholders to shape an energy future that will benefit all.

**Datuk Tengku Muhammad Taufik**  
President and Group Chief Executive Officer



# Letter from the Executive Vice President and Group Chief Financial Officer



**Liza Mustapha**  
Executive Vice President and Group Chief Financial Officer

➔ Revenue  
**RM375.3 Billion**  
2021: RM248.0 Billion

➔ PAT  
**RM101.6 Billion**  
2021: RM50.9 Billion

➔ Total Assets  
**RM710.6 Billion**  
2021: RM635.0 Billion

Businesses across the value chain took bold choices and displayed operational resilience and commercial excellence, allowing us to capture market uptrends, resulting in the strong financial performance.

### Strong Financial Position

The unpredictable energy markets, coupled with the possibility of a global economic slowdown as well as rising inflation has led to increase in operating costs. Despite these challenges, PETRONAS continues to maintain its strong liquidity by exercising effective cost management and delivering solid financial performance.

We recorded robust cash flows from operating activities of RM135.3 billion, a 72 per cent increase from FY2021, enabling us to increase investments required for growth, make higher dividend payments, service our debt obligations and increase contributions to support economic and social development. Additionally, we recorded gearing of 20.3 per cent in FY2022, 2.8 per cent lower than FY2021. This strengthened the Group's net cash position to RM108.0 billion. Our net cash position compares favourably with that of our peer group comprising international oil majors.

Total assets stood at RM710.6 billion as at 31 December 2022, an increase of 12 per cent against the previous year. This was mainly contributed by the higher cash position as well as higher property, plant and equipment and intangible assets following new acquisitions during the year.

### Capital Allocation

Amid the continued volatility of the energy market and the increasing call for energy transition, we remain steadfast in strengthening our portfolio through strict capital discipline, ensuring sufficient allocation for our core cash generators, as well as investments in new business and intensify emissions abatement efforts.

As activity started to pick up across the globe, our capital investment spending in FY2022 grew 65 per cent from the previous year to RM50.1 billion. 25 per cent of the capital investment spent in FY2022 was on New Business.

### The Financial Year in Review

The year 2022 was a time of heightened uncertainty and volatility for the oil and gas industry. The ongoing conflict between Russia and Ukraine triggered energy price spikes and supply chain disruptions, bringing with it concerns over energy security. Even as supply concerns emerged, the call for energy transition remains strong with augmented demand for cleaner energy. Investors and financial institutions are putting a high level of scrutiny on oil and gas players to ensure we measure up to what we have committed in terms of climate change, emissions targets and cleaner energy sources.

Amidst the confluence of these seemingly opposing factors, PETRONAS leveraged on our strong integrated value chain, demonstrated agility and resilience to capitalise on the opportunities from the market uptrends. We remain focused on delivering our strategy and Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway by exercising discipline in capital allocation. As a global energy player with commitments and responsibilities towards uplifting communities and supporting net zero ambitions in Malaysia as well as

**PETRONAS leverages its strong portfolio and integrated value chain to capture opportunities from the market uptrends, delivering a sterling financial performance for the year 2022.**

the countries where we operate, we are future-proofing our portfolio by investing responsibly to preserve our ability to deliver long-term value to provide energy that is secure, affordable and sustainable.

Our Profit After Tax (PAT) for FY2022 was RM101.6 billion, a 100 per cent higher than RM50.9 billion in FY2021. This was driven by the substantial increase in revenue, as well as the effectiveness of our prudent financial management that we continue to practice. Our PAT Margin for FY2022 was

27 per cent, a significant increase from 21 per cent in FY2021, testament to our commercial and operational excellence as well as effective cost control measures. Some examples of such measures include fuel consumption management and vessel optimisation.

Our revenue for FY2022 was RM375.3 billion compared to RM248.0 billion in FY2021, representing a 51 per cent increase. The substantial rise in revenue was driven by higher average realised prices for all products against the backdrop of concerns in relation to energy security, coupled with favourable impact from foreign exchange. More than 70 per cent of PETRONAS' revenue was contributed by customers outside Malaysia, demonstrating our strong global presence.

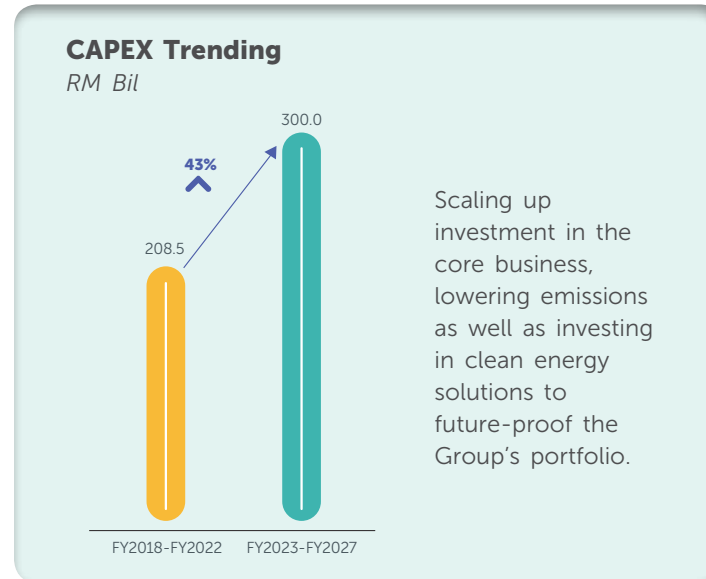
Our Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA) for FY2022 was RM170.7 billion, a 70 per cent increase in line with the higher profit recorded.

## Letter from the Executive Vice President and Group Chief Financial Officer

Domestic Capital Expenditure (CAPEX) increased by 24 per cent against the same period last year, contributing to the growth of the Malaysian oil and gas industry.

International CAPEX also increased as investments were channeled mainly to non-traditional businesses such as specialty chemicals. Excluding international acquisitions made during the year, the CAPEX spent was almost equal for Malaysia and international projects.

Capital investment allocation over the next five years i.e. between FY2023 to FY2027 is expected to be 43 per cent higher than the last five years i.e. between FY2018 to FY2022, mainly as a result of scaling up investments in the core business, lowering our emissions as well as investing in new business to future-proof the Group's portfolio.

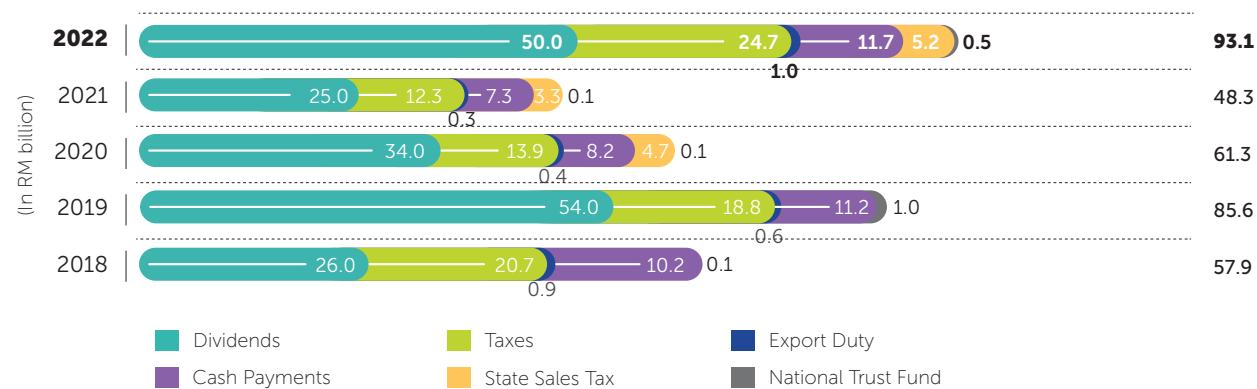


### Contributions to the Government

We contributed RM93.1 billion to the Federal and State Governments of Malaysia in the form of dividends, taxes and cash payments, higher by RM44.8 billion or 93 per cent compared to the previous year. This also includes contributions made to National Trust Fund (NTF) of RM500 million.

To date, our cumulative contributions to the Federal Government of Malaysia, state governments and NTF amounts to RM1.4 trillion.

In FY2022, we paid total dividends to the Federal Government of Malaysia of RM50.0 billion, higher by RM25.0 billion as compared to FY2021, in line with our profitability and affordability.



Additionally, PETRONAS also supported Peninsular Malaysia's power and non-power sector in respect of the regulated gas pricing mechanism imposed on the supply of sales gas, which resulted in total accumulated revenue forgone from FY1997 until FY2020 amounted to RM261.04 billion. By the end of FY2020, all contracts have reached convergence between the regulated price and contract price.

### Governance and Transparency

PETRONAS adopts the highest standards of governance and transparency, delivering efficient operations and maximising shareholder's returns. As a result, PETRONAS' credit ratings remain strong, with a rating of A2, A- and BBB+ from Moody's, Standard & Poor's (S&P) and Fitch respectively. Our standalone credit profile is four notches above PETRONAS' credit ratings, as assessed by S&P and Fitch. These ratings affirm PETRONAS' robust financial strength, solid business fundamentals and strong governance practices.

Our financial statements are audited by global accounting firms and comply with Malaysian and International Financial Reporting standards, at par with other Fortune Global 500® companies.

We also adhere to the best principles of corporate governance in line with the Malaysian Code on Corporate Governance:

- Awarded the Platinum Awards in Excellence Awards (Non-Listed Organisation) category in 2021 and 2022 for our annual issuance of Integrated Report by the National Annual Corporate Report Awards (NACRA).
- PETRONAS is progressing towards full adoption of the Recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) by FY2024.

Additionally, we have further strengthened our commitment towards our NZCE 2050 Pathway by adopting the following:

- Relevant sustainability disclosures in the audited financial statements.
- Elevated carbon accounting approach to fully adhere to the GHG Corporate Accounting and Reporting Standard (2004), Ipieca Climate Change Reporting Framework (2011) and ISO 14064-1:2018.
- Allocated funding for decarbonisation and energy transition.

### Looking Forward

Oil and gas prices could potentially moderate in 2023 as the world anticipates an economic slowdown, while grappling with prolonged market volatility. We will continue to drive operational excellence in our core business while we pursue growth and sustainability targets.

Driven by the urgency of the energy trilemma of security, affordability and environmental sustainability, PETRONAS aims to provide leadership in Southeast Asia's discourse on efforts to accelerate collaborations in net zero carbon solutions and will continue to support the government's efforts to ensure an effective and just energy transition.

**Liza Mustapha**  
Executive Vice President and Group Chief Financial Officer





**Dear Stakeholder,**

Over the past year, PETRONAS has made significant progress in our sustainability journey. We continued integrating sustainability in our strategic execution and the future of our business. As a global energy company, this is no simple feat. Our ability to create long-term value is not only driven by market forces – we also have broader responsibilities to bear. We are committed to contribute towards government efforts to decarbonise economic development while delivering reliable energy that supports progressive growth. Our impact is far-reaching and we remain steadfast in using our scale, technology and talents to provide the energy solutions our customers desire for a sustainable future. Therefore, I am pleased to share my assessment of the Group’s sustainability performance and journey for 2022.

**Letter from the Vice President and Chief Sustainability Officer**

**We remain steadfast in using our scale, technology and talents to provide the energy solutions our customers desire for a sustainable future.**

**Trends Signal a Sustainable Energy Future**

2022 was another tumultuous year. The extraordinary health crisis brought by the COVID-19 pandemic, was overtaken by a global energy crisis, high inflation, supply disruptions and compounding effects of climate change. Instability continues to surround economic activity, weakening long-term prospects for global growth and social progress. Energy security remains a key concern for political leaders across the world, yet the underlying trend of decarbonisation remains strong with renewed momentum.

Despite volatile geopolitics, addressing climate change, nature loss and persistent inequality continue to serve as a common ground for international collaboration. The United Nations convened conferences on climate change (COP27) and biodiversity (COP15) in 2022 demonstrated strong participation and engagement by all relevant parties. Overall, sustainability considerations continue to drive developments in public policy, regulation, investment decisions and business development.

The scale of change brought on by the energy transition is hard to overstate. Today, we see transformative policy instruments at play internationally, driving large-scale shifts into new renewable and low carbon energy value chains.

In Malaysia, broad climate aspirations are translated into more specific policy developments and practical deliveries. The National Energy Policy (NEP 2040) was launched in September 2022. It frames the context for optimising the value of national oil and gas resources, while capitalising on growth opportunities from the global energy transition. NEP 2040 presents low carbon growth pathways that include a higher share of renewable energy, financing and incentives to drive energy efficiency, green mobility, hydrogen, circular economy, biofuels and carbon capture, utilisation and storage (CCUS).

In December 2022, Bursa Malaysia Bhd launched the Bursa Carbon Exchange (BCX), a voluntary carbon market and the world’s first shariah-compliant carbon exchange.

**A Sustainable Approach to Value**

The strong emphasis we have on sustainability gives PETRONAS a vital understanding of how changes in society affect our risk landscape. It helps us be responsive, operate effectively, align new opportunities for

investment and attract talents. We do not see a trade-off between value creation and sustainability. We can only succeed, if we use our scale, technology and skills to provide the energy solutions our customers desire.

Each country has energy accessibility, affordability and sustainability concerns that require tailored responses. PETRONAS is building strength and expertise in responding effectively to the evolving context in energy markets, while balancing short-term demands of continued energy supply with long-term responsible growth.

In support of our strategy, we have launched our Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway that sets clear milestone targets for reducing our operational emissions and frames our growth ambitions in new areas.

**Becoming a Net Zero Energy Company**

For PETRONAS, we intend to capture the opportunities and provide the world with the energy it needs with consideration for the climate goals of the Paris Agreement. With our integrated energy portfolio, we serve as the custodian of Malaysia’s hydrocarbon resources, while transforming in line with our published NZCE 2050 Pathway.

Our NZCE 2050 Pathway stipulates emissions reduction from our own operations and growth ambitions for clean energy solutions, enabled by a 20 per cent allocation of total capital expenditure over the period of 2022-2026. Delivery of these targets is anchored on our business context, national policies, international frameworks and scientific consensus on climate change.

2022 saw growth in our energy production, after the disruptive years of the COVID-19 pandemic prior. Our Groupwide absolute greenhouse gas emissions have also risen. While some of it can be attributed to changes in our accounting method, we are determined to decouple growth of our business from emissions. To this aim, we have set ourselves absolute emissions targets.

Our near-term target is to cap operational emissions at 49.5 million tonnes of carbon dioxide equivalent (Million tCO<sub>2</sub>e) by 2024 in Malaysia. Our 2030 target is to achieve a 25 per cent absolute emissions reduction Groupwide, based on 2019 emissions data, for our own emissions and the emissions from the energy we buy (Scopes 1 and 2).

## Letter from the Vice President and Chief Sustainability Officer

We are on track to meet our 2024 target and we have reduced our GHG emissions by 8.49 per cent against our 2030 target of 25 per cent absolute emissions reduction against 2019 baseline.

Our targets include specific provisions for methane emissions reduction: 50 per cent by 2025 and 70 per cent by 2030, from 2019 levels, for PETRONAS' groupwide natural gas value chain. In support of Malaysia's commitment to the Global Methane Pledge of reducing national methane emissions by 30 per cent by 2030 from 2020 levels, PETRONAS is going beyond its own operations and has set a 50 per cent methane emissions reduction target for Malaysia's natural gas value chain.

Key levers for reducing our operational emissions are: zero routine flaring and venting, energy efficiency, electrification and carbon capture and storage (CCS).

CCS is an essential component in global decarbonisation, providing substantive emissions reduction potential for oil and gas and hard-to-abate industrial sectors. Towards this aim, we now have a centralised Carbon Management Division to drive emissions management, including CCS, laying the foundation for such practice in Malaysia to serve both domestic and international commercial industrial customers.

Gentari has been established to deliver clean energy solutions that will assist customers to achieve their respective net zero carbon emission aspirations. Gentari has strong growth ambitions for 2030: 30-40GW of renewable energy capacity, up to 1.2 million tonnes per annum of hydrogen and 10 per cent market share of public electric charging points across Asia Pacific.



**Our near-term target is to cap operational emissions at 49.5 Million tCO<sub>2</sub>e by 2024 in Malaysia.**

We are also making inroads into the biofuels market with plans for a greenfield biorefinery and co-processing at existing facilities, slated for 2025. The biorefinery will provide Sustainable Aviation Fuel (SAF) with operational flexibility and generate hydrogenated vegetable oil or renewable diesel.

We launched our NZCE 2050 Pathway to our top leaders in October 2022, followed by master classes to ensure a common vision and accelerated delivery by our highly skilled engineering teams, across all parts of the business.

The targets set forth by the NZCE 2050 Pathway are bold and ambitious. Buoyed by strong performance of the past decade of reducing emissions by 18.1 million tonnes of carbon dioxide equivalent cumulatively and our recent impactful acquisitions of specialty chemicals businesses with strong sustainability credentials, will hold us in a good stead to reach our stretch targets.

In support of our NZCE 2050 Pathway, since 2022, senior leader's long-term incentive plan includes a 20 per cent environmental, social and governance (ESG) element encompassing measures relating to the attainment of our Pathway and diversity and inclusion.

### Protecting Our Natural Environment

In December 2022, the United Nations brokered a milestone agreement of halting and reversing biodiversity loss by 2030 through conserving at least 30 per cent of land, freshwater and oceans globally.

We recognise the importance of conserving nature and biodiversity and the interlinkages with climate change. Both areas need to be addressed in parallel. This is why with the approval of the PETRONAS Board, we have established PETRONAS' Position on Nature and Biodiversity, through which wherever possible, we aim to conserve, protect and restore nature.

As one of the most recognised brands in the region, we see the need to demonstrate visible leadership in countries where we operate, not least in Malaysia that is regarded as one of only 17 mega biodiversity countries in the world.

To attain net zero carbon emissions by 2050, PETRONAS will require carbon offsets for residual emissions that cannot be avoided or mitigated. For this purpose, PETRONAS will invest in nature-based solutions.

In Malaysia, we promote the development of high-quality nature-based projects to generate carbon credits certified in accordance with credible international standards. Project development would help channel much needed funds towards land use impact mitigation, forest conservation, peatland management, as well as mangrove, seagrass and coral reef conservation.

Environmental management remains a key focus for our continuous improvement efforts. During 2022, we saw a negative trend for some of our key indicators, most notably for sulphur oxide emissions and hazardous waste, which we are determined to reverse in the coming year.

### Supporting Our People and Enriching Lives

The safety and well-being of our employees, contractors and surrounding communities is central to the success of our daily operations.

In 2022, we placed a particular importance on employees' mental well-being. Our Executive Leadership Team was directly involved through sharing of personal experiences,

thus lifting the stigma that may typically be associated with mental health issues. An end-to-end prevention and support programme was established, with early signs of making a positive impact. During the year, efforts to enhance diversity and inclusion were undertaken to create a more progressive work environment, focusing on leadership and governance, communication, education and culture.

Recognising the need to upskill existing talents to deliver our NZCE 2050 Pathway, we have also prioritised sustainability capability development. Beyond our own workforce, our extensive value chain and global presence exposes the Group to potential human or labour rights breaches, which will only broaden through the energy transition that implies new interactions, business relations and infrastructure development. Thus, we continue to strengthen our approaches to respect human rights, guided by the United Nations Guiding Principles on Business and Human Rights. Third party assurance of suppliers' and vendors' requirements to uphold human rights, showed some level of awareness, but with further work required to uplift human rights commitments and delivery of such.





## Letter from the Vice President and Chief Sustainability Officer

We are also committed to contribute to the well-being and development of surrounding communities. In 2022, close to RM900 million was invested towards Social Impact programmes, benefitting over 1.5 million beneficiaries worldwide. Ninety five per cent of the amount invested focused on education, including a doubling of scholarships to directly benefit 587 students. We have also enhanced efforts to increase the marketability of unemployed Malaysian graduates through the Graduate Employability Enhancement Scheme (GEES), benefitting 4,683 graduates with a total contribution of RM73.7 million since the inception of the programme.

### Transparency in Sustainability Performance and Promoting Good Governance

Brand Finance ranked PETRONAS as the most valuable ASEAN brand in terms of sustainability perceptions. This achievement was undoubtedly helped by our efforts to strengthen transparency of our sustainability impacts and performance.

As we uphold the principle of accountability and earning trust with key stakeholders, we strive to improve both internal management reporting of key sustainability indicators, as well as external disclosure of our strategies and performance in line with recognised international disclosure frameworks.

We have revised our carbon emissions accounting method to adhere to sector-specific guidance and to give us a robust emissions baseline. Our strengthened reporting will improve external benchmarking and provide a better correlation between financial and greenhouse gas emissions accounting. To this aim, we account for our methane emissions, flaring and venting management through the publicly available reports issued by the Methane Guiding Principles and the World Bank's Zero Routine Flaring by 2030 initiative and report through CDP (formerly Carbon Disclosure Project).

New for this integrated report, is our phased adoption of climate-related disclosures as per the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). These disclosures will provide greater transparency around our approach to climate risk.

Throughout the year, efforts were underway to drive accountability and embed sustainability in advisory bodies and decision-making processes across the enterprise. While this work is still underway, important milestones include board deliberations around the development of the Pathway to Net Zero Carbon Emission 2050 and the introduction of sustainability-linked key performance indicators in senior leadership's long-term incentive plans.

### Promoting Progress Through Engagement and Partnerships

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.

The Malaysian Oil and Gas Services and Equipment (OGSE) ecosystem is facing raised expectations on environmental, social and governance (ESG) grounds. In response, the Malaysia Petroleum Resource Corporation (MPRC) is devising a national OGSE sustainability strategy. PETRONAS also works with vendors to identify barriers and help define opportunities for greater ESG adoption among local businesses.

Malaysia recently launched a voluntary carbon trading facility and has plans to develop a domestic emissions trading scheme. These are regarded as important instruments to drive the country's net zero ambitions. In support of this aim, PETRONAS has joined the International Emissions Trading Association (IETA).

At a regional level, we are active in the APEC Business Advisory Council (ABAC). In 2022, we delivered a proposal around building Small and Medium Enterprises' resilience in a low-carbon economy. We also joined the International Renewable Energy Agency's Alliance for Industry Decarbonisation to foster action for the decarbonisation of industrial value chains, promote understanding of renewables-based solutions and their adoption by industry to contribute to country-specific net zero goals.

Furthermore, we are active contributors towards the Global Methane Pledge Energy Pathway and other regional and global initiatives that address methane emissions in oil and gas value chains. In 2022, we signed up to the United Nations Environment Programme's Oil and Gas Methane Partnership 2.0. Through this initiative, we strive to improve the accuracy and transparency of our methane emissions reporting, guided by a comprehensive and measurement-based reporting framework.

Since 2021, we have convened the ASEAN Energy Sector Methane Roundtable, in collaboration with PTT Public Company Limited (PTT) of Thailand, Pertamina of Indonesia and since last year the United States Agency for International Development (USAID). The roundtables continue to engage a diverse set of stakeholders from across ASEAN through information sharing, technical exchange and open conversations, to advance strong performance and effective methane emissions management.

### Outlook

Economic growth across Southeast Asia will put decarbonisation and broader sustainability goals to the test. Each country and each sector need tailored approaches to unlock new business models, without compromising broader development. Conducive policy and regulation will be critical in defining country-specific pathways and in unlocking private sector investment for the next generation of energy systems.

During the year, we stepped up in many ways, from setting measurable targets for our Pathway to Net Zero Carbon Emission by 2050 to investing in real emissions reduction projects, renewables and clean energy solutions. PETRONAS' leading stance on sustainability will not only grow the business, but galvanise innovation, investment and long-term sustainable growth.

For PETRONAS to succeed at speed and scale we will need to work even more intensely across sectors. New value chains need to be defined and deployed. Such can only be achieved through greater collaboration between the private sector, regulators and investors internationally to realise the benefits of e.g., carbon capture and storage (CCS), hydrogen, biofuels and nature-based solutions fully.

**With our commitments and plans to address climate change and nature loss in place, next, we will engage with stakeholders across our value chain to better understand what a just and equitable energy transition may look like and what our role should be.**

The energy transition is not just a technology and investment play, the associated large-scale investments is a once in a generation opportunity to strengthen social progress and reverse nature loss. As Malaysia's oil and gas resource custodian, we strive for socially inclusive and sustainable resource development.

With our commitments and plans to address climate change and nature loss in place, next, we will engage with stakeholders across our value chain to better understand what a just and equitable energy transition may look like and what our role should be.

The coming year will undoubtedly continue to be volatile. As we move forward, we will encounter obstacles in advancing sustainability and an equitable energy transition. However as demonstrated over recent years, PETRONAS remains resilient. Our focus on sustainability and strategic priorities coupled with milestone achievements will cement our position as a dynamic and reliable partner in the energy transition set for long-term success.

**Charlotte Wolff-Bye**  
Vice President and Chief Sustainability Officer

# Our Integrated Approach to Value Creation

## Understanding Our Environment

### Evaluate Our Operating Landscape

See page 78

Our ability to create value is closely linked to the global macroeconomic landscape and its impact on the energy industry. To stay ahead, we closely analyse the factors that influence the macroenvironment in relation to our business and operations. This helps us to identify potential trends and opportunities, enabling us to adapt our strategies and make informed decisions that optimise our value creation capabilities.

### Strengthen Stakeholder Relationships

See page 70

As we expand our portfolio to include cleaner energy solutions, we understand the importance of managing the evolving needs of our stakeholders. We proactively engage in meaningful dialogues, collaborations and engagements on various platforms. This strengthens our position as a trustworthy and credible partner.



### Monitor Risks And Opportunities

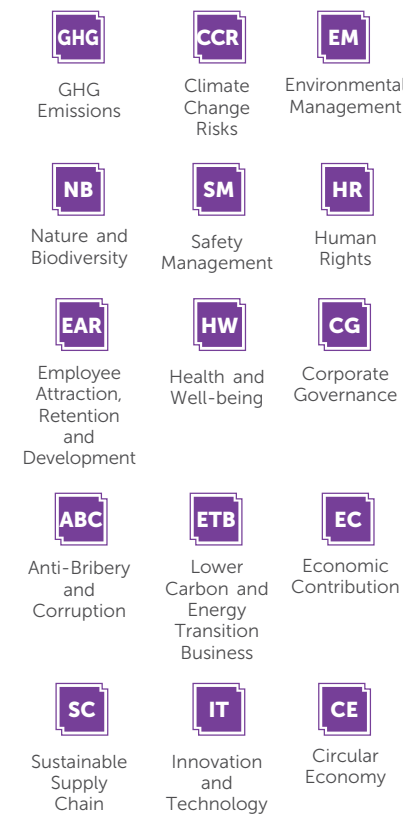
See page 86

With a fully integrated value chain covering upstream, gas, downstream and clean energy, we are exposed to risks and opportunities associated to the energy transition. To ensure the resilience and robustness of our energy portfolio, we continually monitor all risks and effectively mitigate them through our risk management processes. We also view each risk as an opportunity to enhance our operations and to drive our business forward.



## Identifying and Prioritising Our Material Topics

Our ability to create value for stakeholders is influenced by a range of environmental, social and governance (ESG) factors. To ensure we address the issues that matter to our stakeholders, we identified material topics that are closely related or could impact them. This helps us to develop and execute the right strategies to ensure that we continue to deliver value in a sustainable and responsible manner.



See page 80

## Integrating Our Strategy to Allocate Resources Into Our Business Model

### Formulate Business Strategy

See page 102

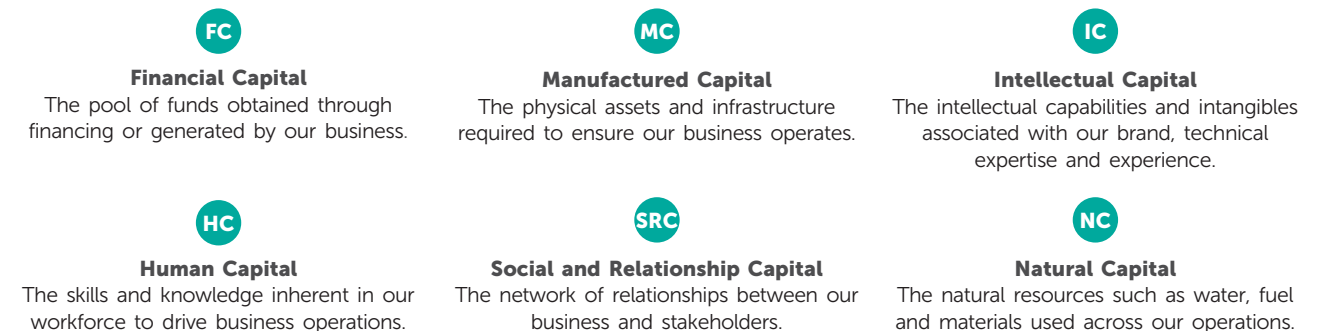
The PETRONAS Energy Transition Strategy anchors on our Statement of Purpose, competitive advantage and commitment to sustainability. We will prioritise reducing emissions as we grow our Core Business and New Business. Equal attention will be given to each priority in our strategy, taking into consideration the availability of resources, opportunities and technological advancements:



### Allocate Our Key Capitals

See page 68

We utilise various financial and non-financial resources, known as the six capitals, to execute our strategy and achieve growth. These capitals include:



## Embedding Ethical Environmental, Social and Governance (ESG) Practices

ESG is the golden thread that binds all elements of our value creation process together. It informs our strategic decisions and daily operations – ensuring that we make choices that are aligned with our values and strategic objectives to enable long-term value creation, while ensuring transparency and accountability for our actions.



# Value Creation Model

## Our Capitals...

## ...Enable Value-Adding Activities that Create

## ...Value for Our Stakeholders

### Inputs

### Guided By

### Business Activities

### Outputs and Outcomes

### Stakeholder

### SDGs

**Financial Capital**  
 • RM710.6 billion in total asset value

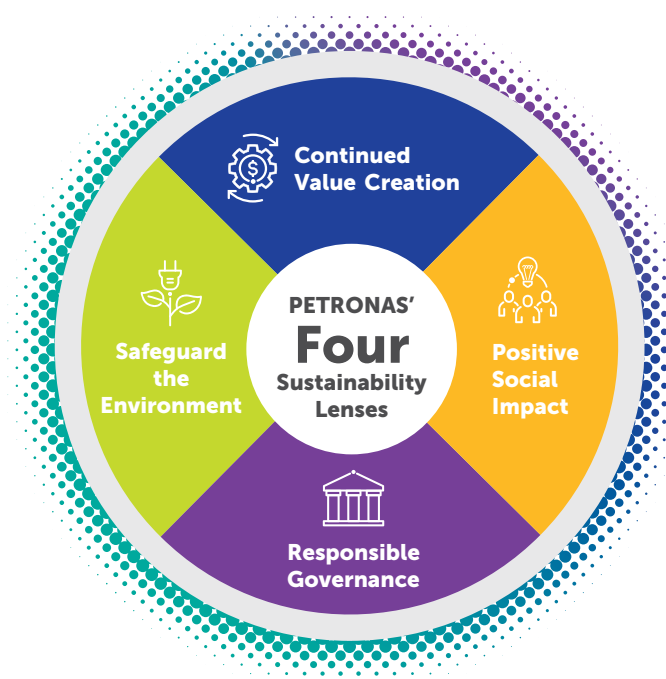
**Manufactured Capital**  
 • Property, Plant and Equipment: RM301.2 billion

**Intellectual Capital**  
 • RM589 million invested in technology  
 • 195 R&D laboratories

**Human Capital**  
 • A diversified workforce of 49,771 employees across the globe  
 • RM264 million invested in training and development

**Social and Relationship Capital**  
 • Close to RM900 million invested in Social Impact activations covering education, community well-being and development and environment

**Natural Capital**  
 • 25 per cent CAPEX spent on New Business  
 • 9.25 Bboe 2P Reserve



### Market Landscape

- Geopolitics
- Economy
- Energy Transition
- Oil
- LNG
- Chemicals
- Upstream
- Post COVID-19 Pandemic Recovery

[Read more on page 78](#)

### Material Topics

- Safeguard the Environment**
  - GHG Emissions
  - Climate Change Risks
  - Environmental Management
  - Nature and Biodiversity
- Responsible Governance**
  - Corporate Governance
  - Anti-Bribery and Corruption
- Continued Value Creation**
  - Lower Carbon and Energy Transition Business
  - Economic Contribution
  - Sustainable Supply Chain
  - Innovation and Technology
  - Circular Economy
- Positive Social Impact**
  - Safety Management
  - Human Rights
  - Employee Attraction, Retention and Development
  - Health and Well-being

[Read more on page 80](#)

### Business Snapshot

**Upstream**  
 Cost efficiency

**Gas**  
 Overall Equipment Effectiveness

**Downstream**  
 Overall Equipment Effectiveness

**Project Delivery and Technology**  
 OTOBOS and technology solutions

**Gentari**  
 Deliver cleaner energy solutions

**Other Businesses**  
 • Maritime and Logistics - Sustainable maritime transportation solutions  
 • Property - Financial sustainability

### Key Risks

- Market Risk
- Financial Liquidity Risk
- Legal and Regulatory Risk
- Sustainability Risk
- Health, Safety, Security and Environmental Risk
- Geopolitical Risk
- Hydrocarbon Reserves and Resources Risk
- Technology Risk
- Execution Risk
- Human Capital Risk

[Read more on page 86](#)

**Financial**  
 • 70% growth in Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA)  
 • RM50 billion dividend to shareholder

**Manufactured**  
 • 34.2 MMT of overall LNG sales  
 • 10.0 million metric tonnes of petrochemicals production volume  
 • 260.7 million barrels of petroleum product sales volume

**Intellectual**  
 • 14 new products and softwares launched  
 • 3 proprietary chemical formulations  
 • 31 patents secured  
 • 13 projects were executed according to on time, on budget, on scope (OTOBOS), while 11 were completed ahead of schedule

**Human**  
 • 48,007 employees completed training and development programmes  
 • 1,384 technical professionals developed

**Social and Relationship**  
 • More than 1.5 million beneficiaries worldwide from PETRONAS' Social Impact activations

**Natural**  
 • 2,434 kboe/d crude oil, condensates and natural gas production  
 • 0.6 Million tCO<sub>2</sub>e GHG emissions reduction  
 • 62,790 tonnes nitrogen oxides  
 • 60,116 tonnes sulphur oxides  
 • 20% reduction in flaring and venting emissions in our Malaysia operated assets including four fields achieving zero routine venting of hydrocarbon  
 • 73,643 tonnes waste recycled and recovered  
 • 487 tonnes hydrocarbon discharges to water  
 • 2 hydrocarbon spills into the environment over one barrel



### PETRONAS Energy Transition Strategy

- **Core Business** - More Energy, Less Emissions
- **New Business** - Capturing New Growth Opportunities
- **Net Zero Carbon Emissions** - Pathway to Zero

SUPPORTED BY A ROBUST GOVERNANCE FRAMEWORK: Highest standard of governance and effective board leadership

# Performance by Capital

	FC Financial	MC Manufactured	IC Intellectual	HC Human	SRC Social and Relationship	NC Natural																																																																																																																					
Introduction	Guided by our strategy and NZCE 2050 Pathway, we invest responsibly, practice prudent financial management and firm capital discipline to finance our operations and ensure sustainable business growth.	We leverage our vast range of assets to deliver secure and affordable energy. Our efficient and reliable assets allow us to meet evolving market demands and achieve our net zero ambition. We continuously invest in new technologies to drive down emissions from our operations and advance business growth priorities.	We have a strong foundation of intellectual capital to create proprietary technologies, system procedures and protocols that enable us to deliver sustained value and growth.	Our diverse and high-performing workforce is essential to delivering our strategic priorities. We invest in nurturing agile, innovative, future-ready, skilled employees.	We remain steadfast in building trust, supporting our communities and forging strong relationships to create a positive impact through numerous initiatives. Establishing a meaningful connection with our communities that grants and preserves our license to operate.	Given our reliance on a wide spectrum of natural resources, we strive to continuously minimise our environmental impact, while ensuring the security of the energy supply over the long term. With our NZCE 2050 Pathway in place, we are focused on reducing emissions from our operations with abatement levers that have been identified to achieve our target.																																																																																																																					
Input	<ul style="list-style-type: none"> <li>RM710.6 billion in total assets</li> <li>RM401.6 billion shareholders' equity</li> <li>RM135.3 billion cash flows from operations (CFFO)</li> <li>RM85.2 billion free cash flow</li> </ul>	<ul style="list-style-type: none"> <li>224 producing fields</li> <li>451 offshore platforms</li> <li>34 floating facilities</li> <li>4 LNG plants</li> <li>2 LNG floating facilities</li> <li>5 gas processing complexes</li> <li>1 utility plant</li> <li>2 regasification terminals</li> <li>5 refineries</li> <li>19 petrochemical manufacturing sites</li> </ul>	<ul style="list-style-type: none"> <li>RM589 million invested in technology</li> <li>195 of R&amp;D laboratories</li> <li>183 dedicated researchers</li> </ul>	<ul style="list-style-type: none"> <li>49,771 total PETRONAS employees</li> <li>29% of PETRONAS employees are women</li> <li>RM264 million invested in training and development</li> <li>5,210 total PETRONAS new hires</li> <li>293 scholars recruited</li> </ul>	<ul style="list-style-type: none"> <li>Close to RM900 million invested in education, community well-being and development and environment programmes aimed at uplifting the livelihoods and living standards of local communities where we operate.</li> </ul>	<ul style="list-style-type: none"> <li>9.25 Bboe 2P Reserve</li> <li>81.6 million m<sup>3</sup> total freshwater withdrawal</li> </ul>																																																																																																																					
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Actions To Enhance Outcomes	<ul style="list-style-type: none"> <li>Prudent management of financial commitments, firm discipline in capital allocation and responsible investment.</li> <li>Effective asset and liability management and implementation of strategies to manage risks.</li> <li>Strive to adopt the highest standards of governance and transparency, including TCFD.</li> </ul>	<ul style="list-style-type: none"> <li>Continued to ensure proper maintenance of assets to deliver operational excellence.</li> <li>Expanded our product portfolio to meet the growing demand for lower carbon energy solutions to capture new value.</li> <li>Strengthened presence in key areas to future-proof the business and deliver business targets.</li> </ul>	<ul style="list-style-type: none"> <li>Accelerated deployment and execution of R&amp;D and Delivery projects.</li> <li>Intensified review of intellectual property (IP) portfolio to maximise the potential of existing and inactive IP.</li> <li>Intensified efforts in lower carbon technology and innovation towards realising NZCE 2050 Pathway.</li> <li>Pursued opportunities to commercialise our technology and digital solutions.</li> </ul>	<ul style="list-style-type: none"> <li>Accelerated upskilling and reskilling efforts to equip employees with new skills and capabilities needed to support the delivery of core, new business and NZCE 2050 goals.</li> <li>Enriched the learning content on myLearningX, a Groupwide internal training platform to empower a self-learning culture across the organisation.</li> <li>Introduced flexible working arrangement (FlexiWork) to promote a conducive work environment and culture to improve employee well-being and productivity.</li> <li>Improved Employee Value Proposition to enhance overall employees' experience.</li> </ul>	<ul style="list-style-type: none"> <li>Continued to engage and collaborate with various state agencies and Non-Governmental Organisations (NGOs) to uplift communities.</li> <li>Introduced Discover PETRONAS to more schools across Malaysia as part of our efforts to invest in future talents that can positively contribute to their communities.</li> <li>Increased the number of scholarships awarded to deserving students to pursue tertiary education at leading local and international universities.</li> </ul>	<ul style="list-style-type: none"> <li>Increased crude oil production from international operations.</li> <li>Focused on delivering energy from our core resources that are cost-optimised and emissions-abated.</li> <li>Addressed emissions by focusing efforts on reducing flaring and venting, energy efficiency and electrification.</li> <li>Introduced our position on nature and biodiversity to conserve, protect and restore nature.</li> <li>Provided customers with cleaner energy solutions in renewable energy, hydrogen and green mobility under Gentari which also contributes to reducing our carbon footprint.</li> </ul>																																																																																																																					
Trade Offs	<ul style="list-style-type: none"> <li>Amid an accelerated energy transition, there is a need to exercise discipline in capital allocation and portfolio reshaping between our core business predominantly our Manufactured Capital as well as growth areas, even as we future-proof our portfolio to ensure investments are done responsibly.</li> <li>Our new businesses will generate lower, albeit more stable returns and contribute towards delivering our NZCE 2050 Pathway.</li> </ul>	<ul style="list-style-type: none"> <li>The growing demand for cleaner energy solutions will also impact our Natural Capital, Social and Relationship Capital and Financial Capital in the longer term.</li> <li>We invested in technologies and innovation to reduce emissions from our operations and develop cleaner energy solutions to realise our NZCE 2050 Pathway.</li> <li>Our focus on decarbonising our operations and expansion into cleaner energy solutions means expanding our Manufactured Capital to include renewable infrastructure requiring significant Financial Capital in the near term. However, this will have a positive impact on all other capitals, particularly Natural, Social and Relationship and Intellectual Capitals.</li> </ul>	<ul style="list-style-type: none"> <li>We continued to invest in technology and innovation to improve the quality of our operations and lower our emissions. However, the accelerating rate of technological change will require a faster pace of innovation for our products and solutions to remain relevant.</li> <li>While these investments will impact our Financial Capital over the long-term, it will increase the value of our Human, Financial, Social and Relationship Capitals.</li> </ul>	<ul style="list-style-type: none"> <li>Operating effectively and efficiently in a rapidly changing energy landscape will require investment to shift our talents from resource-based to market-based skills. Growing global competition for talent will need significant investments in retaining and attracting the right talent to see through our strategy and ambition. Managing this will impact our Financial Capital but will positively impact Human Capital to deliver business effectively and benefit Financial Capital in the longer term.</li> </ul>	<ul style="list-style-type: none"> <li>While this may have impacted our Financial Capital, it has enhanced our position as a responsible corporate citizen among our stakeholders which indirectly serves all our other capitals.</li> </ul>	<ul style="list-style-type: none"> <li>As we progress in our NZCE 2050 Pathway, efforts to abate and/or offset carbon emissions from our operations will result in higher costs. Nevertheless, this will contribute towards reducing our carbon footprint and improving our Natural Capital.</li> </ul>																																																																																																																					



# Engaging with Stakeholders

## Partnering with Stakeholders in Delivering Our Purpose

At PETRONAS, we are committed to building meaningful collaborations to progress together with our stakeholders in achieving our business aspirations and realising our NZCE 2050 Pathway. We hold true to our ethos of building trusted relationships with our stakeholders, proactively engaging with a broad range of groups to promote our efforts as a global energy company whilst adding value to Malaysia's energy resources and supporting economic value creation.

As expectations and scrutiny from stakeholders increase, proactive and frequent engagements are critical in ensuring balanced and timely responses to their concerns and interests. These collaborations are essential in shaping a positive perception of PETRONAS, particularly concerning our approach to sustainability. We monitor our engagement outcomes and measure our stakeholder sentiments periodically to ensure timely interventions. We can achieve our goals and contribute to a sustainable future by working collaboratively with our stakeholders.

### Quality of Engagement

- No existing relationship
- Relationship established, but much work to be done to improve quality of relationship
- Relationship established, value-generating connection, but with some room for improvement
- Good-quality, mutually beneficial relationship, with some room for improvement
- Strong relationship of mutual benefit

### Frequency of Engagement

- AR** As Required
- W** Weekly
- M** Monthly
- E** Every Two Months
- Q** Quarterly
- T** Twice Yearly
- Y** Yearly

## FD Federal/Host Governments ●●●●○

**Material Topics** EC SM LCT CG EM GHG

**Risks** FLR SR

**Capitals** FC HC IC MC SRC NC

**UNSDGs** 7 8 9 13

### Why Are They Important

Proactive engagements with governments and regulators enable transparent and trusting relationships which ensure seamless and continuous business operations, advance mutually beneficial commercial objectives and contribute to policy formulation that supports positive growth for the energy sector. This strengthens our role as a trusted partner in realising the government's aspiration to drive the nation's progress.

### Key Concerns

- Nation-building agenda.
- Sustainable development.
- Compliance with laws and regulations.
- Human capital development.
- Social development.
- Health and safety.
- Ethical business practices.
- Environment and climate change.
- Employment opportunities.

### Response

- Supported nation-building agenda as a thought partner and policy contributor to develop and strengthen Malaysia's economic sectors via these initiatives;
  - (i) Collaboration with the Economic Planning Unit (EPU), to expand on collaboration relating to sustainability efforts.
  - (ii) Advisory in Chemical Industry Roadmap.
  - (iii) Support the capability development agenda in the National Oil and Gas Service and Equipment (OGSE) blueprint.
- Operated in compliance to industry safety standard, local and international laws and regulations.
- Supported nation-building initiatives and national-level crisis mitigation efforts such as contributions towards flood relief assistance.
- Engaged in partnerships for social development projects.
- Provided regular updates on issues affecting our operations and the economy.
- Active engagements and continuous collaborations with host authorities and embassies to build strong relationships.

### Value Created for Stakeholders

- Supported nation-building through economic contribution, providing human capital development and employment opportunities.
- Contributed to help shape policies for the energy industry towards realising the government's energy aspirations.

### Engagement Platform

Engagement Platform	Frequency
• Face-to-face and virtual meetings	AR
• Regular reporting, briefings and meetings	M
• Periodical performance briefings	Q
• Collaboration and participation in government-led programmes	AR
• Conferences and exhibitions	Y
• National OGSE Steering Committee	T

## ST State Governments ●●●●○

**Material Topics** EC SM LCT EM

**Risks** FLR

**Capitals** FC HC IC MC SRC NC

**UNSDGs** 7 8 9 13

### Why Are They Important

We continuously engage with state governments to broaden their understanding of our operations, given our presence in various key states in Malaysia. We conduct our operations in accordance with all regulatory requirements to ensure safe and reliable operations. With their continued trust and support, we created business opportunities for local industries, empowered local communities and contributed to the state's, and by extension, the country's economy.

### Key Concerns

- State economic development.
- Skills and entrepreneurship development.
- Employment opportunities.
- Sustainable development.
- Health and safety.
- Environment and climate change.
- Social development.

### Response

- Supported states' economic development via
  - (i) Transformation projects,
  - (ii) Communication with businesses, various state governments and agencies for business opportunities in the new energy sector,
  - (iii) Business arrangements and commercial collaborations,
  - (iv) Advisory in states initiatives and programmes.
- Maintained regular engagements with authorities to ensure close adherence to state laws and regulations.
- Steered Social Impact programmes to elevate socio-economic and community welfare.
- Closely collaborated with state governments via Annual Strategic Dialogues (ASD) and Joint Coordination Committees (JCC) to enhance state participation in the oil and gas industry.

### Value Created for Stakeholders

- Spurred the state's economic development and elevate socioeconomic through human capital development and employment opportunities that is equitable for the locals while operating in a sustainable manner.
- Partnered with respective states to explore and provide new business opportunities.

### Engagement Platform

Engagement Platform	Frequency
• Face-to-face engagements and virtual meetings	AR
• Annual Strategic Dialogues	Y
• Regular meetings, briefings and updates to various State Ministries	AR
• Participate in state governments' policy shaping initiatives and programmes	Q
• Joint Coordination Committee meetings	Q

## Engaging with Stakeholders

### C Customers

Material Topics: SM, HW, IT, SC, EM, HR, CE  
 Risks: HR, GR, TR, SR, LR  
 Capitals: FC, IC, MC, SRC  
 UNSDGs: 7, 9, 12, 13

#### Why Are They Important

Customers provide us with valuable feedback to make our business better. We improve customer experience by listening and addressing their needs. We strive to develop innovative products, services and technological solutions to meet their ever-changing demands in a time of increased scrutiny for environmental considerations.

#### Key Concerns

- Customer experience.
- Health and safety.
- Operational efficiencies.
- Product quality and availability.
- Product pricing and credit terms.
- Ethical business practices.
- Sustainability matters.
- Environment and climate change.

#### Response

- Provided customers with high quality, innovative products and solutions in line with our approach to sustainability.
  - (i) Diversified petrochemical products for example specialty chemicals.
  - (ii) EV charging network in Malaysia and India.
- Listened to customer pain points and launched initiatives to provide variation and accessibility to customers.
  - (i) Introduced a one-stop e-commerce platform via the PETRONAS Shop, available on the Setel, Lazada and Shopee apps.
  - (ii) Launched Café Mesra, to grow the non-fuel business in the food and beverage (F&B) business.
  - (iii) Launched the first Mini Portable Container System, in collaboration with the Ministry of Domestic Trade and Consumer Affairs to help rural communities in East Malaysia gain access to fuel.

#### Value Created for Stakeholders

- Created positive customer experience through quality, convenience and innovative products, supported by timely product delivery and reliable after-sales support.

#### Engagement Platform

Engagement Platform	Frequency
• Face-to-face meetings with customers	AR
• Events, dialogues, roadshows and engagements	Y
• Social Media Platform (YouTube, Facebook, Instagram, Twitter)	W
• PETRONAS corporate website	Q
• Customer feedback system	Q
• Marketing activities and outreach programmes	Q
• Online customer surveys	Y
• Customer appreciation programmes	Q

### IE Internal/Employees

Material Topics: SM, CG, HW, EAR, HR, IT  
 Risks: HSR, TR, ER, HCR, SR  
 Capitals: FC, HC, IC, SRC  
 UNSDGs: 3, 4, 5, 8, 9

#### Why Are They Important

Our people are our most valuable asset. Their safety, well-being, including their mental and physical health are our top priority.

Our employees are key in realising our growth journey. Their courage and resilience helped us achieve significant milestones in 2022, against a challenging business environment. Their competencies, knowledge, dedication and agility give PETRONAS the competitive edge to drive business goals.

#### Key Concerns

- Job security.
- Competitive remuneration and benefits.
- Flexible work arrangements.
- Opportunities for career progression.
- Learning and development and on-the-job learning opportunities.
- Strategic direction, business growth and performance.
- Safe, healthy and conducive working environment.
- Ethical and sustainable business practices.
- Diversity and inclusion.
- Positive behaviour and mindset.

#### Response

- Continued to upskill and reskill our people to maximise their potential.
- Provided regular updates via various internal digital platforms to keep employees informed, engaged and assured.
- Continued holistic wellness support programmes such as the Employee Assistance Programme (EAP), counselling and stress management sessions to safeguard employees' mental health and overall well-being.
- Extended EAP to family members to strengthen our employees' support system.
- Introduced the PETRONAS FlexiWork Arrangement to improve employee productivity and enable them to thrive in any working environment.
- Enhanced awareness on the importance of diversity, equity and inclusion which includes programmes that uplift women in leadership through the PETRONAS Leading Women Network (PLWN).
- Provided young talents with a safe space to contribute ideas, connect with peers and nurture their passion through the PETRONAS Young Professionals Club (YPC).
- Recruited talents from the local communities where we operate and ensured effective succession planning for diverse representation in leadership roles.
- Leveraged PETRONAS Organisation Culture Survey (POCS) and internal talent management system (myCareerX) to provide a safe environment for employees to speak up in fostering diversity, inclusion, creativity and innovation.
- Organised appreciation for long-serving employees and retirees by conducting the Long Service Awards (*Majlis Sekalung Budi*) event.
- Conducted nationwide showcase to engage with staff on HR transformation solutions.

#### Value Created for Stakeholders

- Provided growth opportunities and the right environment to harness our people's passion to achieve their potential in shaping an innovative and agile workforce of the future.

#### Engagement Platform

Engagement Platform	Frequency
• Townhalls	Y
• Staff engagement sessions (in-person, virtual and hybrid)	M
• Internal digital communications	W
• Health, Safety and Environment campaigns	W
• Upskilling sessions (in-person, virtual and hybrid)	AR
• Annual health survey	Y
• Organisational culture survey	Y



## Engaging with Stakeholders

### SIC Shareholders/Investors/Credit Rating Agencies

**Material Topics** EC GHG LCT SM CG CCR **Risks** MR FLR HCR GR SR TR LR ER **Capitals** FC HC IC MC SRC NC **UNSDGs** 7 8 9 12 13

#### Why Are They Important

We nurture stakeholders' trust and confidence to ensure continued access to capital at competitive rates and/or terms.

We engage with stakeholders frequently, as their perspectives and insights enable early identification of opportunities, risks and emerging trends within the financial markets, which contribute towards achieving our strategic priorities in the long term.

#### Key Concerns

- Business and industry outlook.
- ESG and energy transition.
- Financial positions and shareholders' returns.

#### Response

- Provided timely and comprehensive reporting.
- Demonstrated robust fundamentals and delivered resilient financial performance.
- Increased disclosure in sustainability to elevate transparency, aligned with international frameworks and standards.

#### Value Created for Stakeholders

- Timely guidance on PETRONAS' performance, business strategies and industry outlook.
- Clarity on PETRONAS' sustainability journey, particularly on our progress towards NZCE 2050.

#### Engagement Platform

	Frequency
Stakeholder engagements	Q
Quarterly and annual financial results announcements	Q
Analyst briefings	Q
Announcements and disclosures via corporate website	Q
Annual General Meetings	Y

### M Media

**Material Topics** CG ABC IT LCT CCR **Risks** SR **Capitals** FC MC SRC **UNSDGs** 9 12 13

#### Why Are They Important

We work with media practitioners to gain stakeholder insights and relay accurate information to safeguard our reputation and brand. We maintain professional relationships with the media to build trust and ensure mutual accessibility to information that can increase PETRONAS' share of voice and address the expectations of our targeted audience, the industry and general public.

#### Key Concerns

- Governance.
- Financial Performance.
- Products and Services.
- Leadership.
- Sustainability and NZCE 2050 Pathway.

#### Response

- Implemented robust media strategies and plans.
- Ensured timely communication and dissemination of information.
- Provided access and platforms for open and constructive engagement.
- Collaborated and supported meaningful media initiatives.

#### Value Created for Stakeholders

- Credible partners in communicating accurate and timely information.
- Advocate for transparency, ethical business conduct and practices, business performance, environmental, social and corporate governance, health and safety commitments, innovation and technology.

#### Engagement Platform

	Frequency
Physical and virtual engagement sessions which include dialogues with senior management, press conferences, financial results announcements, media interviews (pitched and media buy) and outreach activities during festivities	Q
Timely dissemination of information (press releases, statements, announcements, responding to media queries)	W
Media sponsorships to support media causes and accolades	Y

### IPG Government Linked-Companies (GLCs) and Industry Partners

**Material Topics** CG SM LCT IT ABC **Risks** MR HSR HR ER SR LR **Capitals** FC IC MC SRC NC **UNSDGs** 7 8 9 12 13

#### Why Are They Important

Collaborations with other GLCs and industry partners lead to elevating industry standards. It nurtures a mutually-thriving sustainable energy industry through the exchange of insights and expertise. This strengthens our role as a responsible partner for the industry while venturing towards new areas of growth in realising a Just Transition, in support of our NZCE 2050 Pathway and meeting the needs of a low-carbon economy of the future.

#### Key Concerns

- Governance and integrity.
- Health, safety and environment.
- Industry requirements, regulations, policies and local participations.
- Readiness for energy transition (technology and capability).
- Business challenges and opportunities.

#### Response

- Enhanced knowledge exchange and avenues for business growth of the Oil and Gas Services and Equipment (OGSE) industry via participation in exhibitions, technical presentations and panel discussions for local and international companies to showcase their capabilities, network and explore business opportunities for example Malaysia Oil & Gas Services Exhibition and Conference (MOGSEC).
- Organised continuous vendor engagement programmes to address their concerns on licensing, procurement processes and more.
- Conducted proactive and regular stakeholder engagements to boost the capabilities of local companies through the Vendor Development Programme (VDP) and VDPx by expanding their footprint across industries to be more resilient and competitive via collaborations with industry partners.
- Regular dialogue sessions while engaging in strategic conversations to exchange feedback, insights and perspectives.
- Participated in GLC Open Day to give the public a closer look and experience with GLC and GLIC as well as global energy conferences, for example, CERAWeek and the World Economic Forum, to exchange new ideas, insights and solutions on energy security, climate change and energy transition.
- Collaborated with local and global partners to accelerate technology research, solutions adoption and talent development.

#### Value Created for Stakeholders

- Ensured industry growth by cooperating with partners through research, development and commercialisation of technology solutions suitable for the energy industry and beyond.
- Improved industry standards and regulation by working closely with regulators (government and non-government).
- Facilitated operational improvements in the energy industry by applying best practices such as adopting robotics and digitalisation and elevating technology capabilities through multilateral knowledge sharing.
- Encouraged economic growth in the Oil and Gas Services and Equipment (OGSE) industry through local industry and human capital development.
- Coordinated and aligned initiatives where synergies exist to optimise scope and develop fit-for-purpose efforts for the OGSE industry.
- Develop a robust, resilient and globally competitive OGSE sector that ultimately contributes to the sustainable development of industry partners.
- Accelerated collaboration with GLCs and industry partners to advance net zero carbon emissions initiatives and commercialisation of in-house technology.

#### Engagement Platform

	Frequency
Face-to-face and virtual meetings (formal and informal) e.g. courtesy calls	M
Familiarisation visits with stakeholders	Q
Official events (MoU signings, Launch etc)	Q
Forums and Exhibitions	Q

## Engaging with Stakeholders

### CN Communities/Non-Governmental Organisations (NGOs)



#### Why Are They Important

We value the close working relationship we have established with our Non-Governmental Organisation (NGO) partners in enriching lives of the communities where we operate. This is in tandem with our aim to deliver sustainable positive impact and improve the quality of life and socio-economic outcomes for a shared sustainable future.

#### Key Concerns

- Governance and integrity.
- Health, safety and environment.
- Education.
- Social well-being.
- Ethical practices.
- Human rights.
- Regulatory compliance.

#### Response

- Implemented community, development, social economic programmes and education sponsorships.
- Collaborated with NGOs for the protection and preservation of wildlife, environmental and social causes.
- Installed solar and lighting systems for 156 *Orang Asli* homes across six villages and clean water solutions in Kampung Gakyah, Bera, Pahang.
- Collaborated with NGOs in providing flood relief assistance which included cash donation, distribution of care packages and flood relief equipments.
- Provided skills training to improve the B40 communities' living standards and income stream through the MEKAR (*Memampankan Ekonomi Asas Rakyat*) programme.
- Uplifted communities and worked with NGOs to create positive social impact, safeguard the environment and deliver continuous value creation.

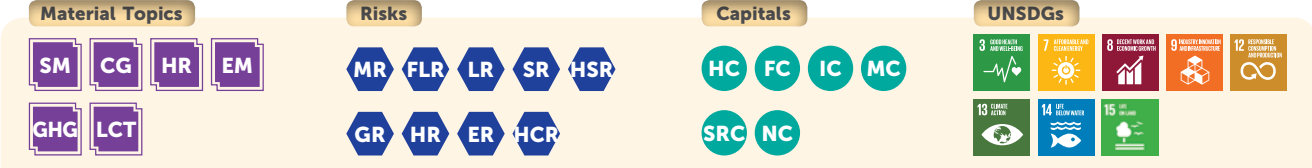
#### Value Created for Stakeholders

- Provided education sponsorship benefitting about 600 recipients from diverse ethnic and economic backgrounds.
- Provided enterprise-level assistance such as Flood Relief Assistance.
- Collaborated with Universiti Teknologi PETRONAS (UTP) on the Towards Uplifting Life Programme (TULiP) to elevate our Social Impact initiatives, focusing on entrepreneurship training, GIATMARA training for local youth and sustainability of the communities through socio-economic empowerment for Sabah-Sarawak Gas Pipeline (SSGP) in Lawas.
- Contributed home medical equipment to 965 beneficiaries nationwide through the Department of Social Welfare with an estimated value of RM2.2 million. Beneficiaries from 13 states and two federal territories (except Putrajaya) received 609 hospital beds, 44 oxygen concentrators and 312 wheelchairs.

#### Engagement Platform

Engagement Platform	Frequency
Social Impact activations	Q
Periodic briefings	Q
Regular engagements with local communities	W
Sentuhan Kasih programmes	M

### IO International Organisations



#### Why Are They Important

We build long-term partnerships based on common goals and continue working closely with key organisations to elevate inclusive participation, discussion and actions for a just and responsible energy transition.

#### Key Themes

- Challenges and opportunities in the energy transition.
- Capacity and capability building.
- Sharing of global best practices, standards and frameworks.

#### Response

- Elevated ASEAN leadership in methane emissions management as a convener and co-host of the ASEAN Energy Sector Methane Roundtables. These roundtables raise awareness, build capability and promote ASEAN collaborations in methane emissions management in the region through advocacy, policy harmonisation, technology transfer and financial options.
- Built partnerships and promoted exchanges among key stakeholders, including government officials and international organisations, in advancing the climate actions in conjunction with the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) 27.
- Demonstrated visible leadership on nature and biodiversity by hosting a Business and Nature roundtable with International Organisations, the Ministry of Energy & Natural Resources and forestry departments in conjunction with Convention on Biological Diversity (CBD) COP 15 in Montreal, Canada. The roundtable promotes expediting nature actions across several issues such as nature, biodiversity, water and climate change.
- Demonstrated thought leadership by conducting sustainability-themed engagement sessions with the PETRONAS Board through the World Business Council on Sustainable Development (WBCSD) and the United Nations Environment Programme (UNEP), World Conservation Monitoring Centre (WCMC) etc.

#### Value Created for Stakeholders

- Fostered multi-stakeholder collaborations to build a fair and inclusive energy transition towards a lower carbon economy.
- Promoted cross-learning and knowledge transfer in energy transition via collective participation in capacity-building programmes.

#### Engagement Platform

Engagement Platform	Frequency
Formal face-to-face engagements	M
Virtual meetings	M
Dialogues, panel and roundtable discussions	Q



# 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.

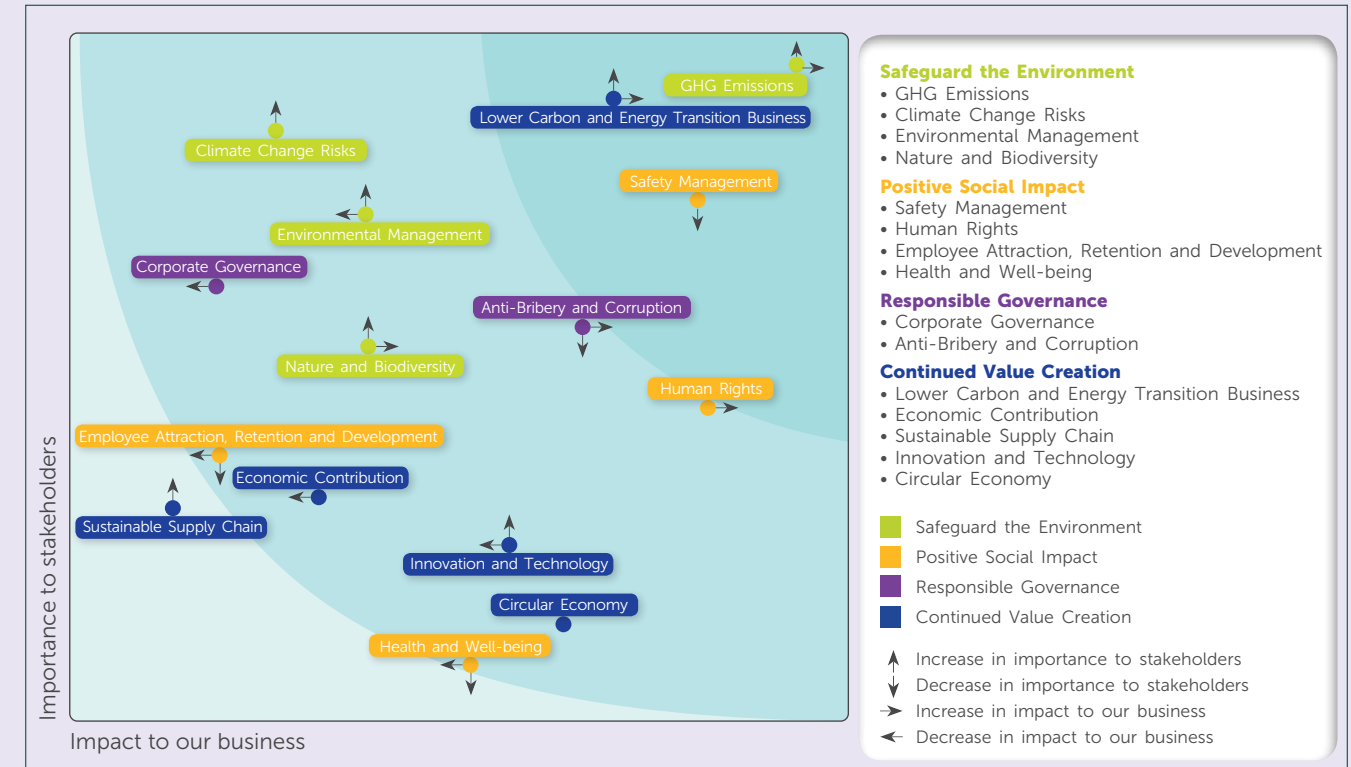
## Materiality Assessment Revalidation



## 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	• Reflects our commitment to conserve, protect and restore nature, with terms better aligned to PETRONAS' Position on Nature and Biodiversity.
Physical Climate Risk and Adaptation	Climate Change Risks	• Emphasises the equal importance of both physical and transition risks and opportunities. • Covers governance systems and processes to manage climate-related risks and opportunities.
Renewable Energy	Lower Carbon and Energy Transition Business	• Highlights our focus on new non-traditional businesses to complement our existing core in oil and gas. • Includes opportunities in natural gas, hydrogen, green mobility, biofuels and specialty chemicals, among others.
Innovation and Circularity	Innovation and Technology	• Emphasises innovation and technology as a strategic differentiator.
	Circular Economy	• Emphasises our increasing commitment in circular economy.



## 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.

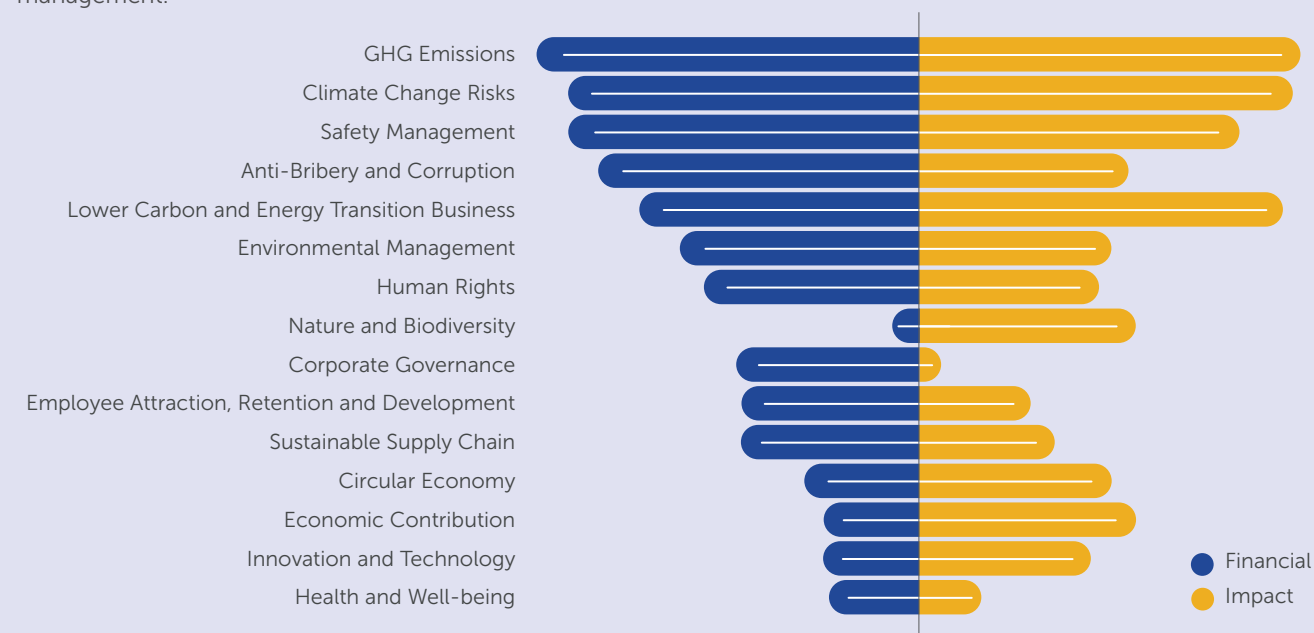
One of the topics that has gained importance in our materiality assessment is GHG emissions. We have set ambitious targets to achieve net zero carbon emissions by 2050 and reducing our GHG emissions is a critical component of this goal.

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: 7, 9, 13

#### 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: 8, 13, 15

#### 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: 3, 6, 13, 14, 15

#### 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: 6, 13, 14, 15

#### 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: 3, 8

## 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

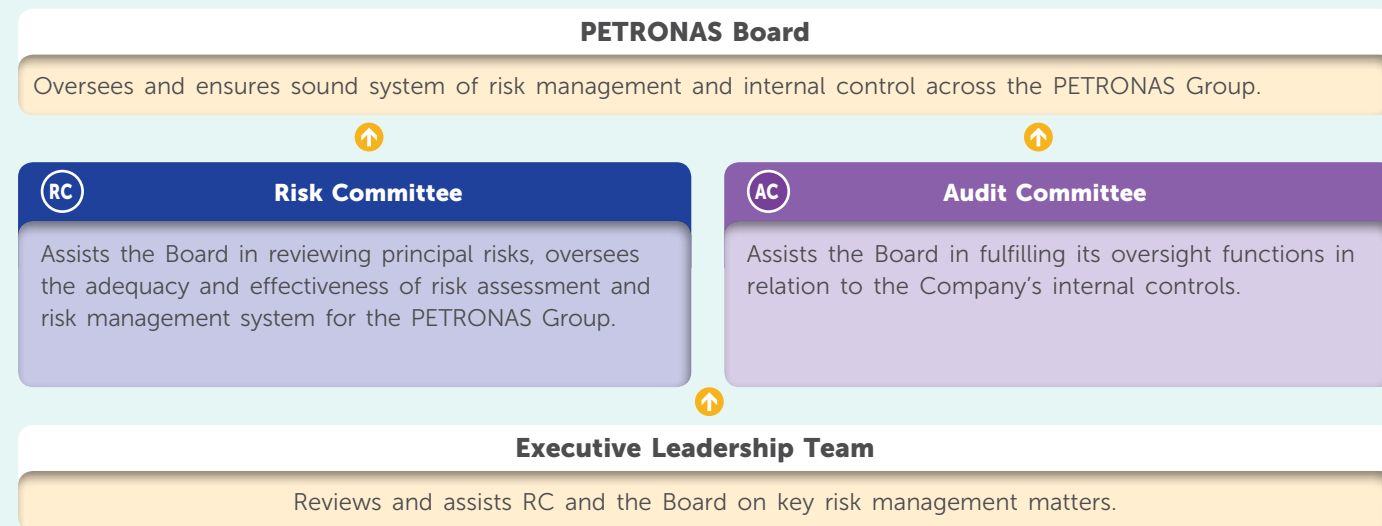
Effective risk management is fundamental to our value creation, especially given the dynamic and volatile landscape following post-pandemic recovery and heightened geopolitical uncertainties in 2022. As we accelerate our progress in energy transition, we are expanding our stepping-out beyond current 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.

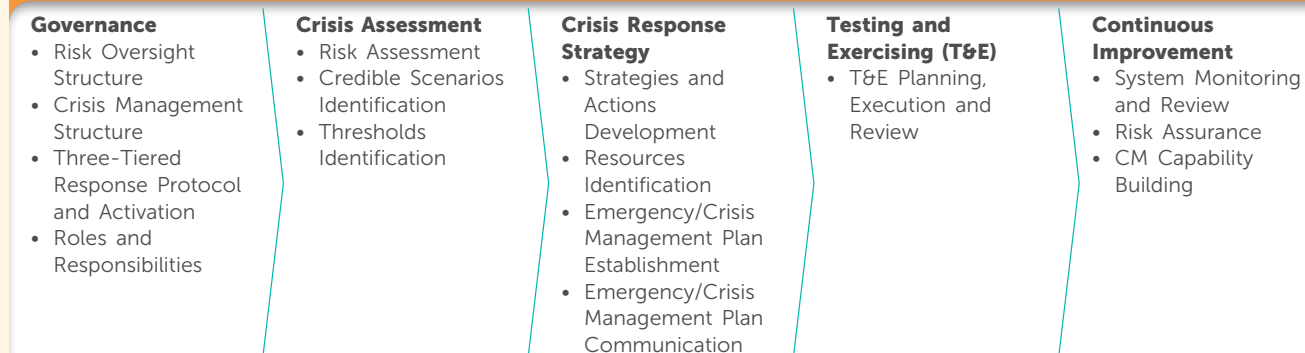
### ERM Framework



**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.

### BCM Framework



## 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



#### 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 FLR

#### 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 LR

#### 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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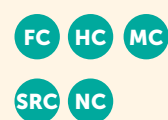
#### Material Topics:



#### Stakeholders:



#### Capitals:



#### SDGs:



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

#### 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

- 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.
- Reinforce competency and assurance levels, supported by digital and focused technologies to strengthen operational discipline.
- Establish Security Academy to enhance capacity development and management for security practitioners.
- Optimise our security readiness through continuous protective security monitoring and predictive analysis.
- 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 GR

#### 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 HR

#### 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 TR

#### 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 ER

#### 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.

##### Social and Relationship Capital:

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

##### 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.

#### Mitigation Strategies

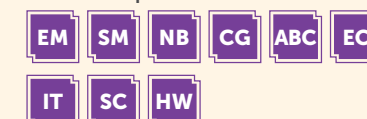
- Establish and implement relevant frameworks and standards to effectively manage PETRONAS' plant and procurement activities. This includes the implementation of project, plant and facilities risk management according to relevant system guidelines and processes such as PETRONAS Group Project Management 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.
- Establish procurement standards that streamline procurement governance across business units and vendors.
- 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.
- 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.
- 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.
- 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

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>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.</li> <li>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</li> </ol> | <ol style="list-style-type: none"> <li>3. Continuously build a pipeline of leaders and talents to ensure sustainable bench-strength succession.</li> <li>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.</li> </ol> |
|--|---|
- sustainability. We equip senior leaders to lead and navigate the business and the workforce to achieve organisational goals through our signature programmes.

#### 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 ZER 2050 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), Ipeca 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).

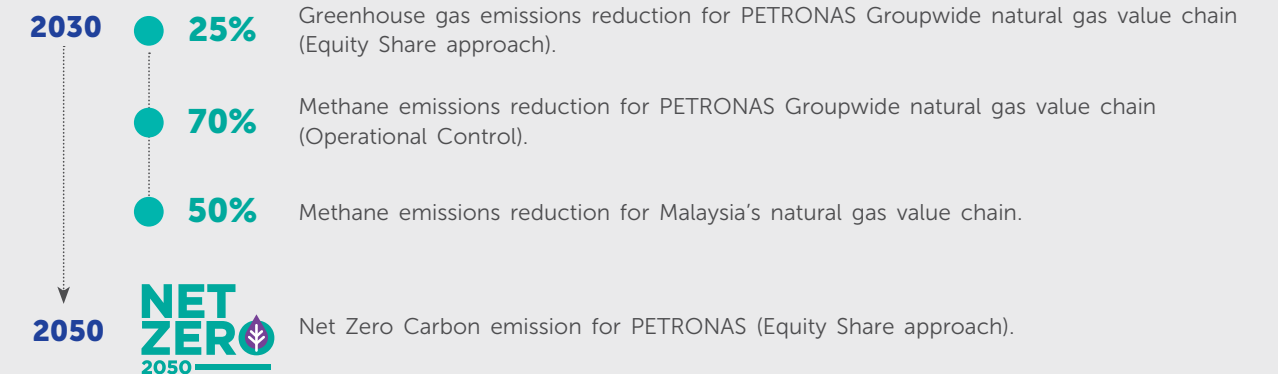
**2025** Fifty per cent Methane emissions reduction for PETRONAS Groupwide natural gas value chain<sup>2</sup> (Operational Control).



## 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.

- **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.





# Upstream



**Datuk Adif Zulkifli**  
Executive Vice President and Chief Executive Officer, Upstream

In 2022, the world leaned on oil and gas to meet its energy needs in light of the geopolitical turmoil. This led to record high energy prices and an uptick in upstream activities against the backdrop of increased costs. And the industry responded, delivering the energy security needed in a sustainable manner.

A renewed focus on the home front rendered a string of successful exploration discoveries which grew Malaysia's resource base. We also sanctioned a slew of projects and activities to continue safeguarding the country's energy security and guaranteeing the vibrancy of its oil and gas industry. Internationally, the reshaping of our portfolio is ongoing through growth in some of the world's most prolific basins. We also undertook a series of high-grading efforts, driven by a relentless focus on value and delivering differentiated barrels.

Finally, we made great strides in decarbonisation and carbon capture and storage (CCS); sanctioning our flagship CCS project while maturing more projects in the pipeline. On the service front, we forged partnerships with leading industry players and customers across the value chain, in positioning Malaysia as a regional CCS hub.

Upstream will continue to balance our responsibility while transforming into a low-cost and low-carbon business through strategic and decisive measures, including an enhanced focus on HSE and integrity, which we consider key pillars for success.



Recorded a total daily production average of **2,434** thousand barrels of oil equivalent (boe) per day.



**9.25**  
Bboe Proved and Probable (2P) Reserves.

**10.4**



3-year average 1P Reserve Life Index (RLI).



Achieved first hydrocarbon for **37** projects.



Reached final investment decision for **26** projects.



Made **9** exploration discoveries.



**62** PSCs in Malaysia, **2** PSCs internationally.



Awarded **12** PSCs to Petroleum Arrangement Contractors (PACs) for Malaysian blocks via Malaysia Bid Round 2022 (MBR).



Forged **14** new partnerships across the CCS value chain.



Recorded a **14.4** per cent reduction in greenhouse gas (GHG) emissions, compared to 2021.





# Upstream

## Creating Stakeholder Value

### Stakeholder Expectations

### Value Created in 2022

#### Government

##### Malaysia

Maximise the long-term value of the country's natural resources

- Spearheaded the growth and development of Malaysia's exploration and production (EP) industry with 30 first hydrocarbons, 16 Final Investment Decisions (FIDs) and six exploration discoveries.
- Promoted Malaysia as an investment destination with the right infrastructure and attractive opportunities via the annual Malaysia Bid Round (MBR) which awarded 12 exploration Production Sharing Contracts (PSCs).
- Facilitated the growth of the gas sector within Malaysia by establishing collaborations and agreements with the Sabah and Sarawak state governments to address energy demand.
- Sanctioned the Kasawari CO<sub>2</sub> Sequestration (CCS) project to enable the monetisation of high CO<sub>2</sub> field for Malaysia's energy security.

#### International Host Authorities

Spur the development of the oil and gas industry in host nations

- Contributed to host countries through our commitment to develop new energy resources by signing agreements in Indonesia, Brazil, Congo and the United Arab Emirates and making two exploration discoveries in Brazil and one in Suriname.
- Involvement in social impact initiatives in areas we operate.

#### Petroleum Arrangement Contractors

Provide attractive opportunities and return on investments

- Signed four deepwater PSCs in Sabah, opening up more deepwater plays in the state and two PSCs in Sarawak.
- Awarded 12 PSCs for Exploration, Discovered Resource Opportunities (DRO) and Late Life Assets (LLA) as a result of the MBR 2022, with attractive fiscal and non-fiscal PSC terms designed to match the risks and rewards of the investments.

#### Partners

Enable the monetisation of oil and gas resources

- Leveraged PETRONAS' fully integrated value chain to meet customers' demands and expectations.
- Adopted innovative technical and commercial solutions to enable the monetisation of resources and prolong the economic life of fields.
- Implemented measures to lower costs and promote efficiency in operations.
- Provided opportunities to contribute towards establishing an integrated CCS value chain in Malaysia.

## Creating Stakeholder Value

### Stakeholder Expectations

### Value Created in 2022

#### Communities

Conduct Social Impact initiatives to support community development.

- Provided access to sufficient supply of clean water, impacting close to 90,000 people in local communities in South Sudan, Sudan, Iraq and Indonesia. This has seen an improvement in the quality of health and access to sustainable economic development in South Sudan and Sudan as well as better education experience and awareness on hygiene and sanitation for school children in Indonesia and Iraq.
- Impacted more than 3,500 members of the marine community in Malaysia through Sahabat Maritim, an outreach programme in Sarawak, Sabah and Terengganu. Through safety awareness, educational activities as well as essential supplies contribution, there has been a 60 per cent reduction in fishermen encroachment and zero fish bombing activities.
- Completed entrepreneurship training for 22 local entrepreneurs from Lawas, Sarawak for them to expand their business reach and find new marketing opportunities.
- Provided financial aid to 105 Sudanese university students to complete their university education through the PETRONAS Local Universities Scholarship (PLUS). The initiative, since its inception in 2016 by PETRONAS Sudan Operations has benefitted 410 university students.
- Provided financial assistance of USD25,000 to four indigenous students from the British Columbia (BC), Canada via the Building Brighter Futures programme. PETRONAS Energy Canada Ltd has participated in two cycles of this initiative since 2020, which sees the BC government match the contribution to the students.
- Organised the PETRONAS School of Life programme to equip 300 youth with life skills training. The initiative by PETRONAS Carigali Brunei Ltd will enhance their future employability and prepare the students for the workforce in the future.
- Started a sustainable farming initiative that involves the cultivation of a 3,000 square-metre sustainable farm. This initiative by PETRONAS Nile Ltd benefits more than 100 children and caretakers with nutritious vegetables at the Juba Orphanage Home (JOH) in South Sudan.
- Contributed medical equipment and assistance to ensure essential supplies of equipment are available and affordable on a sustainable basis to hospitals in Suriname and clinics in Iraq.

#### Employees

Provide opportunities to upskill and reskill based on industry needs.

- Upskilled and reskilled employees with multiple training and development programmes customised to improve their capabilities according to their skill groups (Technical and Business).



# Upstream

## Key Focus Areas and Results

### Core Business – More Energy, Less Emissions

#### What We Did in 2022

##### Sustainable Supply

Ensured a sustainable supply of energy to stakeholders.

1. Pursued and realised material growth through the delivery of production, first hydrocarbon, FID and exploration discoveries.
2. Promoted Malaysia as an attractive investment destination to industry players through the MBR 2022
3. Focused efforts to grow the domestic energy sector

#### Results

- Achieved total daily production average of 2,434 thousand boe per day, seven per cent higher compared to 2021.
- Achieved first hydrocarbon in 37 projects; seven greenfields and 30 brownfields.
- Reached FID in 26 projects covering Malaysia (16), Indonesia (four), South Sudan (four) and Brazil (two).
- Made nine exploration discoveries covering Malaysia (six), Brazil (two) and Suriname (one).
- Received approval from Malaysian and Thailand governments to extend the Malaysia-Thailand Joint Development Area (MTJDA) PSC until 2039, ensuring energy security for both nations.
- Signed the Gas Supply Agreement extension for SK309/SK311 PSC with Sarawak state government for sustainable gas supply to the state.
- Offered 14 exploration blocks, six clusters of Discovered Resource Opportunities (DRO) and one cluster of Late Life Assets (LLA) for bidding.
- Awarded 12 Production Sharing Contracts (PSCs) through MBR 2022, including to new players in Malaysia.
- Signed six PSCs, four in Sabah and two in Sarawak.
- Signed a Heads of Agreement (HOA) with Petroleum Sarawak Bhd (PETROS) for the supply of 60 MMscfd of gas to the proposed 400 MW Combined Cycle Gas Turbine power station in Miri.

##### Portfolio Expansion and High-grading

1. Grew business portfolio as part of our global strategy with prolific growth opportunities
2. Strengthened portfolio health and value through continuous portfolio high-grading exercise

- Signed an agreement to explore and appraise Unconventional Onshore Block 1 in the United Arab Emirates.
- Won the bid for Brazil's Agua Marinha exploration block.
- Signed an agreement to farm into the Marine 20 PSC in the Republic of Congo.
- Signed an MoU and an Integrated LNG Joint Study and Development Agreement (JSDA) in Argentina.
- Initiated high-grading exercise for our assets in the Republic of South Sudan and the Republic of Chad.

## Key Focus Areas and Results

### Core Business – More Energy, Less Emissions

#### What We Did in 2022

##### Digital and Technology

Harnessed data to increase productivity and efficiency, driving a more informed decision-making process.

#### Results

- Digitalised geological core samples and insights via the myCORE360 programme, which led to an 80 per cent reduction in data analysis duration and better interpretation or analysis of reservoir characterisation.
- Launched an extensive EP data platform, myPROdata, which saw a 30 per cent increase in investors participation in bidding rounds and helped more than 120 investors conduct a comprehensive subsurface evaluation by leveraging over 1,100 terabytes of data.
- Piloted the Rig Mechanised Automation (RMA) at the Integrated Bekok Oil project, which has led to cost savings, carbon emission reduction via decreased drilling time and carbon footprint reduction via smaller manpower offshore.

##### Health and Safety

Fostered Generative HSE Culture at all our areas of operations.

1. Shortened the health assessment process and tracking of health parameters for all offshore staff.
2. Reduced the possibility of occurrences of major incidents through Process Safety Golden Rules (PSGR).
3. Reinforced HSE accountability and behaviour throughout Upstream business.
4. Promoted mental health awareness.

- Increased efficiency of the health assessment process by 85 per cent through digitalisation (from three weeks to three days) and provision of real time health status data for staff.
- Addressed shortage of staff offshore, facilitated clearance in a timely manner and properly monitored the well-being and health of staff.
- Effectively operationalised and increased awareness of PSGR in Malaysia and company-operated international assets by increasing visibility and awareness among targeted personnel.
- Established Accountability and Behaviour Reinforcement (ABR), including ABR Committees across Upstream business to promote accountability, ownership and nurturing the desired HSE behaviours in daily operations.
- Appointed 42 ambassadors and five facilitators under the Upstream MIND-A-CARE programme.
- 217 staff completed the i-CARE training to increase resilience.
- 4,000 staff and contractors attended mental health awareness training.

# Upstream

## Key Focus Areas and Results

### NZCE – Pathway to Zero

#### What We Did in 2022

##### Sustainability

Operational excellence and collaboration to lower overall carbon footprint.

1. Physical decarbonisation to lower overall GHG emissions
2. Provide storage for CO<sub>2</sub> from internal output
3. Position Malaysia as a CCS solutions hub

#### Results

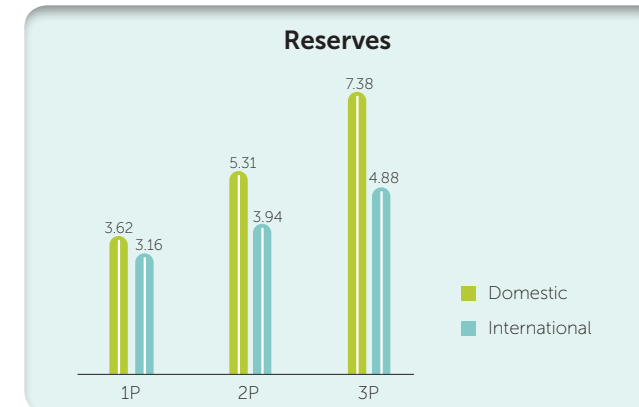
- Recorded a 14.4 per cent reduction in GHG emissions in 2022 compared to 2021 following the execution of multiple emissions reduction projects, including achieving zero routine venting in four fields, contributing to 0.6 Million tCO<sub>2</sub>e reduction in hydrocarbon venting from our Malaysia-operated assets.
- Reduced Drilling and Completion GHG emissions by 50 per cent through better operational efficiencies, well-testing improvements and use of dual fuel vehicles at PETRONAS Energy Canada Ltd.
- Entered into a HOA with JX Nippon Oil & Gas Exploration Corporation to collaborate in developing a joint proposal to monetise the gas potential within the Bujang, Inas, Guling, Sepat and Tujoh (BIGST) fields.
- Reached the FID for the development of the Kasawari CO<sub>2</sub> Sequestration (CCS) project offshore Sarawak.
- 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.
- Signed 14 Memoranda of Understanding (MoUs) with like-minded industry players across the value chain.

## Governance and Disclosure (Reserves and Resources)

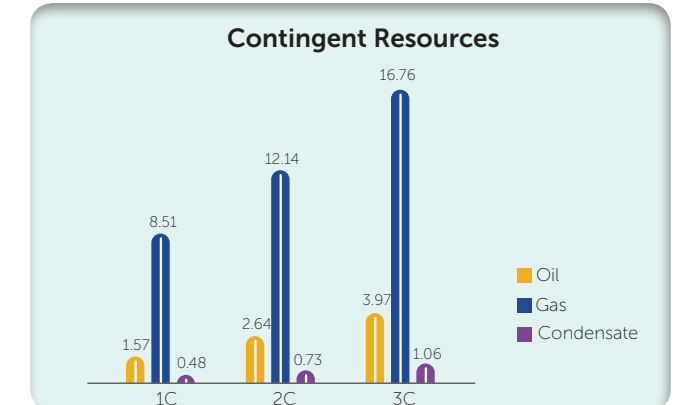
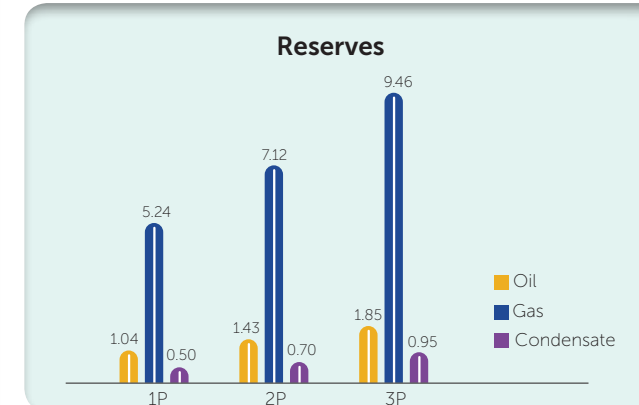
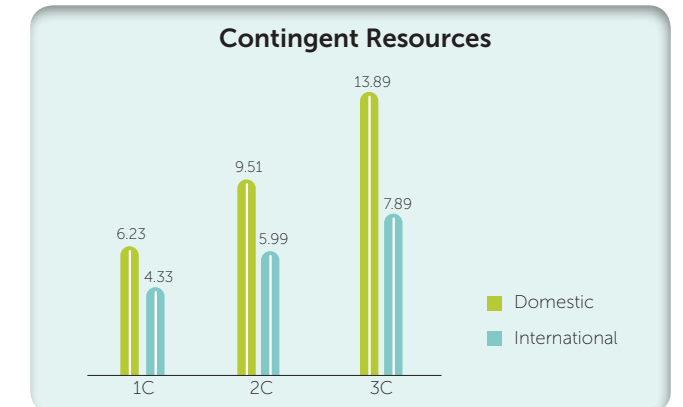
As at 1 January 2023, PETRONAS' total petroleum 2P reserves stood at 9.25 Bboe, an increase of two per cent from 2021. The improvement in reserves performance is primarily due to the healthy maturation of contingent resources to reserves. PETRONAS' total contingent resources (2C) stood at 15.50 Bboe, an increase of one per cent from 2021 as a result of nine new exploration discoveries that were made during the year that contributed 0.77 Bboe of 2C to our portfolio.

### (i) ARPR 1.1.2023 Reserves and Contingent Resources

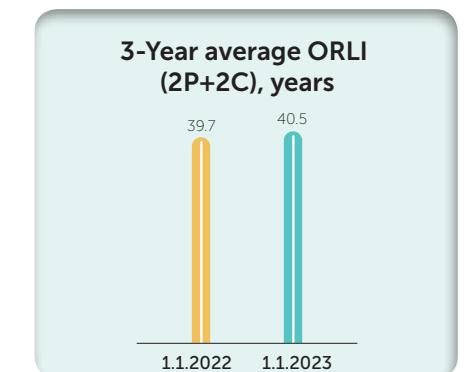
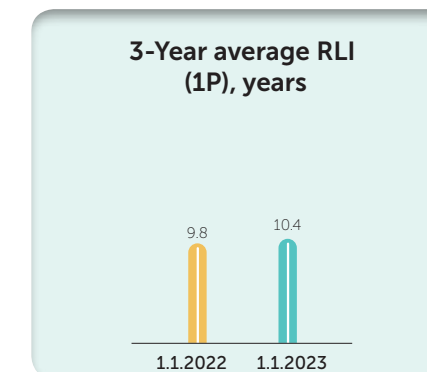
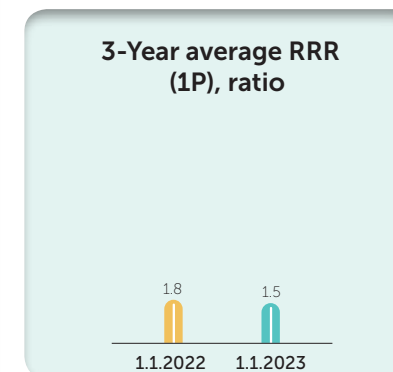
Unit: Bboe



Unit: Bboe



### (ii) Reserves and Resources Performance Indicators



**Note:**

(a) Gas conversion factor prior to ARPR 1.1.2022 6,000 scf = 1 boe. ARPR 1.1.2022 and beyond 5,650 scf = 1 boe.

(b) For ARPR 1.1.2022, without the uplift due to the change in conversion factor, the 3-year average 1P RRR ratio would be 1.6.



# Upstream

## Key Risks and Challenges

### Risks and Challenges

#### Corruption Risk

Failure of employees, partners and associated third parties to comply with the PETRONAS Code of Conduct and Business Ethics (CoBE), Anti Bribery and Corruption (ABC) manual and related laws and regulations to safeguard PETRONAS' reputation.

#### Project Delivery Risk

Capital projects not being delivered on time, on budget, on scope and on volume.

#### HSE and Security Risk

Non-compliance to HSE practices causing business disruption and negative impact to reputation.

Managing new and emerging risks from security and maritime threats.

### Mitigation Strategies

Strengthened the culture of transparency and accountability among Upstream personnel which includes improved understanding of assurance processes and awareness on PETRONAS CoBE, the ABC manual and related laws and regulations and whistleblowing.

- Reviewed current project risk and assurance to ensure technical integrity.
- Developed strict assurance implementations on project risk management practices.
- Collaborated with host authorities, PSCs and the industry to address limited resources.

- Established the Upstream Generative HSE Culture (GC) Framework and Roadmap.
- Implemented Competency and Fatigue Management System (FMS) Monitoring (Tour of Duty).
- Strengthened contractors' accountability and frontline site supervision for better HSE compliance.
- Conducted continuous monitoring of our offshore assets and in close collaboration with relevant government authorities.

## Growth Opportunities

### Opportunities

- Extract and monetise remaining oil and gas resources from the frontier and mature basins to deliver the full potential of Malaysia's resources.
- Monetisation of high value and quality oil resources in PETRONAS Upstream's focus regions of the Americas, Middle East and Southeast Asia to generate competitive returns.
- Monetisation of world-class unconventional gas resources in Canada and potentially Argentina to deliver enterprise value upsides through integrated LNG business.
- Pursue CCS solutions.

### Our Approach

- Intensify exploration activities by venturing into more frontier plays and rejuvenate mature basins.
- Accelerate the monetisation of discovered resources with high reserve recovery, achieving best cost efficiency while adopting data and technology as key enablers.
- Maximise production and value from producing assets through high production reliability, implementation of value-based and low-carbon operation solutions.
- As the host authority, offering attractive fiscal terms as well as enriched data availability and transparency to entice more players and investments.
- Positioning growth at strategic areas concentrated on availability of sizeable resources and infrastructure, access to markets and alignment to Environmental, Social and Governance (ESG) considerations.
- Deliver more focused exploration activities driven by pace of monetisation.
- Accelerate the monetisation of discovered resources and maximise value from producing assets in a low-cost and low-carbon manner.
- Positioning growth at strategic areas that is aligned with our Gas and LNG focus areas.
- Deliver low breakeven gas supply in a low-carbon manner through development and operational excellence with digital and technology as key enablers.
- Ensuring clear monetisation plan with optimum midstream positioning.
- Advocate the government for ecosystem development in Malaysia.
- Commence discussion with interested emitters and their relevant government agencies in fulfilling regulatory requirement for cross-border CCS.
- Deliver Kasawari CO<sub>2</sub> Sequestration (CCS) project offshore Sarawak successfully as the catalyst for other similar projects.

# Upstream

## Outlook

### Short Term (2022-2027)

A renewed emphasis on energy security has returned the focus to developing resources at home, or which are quick to meet the pickup in demand, while driving a rebound in Upstream activities that will support economic growth.

Our short term key focus areas include:

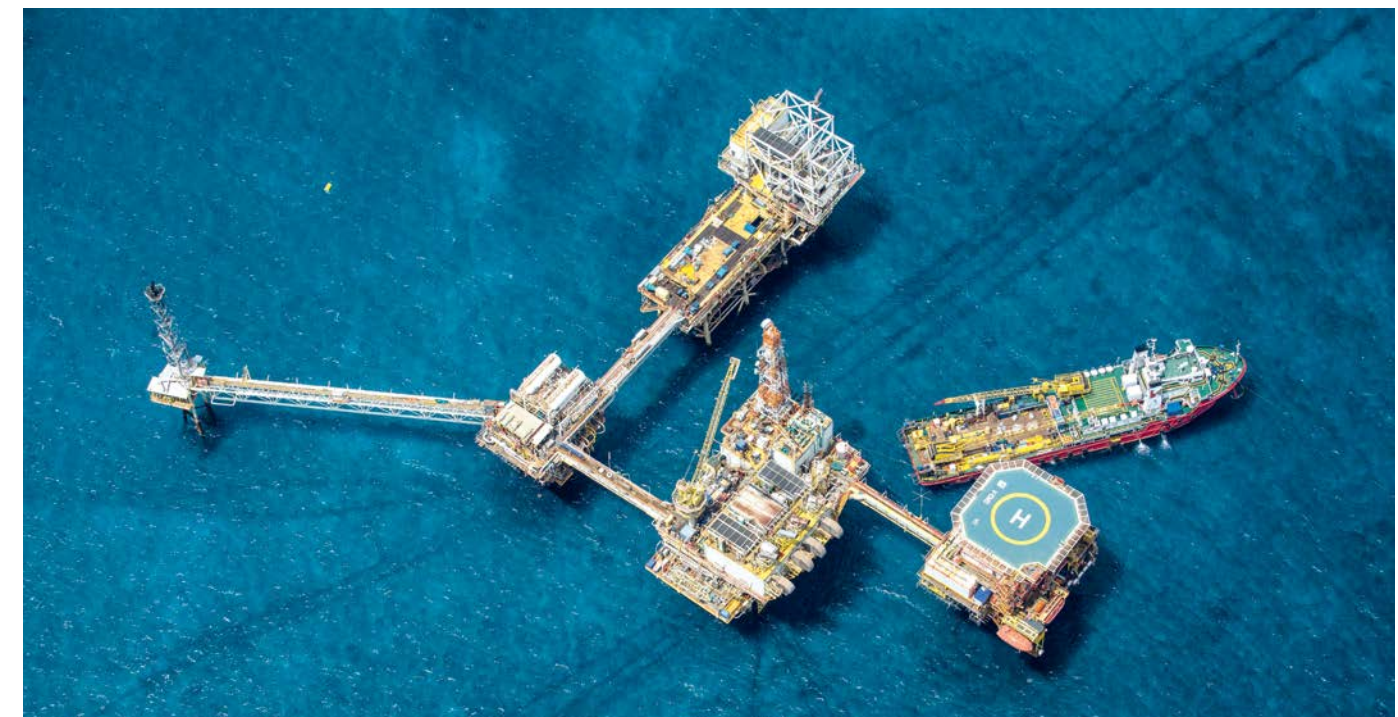
Business Unit	Results
<b>Malaysia</b> Grow to replenish resources and achieve production target in a low-cost and low-carbon manner to address energy demand while positioning CCS as a business.	<ul style="list-style-type: none"> <li>Revitalise Malaysia's exploration and production (EP) landscape to ensure continued growth and make Malaysia a home for dynamic and robust investors.</li> <li>Intensify exploration activities at all regions including exploration of new plays and matured areas while expediting appraisal programmes to replenish our resources.</li> <li>Deliver base production by accelerating maturation and delivery of projects including the Gansar Gas Field Development (GFD), Kasawari GFD and Jerun to meet demand centres' requirements.</li> <li>Deliver low-carbon production through physical decarbonisation of Upstream activities including flaring and venting reduction projects.</li> <li>Enable monetisation of high CO<sub>2</sub> resources via CCS solutions including successful delivery of the Kasawari CO<sub>2</sub> Sequestration (CCS) project offshore Sarawak.</li> <li>Positioning Malaysia as regional CCS solutions hub by advocating to targeted stakeholders while continuing to pursue collaborative partnerships with industry players.</li> </ul>
<b>International</b> Deliver enterprise value upsides through our integrated Gas business as well as pursue and realise material growth in strategic oil focus areas in a low-cost and low-carbon manner with ESG as a key consideration.	<p><b>Canada and Argentina</b></p> <ul style="list-style-type: none"> <li>Pursue enterprise value upsides through the monetisation of our North Montney Joint Venture (NMJV) resources via our Integrated LNG project while also maximising value creation by monetising gas to domestic market in tandem with growing gas demand markets in North America.</li> <li>Continue building our strategic position of integrated business in the region with focused efforts to potentially supply Argentina's world-class unconventional gas resources to the potential integrated LNG project in Argentina.</li> </ul> <p><b>Brazil and Mexico</b></p> <ul style="list-style-type: none"> <li>Pursue and realise material growth in Brazil and Mexico by focusing on exploration activities with a clear path to monetisation to build a value-driven portfolio. Key efforts are being put in place to realise planned resource addition in a low-cost and low-carbon manner, leveraging our synergy with partners and host authorities.</li> <li>Drive value maximisation while executing low-carbon production in the likes of Sépia, Brazil and continue physical decarbonisation efforts at our assets.</li> </ul>

### Medium to Long Term (2028-2030)

Accelerating energy transition demands decarbonisation across every step in the value chain and we are committed towards achieving this through innovation and technological deployment, working hand in hand with industry players in Malaysia and in our international operations.

Our medium to long term focus areas include:

Business Unit	Results
<b>Malaysia</b> Grow to replenish resources and sustain production target in a low-cost and low-carbon manner to address energy demand while positioning CCS as a business.	<ul style="list-style-type: none"> <li>Ensure energy security while striving towards maximising full resource potential to grow and expedite monetisation through intensified exploration efforts, timely resource maturation and maximising recovery from producing assets.</li> <li>Deliver energy security in alignment with our NZCE 2050 Pathway by prioritising continuous efforts to develop low-carbon solutions that unlock high contaminant resources while reducing emissions from our assets.</li> <li>Provide storage for PETRONAS' assets as well as meet CCS demands of regional industrial sectors to position Malaysia as a regional CCS solutions hub.</li> </ul>
<b>International</b> Grow to replenish resources and sustain production targets in a low-cost and low-carbon manner to address global energy demand while delivering competitive returns to our shareholders.	<ul style="list-style-type: none"> <li>Address global energy demand while delivering competitive returns to our shareholders by pursuing and realising opportunities with high value and high certainties of delivery in a low-cost and low-carbon manner with ESG as a key consideration.</li> <li>Approach new investment opportunities in alignment with NZCE 2050 Pathway while being involved in focused efforts to decarbonise our existing assets.</li> </ul>







# Gas



**Adnan Zainol Abidin**  
Chief Operating Officer,  
Executive Vice President and  
Chief Executive Officer,  
Gas

In 2022, we took significant strides in our Gas business, positioning natural gas as a critical transitional fuel in response to the ever-increasing energy prices and the global shift towards lower carbon energy sources. Adhering to PETRONAS' strategy and the Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway, we bolstered our position as a one-stop centre for lower carbon energy solutions and as a trustworthy provider of natural gas by prioritising the needs of our customers.

We remained steadfast in our commitment to reduce GHG emissions throughout our natural gas value chain, implementing various initiatives and projects to achieve our carbon reduction targets. We continued to harness the potential of digitalisation and took a proactive approach in reshaping our global LNG portfolio to cater to the escalating demand for lower carbon energy solutions both domestically and internationally, given the pressing need for energy security.

Our unwavering progress was made possible by the passion and dedication of our employees, who never lost sight of our objectives. Moving forward, we are poised to embrace new opportunities and broaden our portfolio to offer more accessible and reliable lower carbon energy solutions in a just and equitable manner.



**Liquefied Natural Gas (LNG)** focuses on exports of lower carbon energy internationally.



**Gas and Power (G&P)** provides processed gas to customers across Malaysia and Thailand.



Achieved OEE of **96.6%** across all business segments under Gas business.



Achieved gross LNG sales of **34.2** MMT.



Delivered **405** LNG cargoes from PLC to customers across the globe.



Delivered **43** LNG cargoes from PFLNG SATU and PFLNG DUA.



Completed **2,619** Virtual Pipeline System and LNG bunkering deliveries across Malaysia.



Secured **136** MMscfd of natural gas deals.





# Gas

## Creating Stakeholder Value

Stakeholder	Expectations	Value Created
<b>C</b> <b>Customers</b>	Provide reliable, affordable and customer-centric solutions that support the energy transition toward a lower carbon future.	<ul style="list-style-type: none"> <li>Delivered more than 12,400 LNG cargoes cumulatively to date to customers around the world from the PETRONAS LNG Complex (PLC) since the first cargo delivery in 1983.</li> <li>Delivered customer-centric solutions such as Virtual Pipeline Services (VPS) and ISO tanks to off-grid customers in Malaysia and China.</li> <li>Delivered the 100<sup>th</sup> cargo from PETRONAS Floating LNG facilities.</li> <li>Delivered carbon-neutral LNG as part of cleaner LNG solutions to help customers achieve their sustainability aspirations.</li> <li>First in Southeast Asia to offer LNG as a cleaner marine fuel via an LNG bunkering solution.</li> </ul>
<b>IPG</b> <b>Government and Regulators</b>	<p>Ensure safe and reliable gas and power plant operations in the surrounding communities.</p> <p>Comply with the latest industry occupational health and safety standards and processes.</p>	<ul style="list-style-type: none"> <li>Ensured continuous secure and reliable delivery of natural gas throughout Peninsular Malaysia with zero domestic gas supply interruptions.</li> <li>Achieved full compliance to industry regulations with mitigations in place such as Occupational Safety and Health Assessment (OSHA), Environmental Quality Act (EQA) and Factories and Machinery Act (FMA) across all operating units.</li> </ul>
<b>CN</b> <b>Communities</b>	Introduce initiatives that positively impact the environment and community at large.	<ul style="list-style-type: none"> <li>Installed solar systems and lighting to off-grid <i>Orang Asli</i> communities via Rays of Hope, a Gas business Signature Social Impact project which saw 156 Orang Asli homes across six villages gain access to energy. This initiative has resulted in an additional six hours of light per night as well as a total savings of approximately RM400,000 by switching from diesel to solar.</li> <li>Conducted social outreach initiatives focusing on education, environment, and community outreach, including:                             <ul style="list-style-type: none"> <li>Community outreach programmes under PETRONAS Sentuhan Kasih.</li> <li>Mangrove conservation and replanting at Sungai Latoh, Pasir Gudang, Johor.</li> </ul> </li> </ul>
<b>IE</b> <b>Employees</b>	Embed sustainable practices into the culture and practices of the organisation.	<ul style="list-style-type: none"> <li>Scaled up the implementation of Zero Single-Use of Plastic Programme, to encourage usage of sustainable materials such as recyclable food packaging and glass bottles to replace plastic food packaging.</li> </ul>

## Key Focus Areas and Results

### Core Business – More Energy, Less Emissions

What We Did in 2022	Results
Sustained world-class operational excellence and grew core business through new LNG supply deals.	<ul style="list-style-type: none"> <li>Achieved a high OEE of 96.6 per cent across all business segments under Gas business.</li> <li>Achieved Gross LNG sales of 34.2 MMT.</li> </ul>
Provided reliable LNG supply and optimised global portfolio to mitigate production shortfalls.	<ul style="list-style-type: none"> <li>Delivered 405 LNG cargoes from PLC in Bintulu to customers across the globe.</li> <li>Delivered 43 LNG cargoes from PFLNG SATU and PFLNG DUA.</li> <li>Mitigated production shortfalls from the Force Majeure declaration on Sabah-Sarawak Gas Pipeline (SSGP) with no supply disruptions faced by impacted customers.</li> </ul>
Advocated for greater natural gas use and grew domestic gas sales.	<ul style="list-style-type: none"> <li>Secured 136 MMscfd of natural gas deals with non-power customers across Malaysia.</li> </ul>
Innovated customised solutions to meet customers' energy demands while pursuing small-scale solutions in Southeast Asia to enhance accessibility to natural gas.	<ul style="list-style-type: none"> <li>Completed 2,619 VPS and LNG bunkering deliveries across Malaysia.</li> <li>Delivered LNG to smaller-scale and off-grid customers in China via LNG in ISO tanks.</li> </ul>
Scaled up Digital Transformation (DX) programmes to enable remote digital operations and improvements in operational efficiencies and safety.	<ul style="list-style-type: none"> <li>Launched the Segamat Unified Operation Centre (UOC) to support remote digital operations at Regasification Terminal in Sungai Udang (RGTSU), Regasification Terminal Pengerang (RGTP) and Gas Transmission (GT).</li> <li>The first in Malaysia to receive Beyond Visual Line of Sight (BVLOS) permit approval for use of nested drones to deter intrusion and encroachment of Peninsular Gas Utilisation (PGU) right of way.</li> <li>Implemented four Machine Learning models through the UP-GREAT strategic initiative that improved plant operations and process safety.</li> <li>Rolled out Malaysia's first 5G pervasive network at RGTSU, enabling reliable and stable high-speed connectivity for the Segamat UOC.</li> <li>Obtained greater visibility across the entire integrated value chain via continuous improvement of the Gas Business Operations Dashboard (GO Dashboard).</li> </ul>



# Gas

## Key Focus Areas and Results

### NZCE – Pathway to Zero

#### What We Did in 2022

Progressed efforts to reduce carbon footprint of assets through electrification and decarbonisation projects.

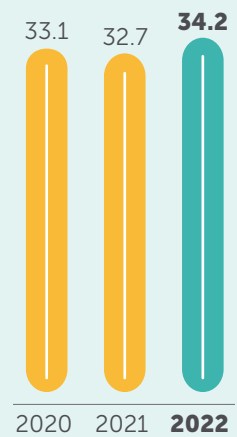
Prioritised sustainability across operations by taking responsible, tangible actions.

#### Results

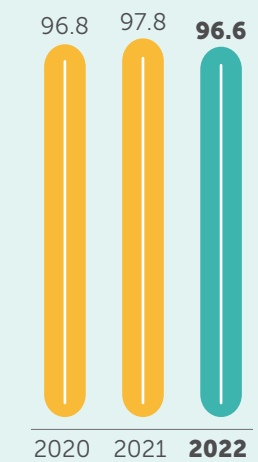
- Malaysia LNG Sdn Bhd signed a Power Purchase Agreement with Syarikat SESCO Bhd, a subsidiary of Sarawak Energy, for 90 MW of hydroelectric power import to PLC in Bintulu. The import of renewable energy will reduce approximately 0.5 Million tCO<sub>2</sub>e of GHG emissions per year by 2025.
- Reduced a total of 189 ktCO<sub>2</sub>e of GHG emissions via operational efficiency efforts such as utilities real time optimiser, ship vapour recovery and gas turbine efficiency efforts.
- Achieved more than 0.3 Million tCO<sub>2</sub>e cumulative GHG reductions as at 31 December 2022, with more than 0.8 Million tCO<sub>2</sub>e further planned until 2027. These collaborative efforts with PETRONAS Delivery and Technology will explore enhancements in environmental compliance and operational efficiency efforts such as steam optimisation and activator upgrades.

## Performance Highlights

Overall LNG Sales (MMT)



Overall OEE for Gas (%)



## Risks and Challenges

### Risks and Challenges

#### Supply Risk

Sustainability of feedstock supply coupled with unreliable plant performance impacting LNG production.

#### Demand Risk

Difficulty in balancing the complexity of Peninsular Malaysia's gas demands and higher gas costs which impacted Gas business profitability.

#### Growth Risk

Challenges to expand supply nodes and entry into new markets.

### Mitigation Strategies

- Strategic level discussions and continuous collaborations internally and at enterprise level to expedite gas supply.
- Stakeholder and customer management to maintain good reputation and relationship (courtesy call and management visits).
- Enhancement of maintenance plan to increase LNG plant reliability and productivity.
- Increased rigour and frequency of inspection and rectification plan at the LNG plant.
- Continuous optimisation of marketing efforts.

- Actively manage feedgas demand, especially from Power sector customers.
- Optimisation of gas supply from the Gas Processing Plant in Kerteh.
- Continuous contract negotiations on price and volume offtake with all customers.
- Continuous engagement with the government to advocate for market parity price for Power sector.

- Proper due diligence process and evaluation of risk appetite prior to investment.
- Exploration of attractive commercial terms, while continuously monitoring key exposures to ensure revenue certainty.



# Gas

## Growth Opportunities

### Opportunities

Growing global demand for LNG in line with the energy transition towards lower carbon energy sources

Increased focus on energy security and GHG emissions reduction

Rising demand for natural gas in Malaysia with the phasing out of coal-fired plants for electricity and power generation

### Our Approach

Grow global supply portfolio and production capacity through new LNG projects:

- 🔹 Signed a Sales and Purchase Agreement (SPA) with Venture Global LNG for 1 MTPA of LNG supply for 20 years.
- 🔹 FID for Southeast Asia's first nearshore LNG facility located in Sabah, in December 2022. Upon completion, the facility adds another 2.0 MTPA of LNG supply to our production portfolio.
- 🔹 Achieved FID for a 52 MW power plant to supply power to Sabah's first nearshore LNG facility in Sipitang via a 20 year power supply agreement.
- 🔹 Signed an MoU with Argentina's largest integrated oil and gas company, YPF S.A, to pursue collaboration in Argentina in an integrated LNG project and other areas, including upstream oil, petrochemicals and clean energy solutions. The integrated LNG project would encompass upstream gas production, dedicated pipeline and infrastructure development, LNG production as well as marketing and shipping.

Establish strategic partnerships with key partners with continued focus on decarbonising our LNG value chain:

- 🔹 Signed a Memorandum of Cooperation (MoC) with Japan's Ministry of Economy Trade & Industry (METI) to strengthen energy security in Asia and develop a cooperative LNG framework that covers investments, reduction in GHG emissions and promote the development of a flexible and liquid LNG market to manage market disruptions.
- 🔹 Pursue the use of renewable energy and electrification of our LNG assets to reduce GHG emissions.
- 🔹 Advocate for LNG as a cleaner marine fuel through LNG Bunkering solutions in support of IMO 2020 regulations.

Strengthen the business' position to meet growing domestic demand for lower carbon energy:

- 🔹 Pursue power generation opportunities in Peninsular Malaysia, Sabah and the region; integrated utilities solutions for power and utilities at new industrial zones in Malaysia through PETRONAS Gas Berhad (PGB).

## Outlook

### Short Term (2022-2027)

In response to the continuing elevated prices and the energy trilemma, we will continue to sharpen our focus on strengthening our position as a one-stop centre for lower carbon energy solutions across our value chain, embracing innovation and new technology solutions.

Our short term key focus areas include:

- 🔹 **Maximise value from our existing assets**
  - We strive to consistently be in the top quartile operational performance to gain intrinsic value via asset optimisation and extrinsic value through dynamic hedging, while strengthening our focus on HSSE.
- 🔹 **Expand our supply nodes**
  - We continue to grow our LNG portfolio by ensuring successful delivery of growth projects such as nearshore LNG facility in Sabah and LNG Canada.
- 🔹 **Expand market reach through customised solutions**
  - We continue to explore new business opportunities by creating solutions that meet our customers' needs.

### Medium to Long Term

Gas and LNG demand are sustained in most energy transition scenarios supported by robust prices which underpin new investments and future growth. Natural gas and LNG are set to see resilient demand as countries continue to pursue their industrialisation agendas, especially for the chemical and industrial sectors. Oil and gas companies are also expected to continue expanding their gas portfolios, given the increase in gas consumption and strict emission goals in the future.

Our medium and long term focus are:

- 🔹 **Maximise and grow LNG portfolio globally**
  - With the expected increase in global demand for LNG, we seek to maintain market leadership by leveraging our global LNG portfolio, world-class operations and customer-centric solutions. We will also pursue expansion of our supply nodes to meet growing demand especially in Asia and Europe.
- 🔹 **Optimise and sustain position in domestic gas sales**
  - As Malaysia's leading gas infrastructure and centralised utilities company, we play a vital role in the nation's energy security. We are committed in ensuring our assets are available, reliable and operating at optimum levels, ready to serve the needs of the nation and continue to advocate for gas and power market liberalisation.
- 🔹 **Extend into adjacent gas value pools**
  - With rapid growth in gas to power generation within Malaysia and regionally, we continue to look for opportunities to grow our power generation business. Beyond that, we will explore step-out opportunities brought forth by the energy transition.
- 🔹 **Explore solutions to reduce emissions**
  - To future-proof our business, we have already taken steps to decarbonise our operations through various abatement solutions.





# Downstream



**Datuk Sazali Hamzah**  
Executive Vice President  
and Chief Executive Officer,  
Downstream

Downstream revealed its strongest financial performance for the last 10 years in 2022, despite challenges on multiple fronts, riding on the continued economic recovery post-COVID19.

The success was attributed to the strategic measures we took to remain competitive, which include strengthening our core business and exploring growth potential of cleaner solutions as we advance towards achieving Net Zero Carbon Emission by 2050 (NZCE 2050) Pathway.

We remain relentless and focused in driving operational excellence and maximising our resources across the value chain and have benefitted from innovation solutions and investment in digital solutions over the years. Our solutions were redesigned to be more sustainable and customer-centric, bolstering our adaptability in the volatile industry with a potential development of a greenfield biorefinery and co-processing at the existing facilities and accelerated transition into circular economy. We have also expanded our offerings to include higher-margin products from the chemical business value chain, as well as non-fuel offerings as part of our efforts to future-proof our business.

My appreciation goes to all our teams and individuals who remain steadfast in delivering value safely, reliably, and efficiently. Moving forward, we will continue to ramp-up our efforts to increase overall efficiency while continuously charting future growth by driving long-term value creation and meeting the world's energy demands responsibly.

**89.0%**  
petrochemical plant  
utilisation (Nexant).



**PETRONAS, Eni S.p.A (Eni) and Euglena Co. Ltd. (Euglena)**

announced its feasibility study to develop and operate a biorefinery plant in Pengerang Integrated Complex to supply sustainable solutions including Sustainable Aviation Fuel for aircraft and Hydrogenated Vegetable Oil (HVO/ Renewable Diesel) for on-road vehicles.



**24.9**  
billion litres of  
overall marketing  
sales volume.



**85.9%**  
Overall Equipment  
Effectiveness.



**New lube oil additives manufacturing facility in Echt, Netherlands**

by BRB International, a wholly-owned subsidiary of PCG, to expand specialty portfolio and product offerings in meeting growing demands.



**Acquisition of Perstorp in line with PCG's strategic diversification**

into the specialty chemicals industry to capture new growth opportunities.





## Downstream

### Creating Stakeholder Value

#### Stakeholder Expectations

#### Value Created in 2022

##### Shareholder

Deliver profits and dividends

- Delivered a total dividend of RM4.04 billion from PETRONAS Chemicals Group Berhad (PCG) and PETRONAS Dagangan Berhad (PDB).

##### Customers

Introduce sustainable and innovative products

- Launched Café Mesra in July 2022 and since then, we have opened more than 40 outlets at PETRONAS stations and beyond the station network to improve accessibility for customers.
- Introduced on-demand auto services on the Setel app\* to enable users to renew road tax or purchase insurance including takaful directly from the app and be rewarded with Mesra points.
- Explored and expanded partnerships primarily with Gentari and other partners to install EV charging stations as well as leveraged Setel for customers' seamless end-to-end charging experience.
- Became a strategic lubricants partner for Tata Motors' commercial vehicles, providing high-quality oil at Tata Motor's authorised workshops across India.

**Note:**

\* Setel is a Malaysian mobile platform introduced in July 2018, designed to provide a seamless experience and inclusive mobility for motorists. The app offers services such as fuelling, parking, EV charging, motor insurance, road tax, auto assistance, and general purchases, and connects customers to PETRONAS petrol stations, retail partners, and online merchants.

##### Communities

Enrich the lives of people in our operational areas

- Made cash contributions of RM1.87 million in 2022 to the Social Enterprise Education Lab (SEEd.Lab), an end-to-end incubator programme, to support the building of self-sustaining social enterprises that forge solutions for specific beneficiaries within communities. Beyond monetary contribution, we also dedicated 21,837 voluntary manhours to implement various initiatives including business and leadership mentorship, market testing and commercialisation to ensure the programme's success. The first of its kind in comprehensiveness in Malaysia, powered by PETRONAS and Tata Consultancy Services, SEEd.Lab has enriched the lives of over 13,000 people and counting, as well as generated a combined Public Relations value of close to RM230,000, largely earned organically since its establishment.
- Reached over 300,000 stakeholders, including students and the community through the circulation of "Plastic, Sustainability and You" education module across schools in Malaysia, as well as Be Green programme to educate the public on responsible waste management.
- Implemented PCG's mangrove conservation and rehabilitation initiatives in collaboration with Sahabat Bakau and Malaysian Nature Society (MNS), with 3,550 trees planted in 2022, whilst generating extra income opportunities for the community.
- Implemented a mangrove conservation programme in Pulau Tanjung Surat, Johor through a collaboration between PETRONAS Refinery and Petrochemicals Corporation Sdn Bhd (PRPC), Pengerang Terminals (Two) Sdn Bhd and PCG with 14,500 mangrove trees planted covering 3.8 acres for reforestation of mangrove degraded area as at December 2022, empowering surrounding local villagers through extra income opportunities.

### Creating Stakeholder Value

#### Stakeholder Expectations

#### Value Created in 2022

##### Communities

Enrich the lives of people in our operational areas

- PETRONAS collaborated with the Johor Petroleum Development Corporation Berhad (JPDC) and Koperasi Pengerang Jaya Johor Berhad (KOPEJA), to develop a technical upskilling programme for the local community. Through the programme known as Skills in Oil and Gas (SOGA) for Pengerang Integrated Complex (PIC) or SOGA PIC, 80 local farmers and fishermen were hired by Turnaround Main Mechanical and Maintenance Mechanical Static contractor companies and sub-contractors, to carry out PIC operational works.
- PETRONAS also worked closely with several local cooperatives within Pengerang such as Koperasi Jaya Teluk Ramunia (KOJAYA), Koperasi Permuafakatan Lepau Berhad (KOLEPAU), and Koperasi Kampung Pengerang Johor Berhad (KOPERANG) to provide them with job opportunities. This includes operating cafeterias, handling landscaping works and providing general supplies for projects in PIC.

##### Employees

Create a better working environment

- Enhanced Agile practices through new training modules, coaching enablement and Agile Enterprise team setup.
- Developed the PETRONAS Working Backwards initiative in collaboration with Amazon Web Services (AWS) to enhance innovation capabilities.

### Creating Stakeholder Value

#### Stakeholder Expectations

#### Value Created in 2022

##### Government and Regulations

Improve governance and industry standards compliance

- Ensured compliance with the highest international standards to build trust with our partners, ensure our license to operate and drive global expansion.
- PCG achieved recognition as one of the Top 10 companies in the chemicals industry for Dow Jones Sustainability Indices (DJSI).
- Achieved top quartile performance for PDB and PCG's outstanding Environmental, Social and Governance (ESG) attributes, based on FTSE4Good Bursa Malaysia Index.



## Downstream

### Key Focus Areas and Results

#### Core Business – More Energy, Less Emissions

What We Did in 2022	Results
<ul style="list-style-type: none"> <li>Sustained safe, stable, and efficient operations across all operating units, while meeting energy security needs</li> </ul>	<ul style="list-style-type: none"> <li>The entire operations recorded stable performance with an Overall Equipment Effectiveness (OEE) of 85.9 per cent.</li> <li>PCG recorded plant utilisation of 89 per cent for its Malaysian operations.</li> </ul>
<ul style="list-style-type: none"> <li>Maximised value via optimising cost-to-serve and pricing excellence</li> </ul>	<ul style="list-style-type: none"> <li>Achieved overall marketing sales volume of 24.9 billion litres, a 17 per cent increase from 2021.</li> <li>Recorded a 28 per cent increase in sales volume from PDB.</li> <li>Achieved a 6 per cent increase in sales volume from Engen.</li> <li>Recorded petrochemical sales volume of 8.3 million tonnes per annum, a 1.2 per cent increase from 2021.</li> </ul>
<ul style="list-style-type: none"> <li>Expanded product offerings to capture additional value</li> </ul>	<ul style="list-style-type: none"> <li>Launched a PETRONAS Syntium with CoolTech+™ hybrid range that delivers up to three per cent better fuel economy and lower emissions.</li> <li>Partnered with Titan LNG through our marine solutions arm, PETRONAS Marine to deliver ship-to-ship transfer LNG bunkering to Very Large Crude Carrier (VLCC) Yuan Rui Yang. The refuelling of the world's first LNG-fuelled VLCC took place in the port of Pasir Gudang, Malaysia using the Avenir Advantage – PETRONAS' long term-chartered barge.</li> </ul>
<ul style="list-style-type: none"> <li>Explored opportunities to expand into higher-margin products from the chemical business value chain</li> </ul>	<ul style="list-style-type: none"> <li>Acquired a 113 kilo-tonnes per annum Maleic Anhydride plant located in Gebeng, Kuantan.</li> </ul>
<ul style="list-style-type: none"> <li>Applied data science and machine learning to accelerate digital transformation to improve plants' efficiency</li> </ul>	<ul style="list-style-type: none"> <li>Deployed and implemented Plant Facing Analytics across Downstream plants with gains in cost avoidance and optimisation in operations.</li> <li>Deployed PIVOT Descriptive Analytics to 15 downstream plants, which improved 11 per cent of Process Cycle Efficiency (PCE) and automated monthly performance reporting.</li> </ul>

#### New Business – Capturing New Growth Opportunities

<ul style="list-style-type: none"> <li>Charted our course into biofuels</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>In June 2022, PDB in partnership with PETCO Trading (UK) Ltd, PETRONAS' marketing and trading arm based in Europe and Neste fuelled the first Malaysia Airlines passenger flight using SAF, travelling from Kuala Lumpur to Singapore. The SAF is produced from 100 per cent renewable waste and residue raw materials, such as animal fat waste.</li> <li>PETRONAS will continue to be the Title and Technical Partner with Mercedes-AMG PETRONAS Formula One Team from the 2026 season onwards, signalling our commitment towards a sustainable future with the use of 100 per cent advanced sustainable fuel for next-generation power units. With our extensive experience in formulating the Fluid Technology Solutions™ for the team, we have the capacity and capability to perfect the technology to produce and supply this fuel to the F1 team.</li> </ul>
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### Key Focus Areas and Results

#### New Business – Capturing New Growth Opportunities

What We Did in 2022	Results
<ul style="list-style-type: none"> <li>Strengthened position in specialty chemicals to future-proof business and capture new growth opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Completed the acquisition of Perstorp Group, a global leader in sustainable specialty chemicals, bringing PCG closer to realising its mid-term goal of 30 per cent additional revenue from non-traditional business by 2030. With Perstorp Group's revenue now contributing to the Group, we achieved a significant increase of 26 per cent in revenue, from RM23.0 billion to RM29.0 billion in 2022.</li> <li>Expanded our presence in Echt, Netherlands with the launch of BRB International BV's (BRB) new lube oil additives manufacturing facility to meet evolving customer demand in the region.</li> </ul>
<ul style="list-style-type: none"> <li>Accelerated the transition towards a circular economy</li> </ul>	<ul style="list-style-type: none"> <li>Signed an MoU with KDEB Waste Management, One Biosys Sdn Bhd, Alam Flora Environmental Solutions Sdn Bhd and E-Idaman to obtain plastic waste which will be reprocessed to produce circular polymers for food packaging, healthcare and industrial applications, in addition to identifying potential for waste segregation facilities development in Malaysia.</li> <li>Signed an MoU with ExxonMobil to assess the potential for large-scale implementation of advanced plastic recycling technology at a PETRONAS-owned facility.</li> </ul>
<ul style="list-style-type: none"> <li>Improved access to green mobility</li> </ul>	<ul style="list-style-type: none"> <li>In keeping with PDB's 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.</li> <li>Launched the first EV charging hub at PETRONAS Station Bandar Baru Ayer Hitam along the North-South Expressway. Its strategic location makes it well-positioned for multiple EV users travelling south- or north-bound to access charging facilities simultaneously.</li> <li>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.</li> <li>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.</li> </ul>

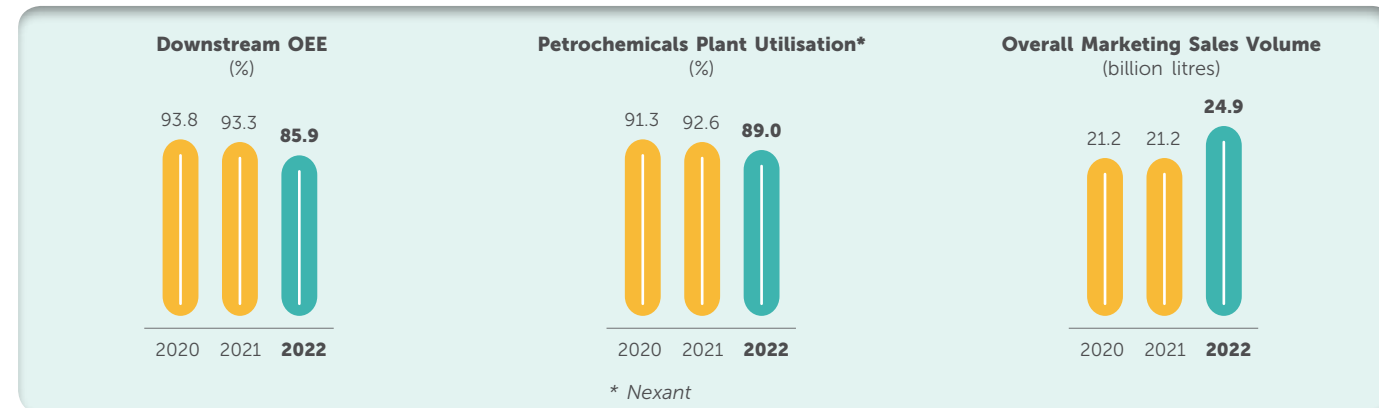
#### NZCE – Pathway to Zero

<ul style="list-style-type: none"> <li>Achieved GHG emissions reductions from our operations</li> </ul>	<ul style="list-style-type: none"> <li>Ramped up efforts to reduce GHG emissions from our operations through several key Scope 1 and 2 reduction initiatives, such as conversion to high performance catalyst, implementing Single/Zero Boiler Operations, electricity use from renewable sources (solar) and implementation of energy efficiency measures (e.g. enhancement of steam trap management and condensate heat integration).</li> </ul>
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## Downstream

### Operational Highlights

We have maintained stable OEE and petrochemicals plant utilisation (Nexant) for the past three years. Retail and Commercial segments meanwhile boosted overall marketing sales volume on the back of economic recovery.



### Key Risks and Challenges

#### Risks and Challenges

- Supply disruptions and volatility in commodity prices due to geopolitical tensions and the COVID-19 pandemic.
- Growing attention on climate change following an increasing number of natural disasters.
- Government policies and commitment by industry players are still developing in managing the energy trilemma (affordability, security, sustainability).
- Evolving customer preferences, especially increasing demand for sustainably-produced products and offerings, impacted petrochemical and fuel demand.

#### Mitigation Strategies

- Accelerated growth into non-traditional businesses by adopting the Agile methodology and dynamic business planning while preserving core business via digitalisation.
- Implemented sustainability initiatives in line with our NCZE 2050 Pathway, focusing on operational emissions reduction and business growth opportunities in the low-carbon economy.
- Diversified from traditional businesses to future-proof the business against volatility in the commodity markets while meeting stakeholders' demand for sustainable and affordable products, as follows:
  - Advanced biofuels
  - Lubricants for EV
  - Non-fuel business at retail stations and beyond
  - Specialty chemicals and circular products

### Growth Opportunities

#### Opportunities

- Rising demand for innovative energy solutions

#### Our Approach

- Continued expansion and diversification into derivatives, specialty chemicals and solutions through mergers and acquisitions to solidify our position in the specialty chemicals industry and future-proof the business.
- Strengthened presence in the biofuels space through planned greenfield bio-refinery and co-processing at existing facilities by 2025 and 2027 respectively, leveraging advance technology to produce sustainable fuel, including SAF and HVO or renewable diesel. In the interim, Phase 1 of co-processing (before further expansion in 2027 under Phase 2) will produce SAF by the end of 2023 to provide volume that will enable to PDB and PETCO to trade and sell in the domestic and export market respectively.

### Growth Opportunities

#### Opportunities

- Recovery in the retail market increased demand for non-fuel products and offerings
- Improve access to green mobility

#### Our Approach

- Enhanced and expanded our non-fuel portfolio including Café Mesra in the domestic market to increase retail market share and future-proof the business.
- Increased innovative and customer-centric solutions by growing the Setel ecosystem to enable greater customer convenience.
- Amplify collaborations with industry players, primarily Gentari, to accelerate the roll-out of EV charging infrastructure in Malaysia.
- Continued innovation in next-generation e-fluids under the PETRONAS Iona range, making us one of the early adopters in the industry to introduce a range of automobile fluids for electric vehicles.

### Outlook

#### Short Term (2022-2027)

The Downstream business will continue to move forward together with the rest of the Group as a more agile organisation in the market, guided by the PETRONAS Energy Transition Strategy. The business is already fronting some of the most advanced solutions in the industry and will continue innovating to offer lower carbon solutions. At the same time, Downstream will continue to be on the lookout for opportunities to scale, collaborating with relevant stakeholders to shape forward-looking energy policies that contribute towards the energy transition.

We will continue to leverage digital technology, advanced infrastructure and robust strategies to maximise production, drive portfolio expansion, capture new offerings in the non-fuel segment and enhance sales and marketing, with a strong emphasis on simplification, resource optimisation and waste reduction.

We are also well-positioned to deliver safer and cleaner solutions to our customers at competitive prices, reinforcing our role as a reliable energy partner. Our short-term key focus areas include:

- Strengthen presence in the derivatives and specialty chemicals business;
- Collaborate with key stakeholders through circular economy initiatives to drive growth in the New Plastics Economy, in line with our approach to sustainability;
- Establish pathways into biofuels production through greenfield biorefinery and co-processing in existing facilities;
- Facilitate PIC's growth and maximise its potential as THE Regional Petrochemical Park;
- Expand the Setel ecosystem to create seamless and frictionless customer experience through new features;

- Expand Café Mesra outlets in and beyond PETRONAS stations' network, including standalone kiosks in Malaysia in 2023;
- Explore partnerships in the EV and sustainable energy space in support of Malaysia's aspiration to be a low-carbon nation by 2040;
- Continue innovating next-generation fluids for EV with the PETRONAS Iona range; and
- Expand PETRONAS AutoExpert network to support Small and Medium Enterprises (SMEs), which in turn will help further grow the local economy.

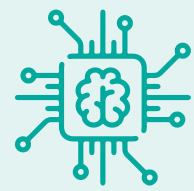
In addition, we will continue to improve our safety performance to achieve "Zero is possible", including zero fatality and best-in-class lost time injury frequency, as the protection of our people and assets remain a high priority.

#### Medium to Long Term

The global energy mix is expected to see a greater shift towards cleaner and more affordable energy over the long term. We are future-proofing the Downstream business by optimising our value chain to remain competitive and relevant. Towards this end, we are driving strong momentum, accelerating actions and strengthening our commitment to realise our NZCE 2050 Pathway and climate goals set out under the Paris Agreement.

As we move into a more sustainable energy future, it is imperative that we strive to reduce GHG emissions from our operating units at pace to ensure our customers have safer, reliable, cost-optimised and emissions-abated energy solutions. Our main priority is to remain in step with the societies we serve, and address energy transition in a just and responsible manner.





# Project Delivery and Technology



**Datuk Bacho Pilong**  
Senior Vice President,  
Project Delivery and Technology

The journey towards achieving net zero carbon emissions has created more innovation, collaboration and inclusivity opportunities. PD&T focuses on delivering secure and affordable energy solutions through the operational excellence of our core activities, underpinned by innovation and data, while delivering our projects safely on time, within budget and scope. We also accelerated growth efforts, ensured we had the right talent and did what we could to protect our environment.

PD&T's functions increased significantly over the past year as we moved into new areas to realise our NZCE 2050 Pathway. We fortified our expertise in project management, technical expertise, technology research and development and digitalisation. We pushed the needle on developments in several key growth areas across our value chain namely carbon capture and storage (CCS), specialty chemicals, hydrogen, renewables, advanced materials and circular economy. At the same time, we focused on building our talents in these non-traditional sectors, a critical component in realising our NZCE 2050 Pathway. We continued our journey to facilitate a just transition, building an innovation ecosystem where we strengthened our collaborations with stakeholders and partners. We developed and deployed our proprietary technology and digital solutions to accelerate decarbonisation across and beyond the energy landscape at scale and pace.



**975** projects worth  
**RM12.63**  
billion.



**RM5.1**  
billion value realised  
through enterprise  
and business digital  
solutions.



PD&T managed projects recorded over **37 million** man-hours with a Full Time Equivalent of **12,800** personnel at the work site. **13** projects were executed according to On Time, On Budget, On Scope (OTOBOS), while **11** were completed ahead of schedule.

**RM4.23 million** in value creation via the establishment of PETRONAS' Groupwide 5G Enterprise Price Agreement with Telekom Malaysia. This is Malaysia's **first 5G Enterprise** Network and a first for Southeast Asia's oil and gas industry.

PD&T workforce  
**4,966**  
in **13**  
countries.



Delivered **450kW** electrolyser to Malaysia's first multi-fuel station and secured sales following market launch of Proton Membrane (PEM) Electrolyser.

Achieved over **RM150 million** from the commercialisation of technology and digital solutions.



Trained **28,032** employees (**63%** of the workforce) in digital competencies and skills at the PETRONAS Digital Academy.



## Project Delivery and Technology

### Creating Stakeholder Value

Stakeholder	Expectations	Value Created
<p><b>C</b> Customers</p>	<p>Introduce sustainable and innovative products and solutions.</p>	<ul style="list-style-type: none"> <li>Managed a total of 975 projects worth RM12.63 billion.</li> <li>Achieved over RM150 million in revenue from technology and digital solutions' commercialisation, including the supply of PETRONAS proprietary electrolyser technology for hydrogen production multi-fuel stations in Sarawak, as well as the deployment of technology products in remote and autonomous operation, production chemicals and production enhancement, asset integrity and health and beauty aid.</li> <li>Generated RM879 million in value by converging engineering and digital domains through innovative approaches and technologies under the ARIES Project, highlighting the power of interdisciplinary collaboration in driving growth and success.</li> </ul>
<p><b>IPG</b> Industry Partners</p>	<p>Elevate industry capabilities and shape industry standards via multilateral knowledge sharing.</p> <p>Create opportunities to collaborate on the latest technologies for application in other industries and broader purposes.</p> <p>Unlock growth in non-traditional businesses to support our business and sustainability targets with Sarawak as a launching pad.</p>	<ul style="list-style-type: none"> <li>More than 20 Malaysian contractors participated in projects to drive project delivery transformation following our collaboration with the Malaysian Oil, Gas and Energy Services Council (MOGSC).</li> <li>Supported Sarawak's adoption of hydrogen and renewable oil as alternative fuels through collaboration between PETRONAS Technology Ventures Sdn Bhd (PTVSB) and SEDC Energy.</li> <li>Accelerated technical and decarbonisation efforts via joint ventures with other industry players.</li> <li>Signed an MoU with Tenaga Nasional Berhad (TNB) to collaboratively study the development of a green hydrogen ecosystem and CCS technology.</li> <li>Established Artificial Intelligence Centre of Excellence (AI CoE) with initial partners Baker Hughes, Boston Consulting Group and Microsoft to drive the advancement of AI solutions.</li> <li>Collaborated with Accenture and Amazon Web Services (AWS) to explore commercialisation opportunities for a cloud-based logistics solution and services platform, STEAR.</li> </ul>
<p><b>ET</b> Employees and Talent</p>	<p>Create a future-ready workforce with embedded digital competencies to augment organisational capability, accelerate adoption and realise value.</p> <p>Introduce training and capability development opportunities for PD&amp;T's talents and higher learning institutions.</p>	<ul style="list-style-type: none"> <li>Curated programmes to strengthen digital literacy among local graduates to meet the demands of current and future job markets via BeDigital Bootcamp.</li> <li>Collaborated with 20 higher learning institutions in Malaysia under the Collaboration with Higher Education Strategic Initiatives (CHES).</li> <li>Raised social consciousness among students and interns via the University of Malaya (UM) Odyssey Hackfest.</li> </ul>

### Key Focus Areas and Results

#### Core Business – More Energy, Less Emissions

##### What We Did in 2022

- Delivered projects safely and ahead of schedule despite COVID-19 challenges.
- Delivered more value to the Group through cost reduction, operational efficiency and cash generation.
- Improved efficiency, enhanced productivity and strengthened operational resilience via digital transformation and technical solutions.
- Achieved progress on key technology projects.
- Improved workforce digital competency through Digital Academy and Citizen Analytics.
- Increased resilience and automation through scalability.
- Leveraged the Internet of Things (IoT) to monitor plants and facilities remotely.
- Utilised a maturity model framework and data analysis to develop a future-ready strategic workforce.
- Reshaping talents with a broad-based approach encompassing the concepts of systemic thinking, sustainability, carbon sensitivity and a value-driven mindset.
- Developing an empowered, enabled and agile talent pipeline to drive business results and future growth.
- Pursued industry-academia collaborations for talent development and innovation advancement.

##### Results

- PD&T's managed projects recorded over 37 million man-hours with a Full Time Equivalent of 12,800 personnel at the work site. Regrettably we recorded a fatality at one of our projects, mainly due to the intensity and complexity of project-related activities despite increased HSE risk preventive measures. Following this, we intensified HSE efforts by forming a Pre-emptive Intervention Taskforce to execute measures based on data analytics (Artificial Intelligence Incident Risk Analytics), key findings from the investigation and personnel's feedback.
- Executed 13 projects according to On Time, On Budget, On Scope (OTOBOS) and completed 11 projects ahead of schedule.
- Installed and piloted two units of 250 m<sup>3</sup> Flexible Subsea Storage and integrated to floating host platforms with potential RM500 million cost saving compared to average new build floating storage and offloading (FSO) unit.
- RM5.1 billion value realised through enterprise and business digital solutions driven by cash generation, cost saving, cost avoidance and efficiency enhancement levers, for example:
  - Realised cost savings on logistics spend for Upstream business through STEAR.
  - In-house digital solution enabled LNG business to plan for third party cost avoidance while adhering to contractual obligations.
- Digital Twin Enterprise Optimisation Centre delivers molecular transparency across the value chain and brings together digital twins of all business sectors.
- Remote Autonomous Operation (RAO) piloted at Institut Teknologi Petroleum PETRONAS to accelerate the implementation of this technology at plants.
- The industry has recognised PETRONAS' tech-digital solutions at Asian Downstream Awards, Asian Oil & Gas Awards, IDC Future Enterprise Awards, Databricks Data Team Awards and Malaysia Technology Excellence Awards.
- Realised RM4.23 million in value creation from establishing the PETRONAS Groupwide 5G Enterprise Price Agreement with Telekom Malaysia. It is Malaysia's first 5G Enterprise Network and a first for Southeast Asia's oil and gas industry.
- Reached a managed maturity in cyber security with capabilities to ensure a secure ecosystem and defend against threats.
- Enterprise Data Hub (EDH), a centralised and unified data store, has liberalised data to cater to enterprise and business-specific needs.
- PETRONAS data now resides in Cloud, allowing for flexibility and scalability. This resulted in better collaboration, reduced costs and improved data security.
- Upskilled close to 30,000 PETRONAS employees through our Digital Academy to future-proof the organisation with a digital-ready workforce. In analytics, developed 850 dashboards and 150 machine-learning modules via the Citizen Analytics programme under Digital Academy.



## Project Delivery and Technology

### Key Focus Areas and Results

#### Core Business – More Energy, Less Emissions

##### What We Did in 2022

##### Results

- Elevated industry-level capabilities through expertise exchange across disciplines between technical professionals, businesses and strategic partners within and beyond PETRONAS via Technical Professional Forum.
- Worked closely with 20 local universities under the Collaboration with Higher Education Strategic Initiatives (CHES) programme to drive progress in technical areas that support energy sustainability via industry-academia knowledge sharing and human capital development.
- Expanded academic network collaborations with more than 10 foreign universities in research and talent development, including establishing PETRONAS global technology centres in Malaysia, the United Kingdom and Norway.
- Approximately 400 women employees participated in the Code Without Barriers programme with Microsoft to promote gender diversity and upskill women talent in Data and AI.
  - 107 completed the self-learning modules curated by Microsoft.
  - 38 were certified in Microsoft Azure Data Fundamentals.

### Key Focus Areas and Results

#### New Business – Capturing New Growth Opportunities

##### What We Did in 2022

##### Results

- Intensified innovation to drive long term sustainability in key focus areas:
    - CCS
    - specialty chemicals
    - hydrogen
    - renewables
    - advanced materials
    - circular economy.
  - Forged industry-wide partnerships to accelerate technology and digital transformation, talent development, knowledge transfer, solutions adoption and improve market penetration.
  - Pursued new revenue streams through technology and digital products to drive competitive advantage.
  - Elevated sustainability-driven competencies such as circular economy and waste management in driving operational excellence amid climate concerns.
  - Identified new capabilities for talent development to support PETRONAS' ventures into growth businesses and ensure proper career transition for talents identified for redeployment.
- Commercialised and marketed proprietary solutions to drive holistic cross-industry efforts towards decarbonisation and sustainability.
  - Launched PETRONAS' Advanced Proton Exchange Membrane (PEM) Electrolyser, secured sales and established a new market for our electrolyser.
  - Delivered 450kW electrolyser to Malaysia's first multi-fuel station and secured sales following the market launch of PEM Electrolyser.
  - Partnered with industry players along the supply chain to create the right ecosystem and widen hydrogen adoption.
  - Delivered 1kg/day Coke-to-Graphene (CtG) production unit reactor.
  - Signed a Sales and Purchase Agreement with a paint manufacturer to use graphene-based paint additive with a contract value of USD1.6 million as market entry.
  - Integrated Bio Hub Facilities completed the Front End Engineering Design for its pilot plant, marking a milestone in specialty surfactants development to capitalise on the demand for higher quality personal care, hygiene and beauty products.
  - Delivered bio-polymer (from waste biomass) coated fertiliser prototype capable of reducing fertiliser application frequency and overall fertilising cost, with potential bioplastic applications in medicine, cosmetics, packaging and consumer goods.
  - Deployed plastic bitumen road paving trials in collaboration with the Malaysian Public Works Department, utilising 790 kg of plastic waste for every 1km lay.
  - Obtained acceptance from Sabah's Department of Fisheries for our Master Reefing Plan to improve future local seafood sources and reduce dependency on imported sources.

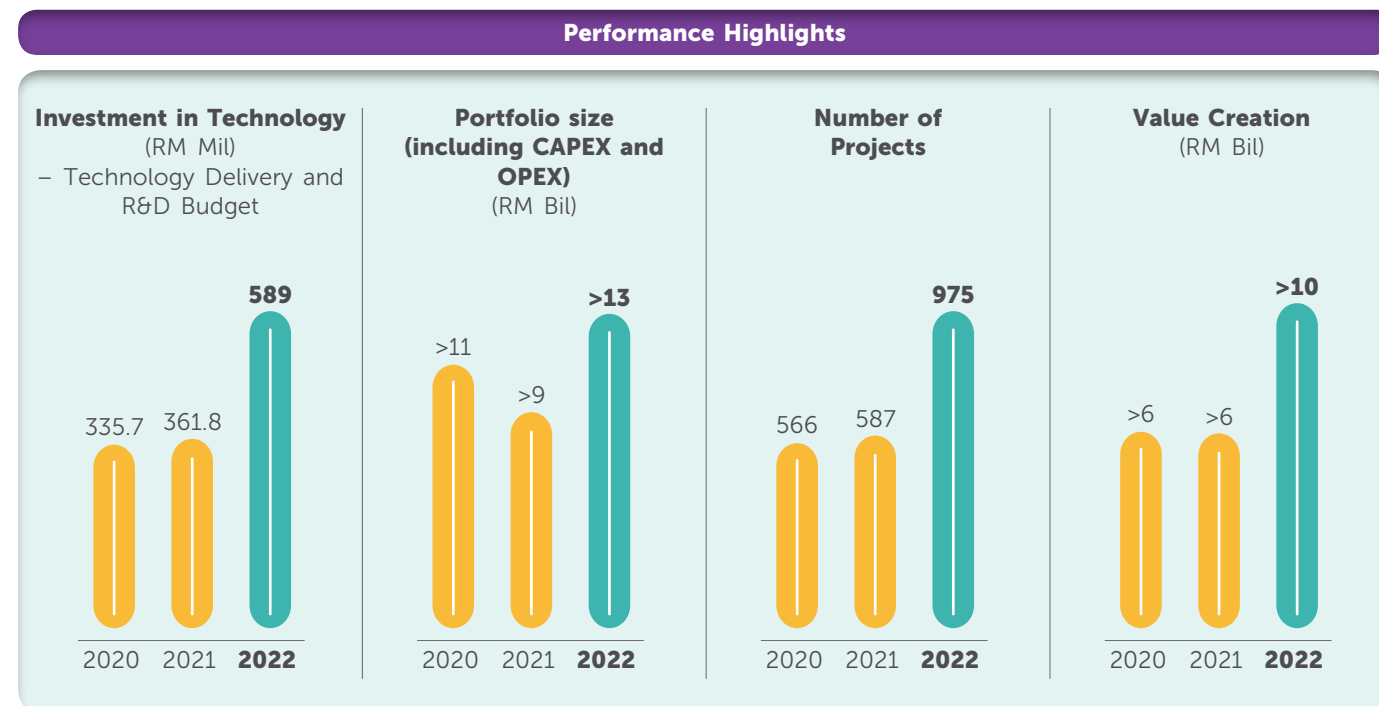
#### NZCE – Pathway to Zero

##### What We Did in 2022

##### Results

- Accelerated the decarbonisation of our assets.
  - Strengthened emissions accounting in fulfilling PETRONAS' pledges to international ESG reporting.
  - Leveraged technologies to reduce environmental footprints and HSSE risks.
  - Embedded sustainability technical know-how in our capability inventory.
- Established the Enterprise Decarbonisation unit to intensify and accelerate strategic groupwide decarbonisation encompassing multiple programmes across Upstream, Downstream and Gas assets.
  - Progressively deployed the following:
    - Improvement of fuel gas utilisation baseline and forecasting.
    - iCON GHG modelling for enterprise transparency and granularity of emission data.
    - Methane emissions accounting and forecasting.
  - Organised the Race2Decarbonise hackathon to spur ideation and crowdsourcing innovative solutions, the first to be conducted by an oil and gas company worldwide.
  - Achieved first steel cut milestone for our Offshore Low-Speed Wind Turbine project.
  - Bio-MEG pilot plant became the first GPM360-certified green project.
  - Conducted the first field deployment of floating solar PV technology for open sea application at Pulau Redang and Tok Jembal, Terengganu.

## Project Delivery and Technology



### Risks and Challenges

Risks	Mitigation Strategies
<ul style="list-style-type: none"> <li>Sporadic global resurgence of COVID-19 and geopolitics disrupt the supply chain, impacting pace and cost.</li> <li>Shortage of critical talents to drive the non-traditional business sector to achieve targets.</li> <li>Gaps in agility towards meeting innovation requirements and lacking pace in adopting best practices will affect PETRONAS' competitive edge and diminution in projected returns.</li> <li>Shortcomings in innovation can leave current physical and intellectual assets obsolete and lack of cyber defence leaves assets vulnerable to attacks.</li> </ul>	<ul style="list-style-type: none"> <li>Diversified suppliers based in vulnerable COVID-19 locations and identified alternative reliable supply points.</li> <li>Strengthened Crisis Management and Business Continuity Plans in meeting post-pandemic challenges.</li> <li>Identified and secured niche talents externally while developing employees with relevant skills in non-traditional business areas.</li> <li>Strengthened competitive advantage with in-house technology solutions meeting business needs and aspirations, guided by the PETRONAS Technology Management System (PTMS).</li> <li>Established a robust Intellectual Property (IP) Policy at enterprise level to protect our innovations and provide an orchestrated systematic approach to managing technology IPs effectively.</li> <li>Continuously strengthened Cyber Security governance through various measures including the enforcement of the PETRONAS Enterprise Cyber Security Framework, PETRONAS Cyber Security Incident Response Procedure and Cyber Security Ransomware Crisis Management.</li> </ul>

### Risks and Challenges

Risks	Mitigation Strategies
	<ul style="list-style-type: none"> <li>Exchange knowledge on best practices and intelligence in the energy sector among the cybersecurity community.</li> <li>Continued talent capability advancement through upskilling and best-in-class recruitment policy.</li> </ul>

### Growth Opportunities

Opportunities	Our Approach
There is rising demand for digital and technology commercialisation.	<ul style="list-style-type: none"> <li>Achieved more than RM150 million in revenue, a five-fold increase compared to 2021.</li> </ul>
Increasing trends in global innovation for decarbonisation to meet emissions capping targets.	<ul style="list-style-type: none"> <li>Conducted crowdsourcing and open innovation to identify decarbonisation solutions through Race2Decarbonise global hackathon to accelerate progress towards NZCE 2050 Pathway.</li> </ul>
Shape industry trends to improve human capability development/ talent pipeline.	<ul style="list-style-type: none"> <li>Shaped International Oil and Gas Producers (IOGP) and Malaysian standards by leveraging our Technical Professionals.</li> <li>50 per cent of our BeDigital Bootcamp participants secured employment offers from PETRONAS and our partners.</li> <li>Launched PETRONAS Career Resides in You (CARRY) Youth Outreach to increase awareness of the multitude of career opportunities within the energy industry.</li> </ul>





## Project Delivery and Technology

### Our Approach to Sustainability

What We Did	Results
Intensified Technology Innovation.	<ul style="list-style-type: none"> <li>Unlocked floating solar photovoltaic (PV) technology for the first open sea field deployment at Pulau Redang and Tok Jembal, Terengganu.</li> <li>Established a joint framework with PETRONAS Chemicals Group (PCG) to develop Nitrile Butadiene Latex (NBL) technology capabilities.</li> </ul>
Accelerated progress of NZCE 2050 pathway.	<ul style="list-style-type: none"> <li>Intensified and accelerated enterprise-wide decarbonisation through streamlined initiatives.</li> <li>First-ever Race2Decarbonise aims to supplement the carbon abatement mission to cap emissions from Malaysian operations at 49.5 Million tCO<sub>2</sub>e by 2024.</li> <li>Delivered PETRONAS' New Leadership Centre project                             <ul style="list-style-type: none"> <li>Recorded the highest Green Building Index (GBI) score of 96/100.</li> <li>Targeted to achieve the lowest Building Energy Index (BEI) in Malaysia at 62.61 kWh/m<sup>2</sup>/year.</li> </ul> </li> <li>Entered into a collaboration with Tenaga Nasional Berhad (TNB) to drive innovative solutions towards decarbonisation in supporting Malaysia's aspiration to be a carbon-neutral nation by 2050.</li> <li>PETRONAS Technical Services Sdn Bhd (PTSSB) collaborated with Green Project Management to jointly work on sustainability in project management focusing on capability building, processes and practices.</li> </ul>
Supported the nation's human capital development and digital economy initiatives.	<ul style="list-style-type: none"> <li>Strengthened local graduates' digital literacy via BeDigital Bootcamp, organised by PETRONAS' Digital Academy.</li> <li>Established the Sabah-PETRONAS Human Capital Development Agenda (HCDA) to build a sustainable talent pipeline for the state and the country.</li> <li>Increased career awareness within the energy industry among youths via PETRONAS Career Resides in You (CARRY) Youth Outreach Programme.</li> </ul>

### Outlook

#### Short Term (2023-2027)

PD&T will continue to advance PETRONAS' core business through Project Delivery Excellence, Asset Operational Excellence, expertise leadership and advancements in technology and engineering, as well as sustain and scale up our digital ecosystem.

Our short-term key focus areas include:

- Drive, intensify and accelerate decarbonisation efforts through all-around measures to support energy transition.
- Ensure technology investments support key business growth priorities in CCS, renewable energy, hydrogen and advanced materials.
- Intensify commercialisation of matured technologies and digital solutions.
- Establish an Artificial Intelligence Centre of Excellence (AI CoE) to accelerate the advancement in AI solutions that support energy delivery, operational efficiency and sustainability through collaboration with a network of global partners.

#### Medium to Long Term

As PETRONAS' CoE and solutions partner of choice for the energy industry and beyond, PD&T will continue to identify innovative solutions to maintain its competitive edge, leveraging its expertise in project delivery, technology, technical and digital solutions, while ensuring safe and efficient operations throughout the value chain. PD&T will also drive, advocate and monitor enterprise decarbonisation to support PETRONAS in meeting its emissions reduction targets.

In accelerating towards a just energy transition, PD&T has fortified its Five-Year Strategic Plan (2023-2027) to drive sustainable growth, focusing on three key thrusts:

- Ensure continuous improvements in safety, reliability and efficiency through distinctive digital and technology solutions.
- Unlock and accelerate commercialisation opportunities to generate new revenue for the Group.
- Intensify research advancements and business ventures in the identified focus areas:
  - Circular economy: Repurpose waste into new products
  - Advanced materials: Strengthen asset integrity, extend service life and reduce overall carbon footprint
  - Improve decarbonisation: Manage and reduce GHG emissions from assets
  - Drive renewables: Support the growth of hydrogen to fast-track the energy transition
  - Advance specialty chemicals: Ensure progress in producing and utilising specialty chemicals beyond oil and gas into everyday consumer products.

Moving forward, we will continue to pursue technology and digital advances throughout our value chain to ensure we meet the Group's business goals and realise our NZCE 2050 pathway.



# Gentari



**Sushil Purohit**  
Chief Executive Officer, Gentari

The energy transition is rapidly gaining momentum with greater push coming from multiple stakeholders including governments, activists, investors, local stakeholders, employees and customers.

In our effort to rank among the world's leading clean energy companies, Gentari has made significant progress with a series of initiatives and collaborations across our core portfolio, since our official launch only recently in September 2022. 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.



Signed MoU with Thailand's Evolt Technology in January 2023, marking inaugural foray into regional EV infrastructure development in Southeast Asia.



**1.6 GW** of global renewable energy capacity in operations and under development.



Entered into an agreement to acquire **WIRSOL Energy**, marking maiden entry into Australia's renewable energy market.



**13** MoUs for hydrogen collaboration with international partners and customers. In November 2022, delivered first cargo of low carbon ammonia from Malaysia to Thailand.



In India, delivered 382 three-wheel EVs, 161 charge points, and clocked in **2 million** clean kilometers.



In Malaysia, became largest DC Network Operator and first to offer equitable kWh pricing. Delivered **151** charge points, Southeast Asia's first public **350kW** super charger at X Park Malaysia in Sunway Serene charging hub, the first hub to be licensed by Malaysia's Energy Commission.





# Gentari

Core Pillars	Mission	Ambition
<b>Renewable Energy</b>	To be a Leading Next Generation Utility-Scale Renewable Energy Developer	🔹 Build out 30 to 40 GW of renewable energy capacity by 2030.
<b>Hydrogen</b>	To be a Scale Clean Hydrogen Producer and Go-to Industry Partner	🔹 Supply up to 1.2 mtpa of hydrogen by 2030.
<b>Green Mobility</b>	To be Asia Pacific's Preferred Green Mobility Solutions Provider	🔹 Capture 10 per cent market share (around 25,000 charging points) across key markets in Asia Pacific by 2030.

## Creating Stakeholder Value

Stakeholder Expectations	Value Created in 2022
<p><b>Customers</b></p> <p>Deliver clean energy solutions to help customers in their decarbonisation journey.</p>	<p><b>Results</b></p> <ul style="list-style-type: none"> <li>🔹 Achieved global renewable energy capacity of 1.6 GW in operations and under development and also played a critical role in PETRONAS' decarbonisation efforts towards its NZCE 2050 Pathway.</li> <li>🔹 Collaborated with international partners in Malaysia, India and the Middle East as well as customers in East Asia to advance hydrogen development.</li> <li>🔹 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 partnerships both in Malaysia and regionally.</li> </ul>
<p><b>Government</b></p> <p>Provide solutions to meet emissions reduction targets, contribute towards shaping policies and economic frameworks to catalyse a clean energy industry, stimulate economic growth in the clean energy space.</p>	<ul style="list-style-type: none"> <li>🔹 Proactively engaged with key stakeholders to introduce key priorities for Malaysia, including increasing the supply of green electrons, growing green hydrogen investments and expanding EV adoption in Malaysia.</li> </ul>
<p><b>Partners</b></p> <p>Opportunities to collaborate in the clean energy space.</p>	<ul style="list-style-type: none"> <li>🔹 Entered various key industrial collaborations in all three verticals – renewable energy, hydrogen and green mobility.</li> </ul>
<p><b>Employees</b></p> <p>Create employment opportunities in a dynamic workplace.</p>	<ul style="list-style-type: none"> <li>🔹 Introduced new employment opportunities to nurture talent and develop competencies in renewable energy, hydrogen and green mobility.</li> </ul>

## Key Focus Areas and Results

**Key Focus Areas**

- 🔹 Pursued and achieved progress in growing our focus areas of renewable energy, hydrogen and green mobility.

*Renewable Energy*


- 🔹 Achieved 1.6 GW of renewable energy capacity in operations and under development
- 🔹 In India, Amplus successfully commissioned an Open Access project (56.5 MW) in Uttar Pradesh and achieved Final Investment Decision for the ISTS Solar Rajasthan Project (363.4 MW).
- 🔹 In Malaysia, Gentari delivered the country's largest single rooftop solar installation (7.4 MW) at Universiti Teknologi PETRONAS and the largest self-consumption, ground-mounted solar installation (40 MW) at the Pengerang Integrated Complex.
- 🔹 In Australia, Gentari entered into an agreement in December 2022 to acquire WIRSOL Energy, a leading renewable energy solutions provider which marks Gentari's maiden entry into the Australian renewable energy market. The full completion of this acquisition was achieved in February 2023.

*Hydrogen*

- 🔹 Gentari is developing blue and green hydrogen facilities in Malaysia, Canada and India with credible local partners and offtakers.
- 🔹 In November 2022, the first cargo of low carbon ammonia from Malaysia was delivered to Thailand.
- 🔹 The first production of green hydrogen is expected in 2025 and efforts to further diversify production nodes to the Middle East, Americas and Australia are in progress.
- 🔹 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.

*Green Mobility*

- 🔹 In India, Gentari's Vehicle-as-a-Service (VaaS) offering has delivered a total of 382 three-wheelers and 161 charge points, that had clocked in 2 million clean kilometers,
- 🔹 In Malaysia, Gentari became the largest DC Network Operator and the first to offer equitable kWh pricing. Gentari has installed a total of 151 charge points, established Southeast Asia's biggest EV charging hub in Suria KLCC and launched Southeast Asia's first public 350kW super charger at X Park Malaysia in Sunway Serene charging hub. The hub is also the first in Malaysia to receive the Energy Commission's inaugural Energy Commission's Electric Vehicle Charging System (EVCS) license. With this license, Gentari is also the first charge point operator to offer an equitable kWh pricing mechanism for EV charging in Malaysia.
- 🔹 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 inaugural foray into regional EV infrastructure development in Southeast Asia, in line with its aspirations to expand across key markets in Asia Pacific.



## Gentari

### Outlook

We are committed to delivering clean energy solutions and contribute towards achieving a net zero future. Gentari will continue to collaborate with customers, partners and stakeholders to create the right ecosystem for growth in the clean energy space. We will also invest in the people, capabilities and technologies required to develop and deploy leading-edge innovations that will amplify our growth in the areas of renewable energy, hydrogen and green mobility.

Our short-term strategic focus areas include:

#### Renewable Energy

- Grow Commercial and Industrial (C&I) projects in Asia Pacific.
- Expand utility-scale solar and wind in Malaysia and Asia Pacific to support the green hydrogen aspiration.
- Embark on offshore wind within Asia Pacific and the European Union.
- Develop round-the-clock energy storage capability to ensure reliability of energy supply.

#### Hydrogen

- Develop hydrogen projects in Malaysia, Canada and other competitive geographies.
- Provide solutions for customers in Asia Pacific and other key markets, especially among early adopters.
- Expand our global footprint through partnerships.
- Venture across the hydrogen value chain, leveraging the right technologies.
- Advocate for policies and regulations that support the growth of the hydrogen industry.

#### Green Mobility

- Expand charging points across Asia Pacific, starting with Malaysia and India, before scaling to adjacent markets of Thailand and Indonesia.
- Establish a Vehicle-as-a-Service (VaaS) fleet position in Malaysia, India and Asia Pacific.
- Grow value-added services for customers, namely retail, advertising, digital platforms and others.



# Other Businesses



PETRONAS' non-core businesses made remarkable progress in 2022, delivering strong results that contributed to the company's overall financial performance.

At MISC, the company has been busy developing new income streams in renewable energy and waste-to-value solutions. MISC secured over USD1.1 billion in long term contracts, expanded its supplier base and successfully raised USD1.0 billion in funding under the USD3.0 billion Global Medium Term Notes programme. With new maritime regulations pushing for global decarbonisation, MISC responded by investing in green asset classes like dual-fuel and low-carbon emission vessels, positioning themselves as a key player in the Green Economy.

KLCCP Stapled Group saw a sustainable recovery with an impressive 9.5 per cent increase in retail sales and new tenants joining the fold. Our retail, Suria KLCC and the retail podium of Menara 3 PETRONAS recorded its highest tenant sales, almost doubled last year's and even surpassed pre-COVID levels in 2019 by 9.5 per cent. KLCCP Stapled Group's Mandarin Oriental, Kuala Lumpur tripled its occupancy levels, signalling a promising future for the business. KLCC Group as a whole also achieved a commendable 119 out of 169 sustainability targets, showcasing its commitment to a better future.





## Other Businesses

### Maritime and Logistics

MISC is a subsidiary company and key solutions provider to PETRONAS. It is a global leader in energy-related maritime solutions, with over 50 years of experience and a modern fleet of more than 100 owned and chartered vessels and assets, backed by a workforce of 9,300 employees worldwide. Its vessels and assets include LNG and Ethane carriers, Petroleum and Product vessels, FPSs and LNG FSUs, with a total capacity of over 13 million deadweight tonnage (dwt) MISC is committed to providing sustainable maritime transportation solutions to meet the world's energy needs and contribute to the PETRONAS NZCE 2050 Pathway.

**MISC Group is steadfast in growing its businesses to become one of the world's most sustainable energy-related maritime solutions and services provider.**

**Our sustainability mission is to deliver long-term stakeholder value by operating safely, sustainably and responsibly to sustain positive impacts for the environment and society.**

MISC Group's Sustainability Strategy aligns with the United Nations' Sustainable Development Goals (SDGs) by prioritising 11 key goals in line with the Company's business practices and sustainability framework.



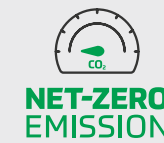
### Our Climate Commitment

Net Zero Greenhouse Gas Emissions by 2050

50% reduction in GHG intensity emissions by 2030 compared with 2008 base year

### Net Zero GHG Commitment

MISC Group is committed to achieving net zero GHG emissions by 2050



Transition to low carbon operations

Deploy zero-GHG emission vessels by 2030

Decarbonised shipping operations by 2050

Net zero GHG emissions by 2050



We are committed to the Global Maritime Forum's mission to shape the future of global seaborne trade to increase sustainable long term economic development and well-being.



Getting to Zero Coalition is a global alliance committed to develop commercially viable deep sea zero emission vessels powered by zero emission fuels into operation by 2030.



A partner to The Castor Initiative, a multi-stakeholder global coalition that is committed to jointly developing commercially viable deep-sea zero-emission vessels (ZEV) fuelled by ammonia by 2030.



Made a strategic investment into Daphne Technology alongside Shell Ventures, Trafigura and Saudi Aramco Energy Ventures, marking our entry into R&D for GHG abatement technologies aligned with our ongoing decarbonisation initiatives.



MISC has set up a dedicated New Energy and Decarbonisation (NE&D) team.

## Other Businesses

Financial	Environment	Social	Governance	Stakeholder Engagement
<p><b>Achieve Growth in Predictable and Recurring Sources of Cashflow</b></p> <ul style="list-style-type: none"> <li>Owned 11 dual-fuel low-carbon vessels (including 3 vessels under construction).</li> <li>Secured a USD527 million 11-year Sustainability Linked Loan (SLL) to finance the delivery of its six large ethane carriers (VLEC).</li> <li>Internal Carbon Pricing (Shadow Price) at USD50/tonne.</li> </ul>	<p><b>Towards Decarbonisation</b></p> <ul style="list-style-type: none"> <li>Developed Material Scope 3 Inventory.</li> <li>17 per cent reduction in GHG intensity.</li> <li>Total GHG: 4.2 Million tCO<sub>2</sub>e.</li> <li>Signed two MoUs to build 2 VLCCs and 2 Aframax zero-emissions by 2025 and 2026.</li> </ul> <p><b>Promoting Circular Economy</b></p> <ul style="list-style-type: none"> <li>Initiated Ship Recycling Yard Assurance Programme.</li> <li>99 per cent hazardous waste recycled.</li> </ul> <p><b>Biodiversity Conservation</b></p> <ul style="list-style-type: none"> <li>Developed MISC Group Heart of the Ocean (HOTO) Guidelines.</li> <li>Sponsored RM200,000 for UMT-MMS Sea Turtle Conservation Initiative.</li> <li>Launched Employee Participation Programme for reef surveys and capacity building at Mersing Island and UMT-MMS Sea Turtle Conservation Programme.</li> <li>32 reef sites surveyed and 3 reef sites rehabilitated.</li> <li>2,181 turtle nests conserved, with 78 per cent turtle hatching success.</li> </ul>	<p><b>Health and Safety</b></p> <ul style="list-style-type: none"> <li>47 per cent improvement in LTIF compared to 2021 (2021: 0.15).</li> <li>64 per cent improvement in TRCF compared 2021 (2021: 0.39).</li> <li>14 HSE Management System Assurance completed.</li> <li>135,929 UCUA raised.</li> <li>42 Management walkabouts conducted.</li> </ul> <p><b>Talent Excellence</b></p> <ul style="list-style-type: none"> <li>Enhanced Leadership Pathway and Functional Curriculum to fulfil current and future development needs.</li> <li>Continued with FlexWork (optimise work-life integration and maximise work efficiency).</li> <li>Introduced FlexCareer (introducing contingent workforce).</li> <li>94 per cent high performance talent retention.</li> <li>Maintained successor ratio of 2:1.</li> </ul> <p><b>Community Investment</b></p> <ul style="list-style-type: none"> <li>RM24.2 million channelled in sponsorship for ALAM cadets.</li> </ul>	<p><b>Values, Assurance and Business Ethics</b></p> <ul style="list-style-type: none"> <li>42 per cent women Board members.</li> <li>Implemented Compliance and Ethics Survey 2022 Management Scorecard FY2022.</li> <li>Recertification of ISO 37001:2016 Anti-Bribery Management System.</li> <li>Carried out annual review of MISC Group Bribery and Corruption Risk Assessment 2022.</li> <li>Zero human rights grievance reports.</li> <li>Zero major cybersecurity breach.</li> </ul> <p><b>Responsible Supply Chain Management</b></p> <ul style="list-style-type: none"> <li>Completed ESG self-assessment on 20 critical suppliers.</li> <li>104 suppliers/vendors attended the Annual CoBE, ESG and HSE Training for MISC Group Third Parties 2022.</li> </ul>	<p><b>Create Value through Trusted Stakeholder Relationships</b></p> <ul style="list-style-type: none"> <li>Remains as a listed constituent in the Dow Jones Sustainability Index (Emerging Market) for two consecutive years and FTSE4Good Index for nine consecutive years.</li> <li>MISC is the only Malaysian transportation sector company and one of the three Malaysian companies listed in DJSI Emerging Market Index globally.</li> <li>Included in the S&amp;P Global Sustainability Yearbook 2023 as a Sustainability Yearbook Member for the first time.</li> <li>197 engagements with customers, investors and financial institutions on our approach to sustainability completed.</li> </ul>

### Outlook

- We expect the market to remain challenging this year. The ongoing geopolitical tension in Europe continues to influence economic development and trade as we cope with high inflation and increasing interest rate environment.
- Closer to our industry, the strengthening of regulations in relation to emissions will require a radical approach and closer collaboration by the industry players to ensure compliance.
- Notwithstanding the continued challenging outlook, 2023 is filled with opportunities for MISC. We see ourselves shifting gears both in terms of the execution of current projects and advancement towards achieving our 2050 objectives whilst being selective on strategic client positioning, strong recurring cash flows and cleaner energy solutions.

### Property

KLCCP Stapled Group, comprising KLCC Property Holdings Berhad and KLCC REIT, constituting 32 per cent of the Malaysian REIT industry, is a subsidiary of PETRONAS that owns and manages top-quality assets. KLCCP Stapled Group's iconic and high quality assets generate additional revenue streams for PETRONAS and help diversify its business portfolio beyond oil and gas. KLCCP Stapled Group is also charting the course towards sustainability, moving its properties in alignment with PETRONAS' NZCE 2050 Pathway.

### Sustainability Highlights

#### Our Sustainability Framework

UN2030 Agenda Critical Dimensions	KLCCP Stapled Group Material Sustainability Matters	Four Sustainability Lenses
<b>Prosperity</b>	<ul style="list-style-type: none"> <li>Financial Sustainability</li> <li>Customer and Talent Management</li> <li>Corporate Social Responsibility</li> <li>Supply Chain Management</li> </ul>	<b>Continued Value Creation</b>
<b>Planet</b>	<ul style="list-style-type: none"> <li>Climate Change and Energy Management</li> <li>Environment Management</li> </ul>	<b>Safeguard the Environment</b>
<b>People</b>	<ul style="list-style-type: none"> <li>Health, Safety and Security</li> <li>Human Capital Development</li> <li>Human Rights</li> <li>Labour Standard and Practices</li> </ul>	<b>Positive Social Impact</b>
<b>Peace</b>	<ul style="list-style-type: none"> <li>Business Ethics Corporate Governance</li> <li>Cyber Security and Data privacy</li> </ul>	<b>Responsible Governance</b>

5-Year Sustainability Roadmap (2019-2023)

Building a Smart, Safe and Sustainable KLCC Precinct

Building an Agile, Inclusive, and Sustainable Workforce

Combating Climate Change and Reducing Environmental Impact

#### Prioritised 5 SDGs:



#### Our Contribution to the UN Sustainable Development Goals in 2022

- Released our first UNGC Communication on Progress (CoP) to show our endorsement of the 10 UNGC Principles on Human Rights, Labour, Environment and Anti-Corruption
- Our achievement in 2022 supported 9 UNSDGs and 15 SDG Targets





## Other Businesses

### Sustainability Achievements 2022

Planet	People	Peace	Prosperity
<ul style="list-style-type: none"> <li>Green Building Index (GBI) Malaysia certification for Twin Towers (Gold) and Menara 3 (Silver)</li> <li>37 per cent reduction in GHG emissions (from 2015 base year)</li> <li>52 per cent hotel waste were diverted from landfill</li> <li>30 per cent reduction in water consumption (from 2015 base year)</li> <li>100 per cent elimination of Single-Use Plastics from Mandarin Oriental, Kuala Lumpur</li> <li>KLCC is the largest EV hub in Malaysia (57 charging points)</li> <li>Refined our GHG emission data based on the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (2004)</li> </ul>	<ul style="list-style-type: none"> <li>Spent RM16.4 million on employee learning and development</li> <li>Zero fatalities since 2015</li> <li>Introduced #YouMatter to destigmatise mental health</li> <li>Enhanced employee benefits, progression criteria, succession planning and high performance talent pool</li> <li>Upgraded the Integrated Security Operations Centre (ISOC) as the central nerve, supported by New Security Operating Model (NSOM).</li> <li>Installed facial recognition services for improved security and contactless access at the Twin Towers</li> </ul>	<ul style="list-style-type: none"> <li>Submitted our first Communication on Progress (CoP) to the UNGC.</li> <li>Zero bribery and corruption cases.</li> <li>Achieved 42 per cent women composition on the Board, 41 per cent women in senior management and 38 per cent of total workforce.</li> <li>Achieved ISO37001:2016: Anti Bribery Management System Standards for three companies.</li> <li>Strengthened cyber security via the Enterprise Cyber Security Governance Framework.</li> </ul>	<ul style="list-style-type: none"> <li>Out of our RM1.4 billion revenue, RM17.0 million was distributed to communities while RM15 million went to our rental assistance for tenants.</li> <li>Practised ethical and transparent procurement and supply chain practices.</li> <li>Built trust and loyalty with customers and tenants.</li> </ul>

### Outlook

We will continue to drive sustainable growth by focusing on:

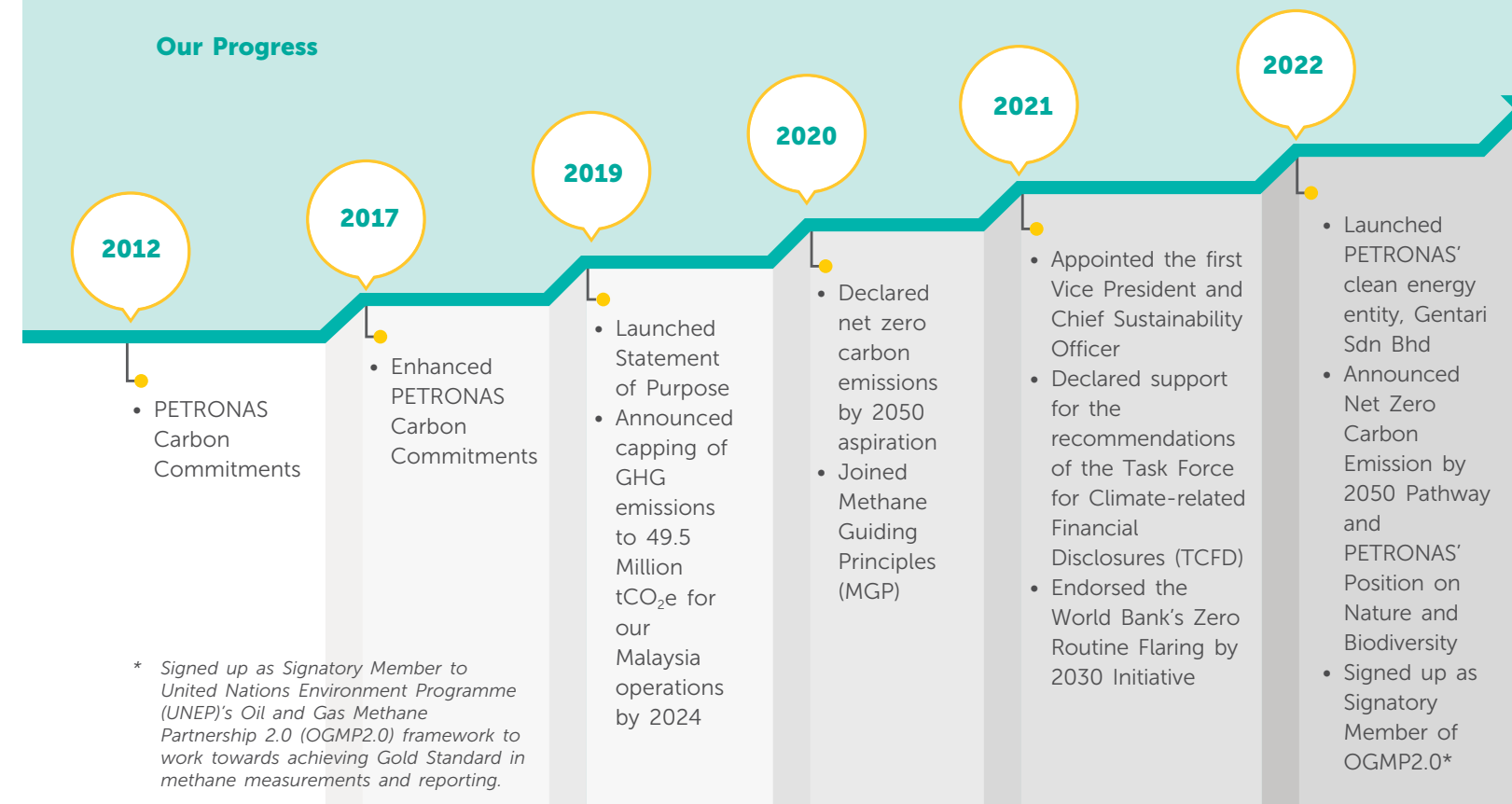
- Attractive tenancy terms and incentives to attract tenants whilst continuing to drive stable growth in offices.
- Innovative marketing programmes to bring more quality traffic into the mall to drive sales for its retail partners.
- World-class hospitality services to enhance our brand, capitalise on tourism returns and gain a competitive edge.
- Charting an NZCE 2050 Pathway with a 25 per cent reduction target by 2030 and Task Force on Climate Related Financial Disclosures (TCFD) assessment in 2023.

Our aim is to become a solutions partner for a sustainable future.

## Sustainability Statement

We have a deep-rooted commitment to sustainability as it is an essential part of our business. We firmly believe in responsible practices that create positive impacts on societies and economies. According to the Intergovernmental Panel on Climate Change (IPCC)'s Sixth Assessment Report (AR6), the global community must urgently reduce total greenhouse gas (GHG) emissions by 43 per cent by 2030 to mitigate the worst effects of climate change and secure a better future for all. In 2012, we introduced the PETRONAS Carbon Commitments and over the past decade, we have been working tirelessly to reduce our emissions. As Malaysia's custodian of hydrocarbon resources, we remain steadfast in supporting Malaysia's long-term aspirations and Nationally Determined Contribution to the Paris Agreement.

### Our Progress



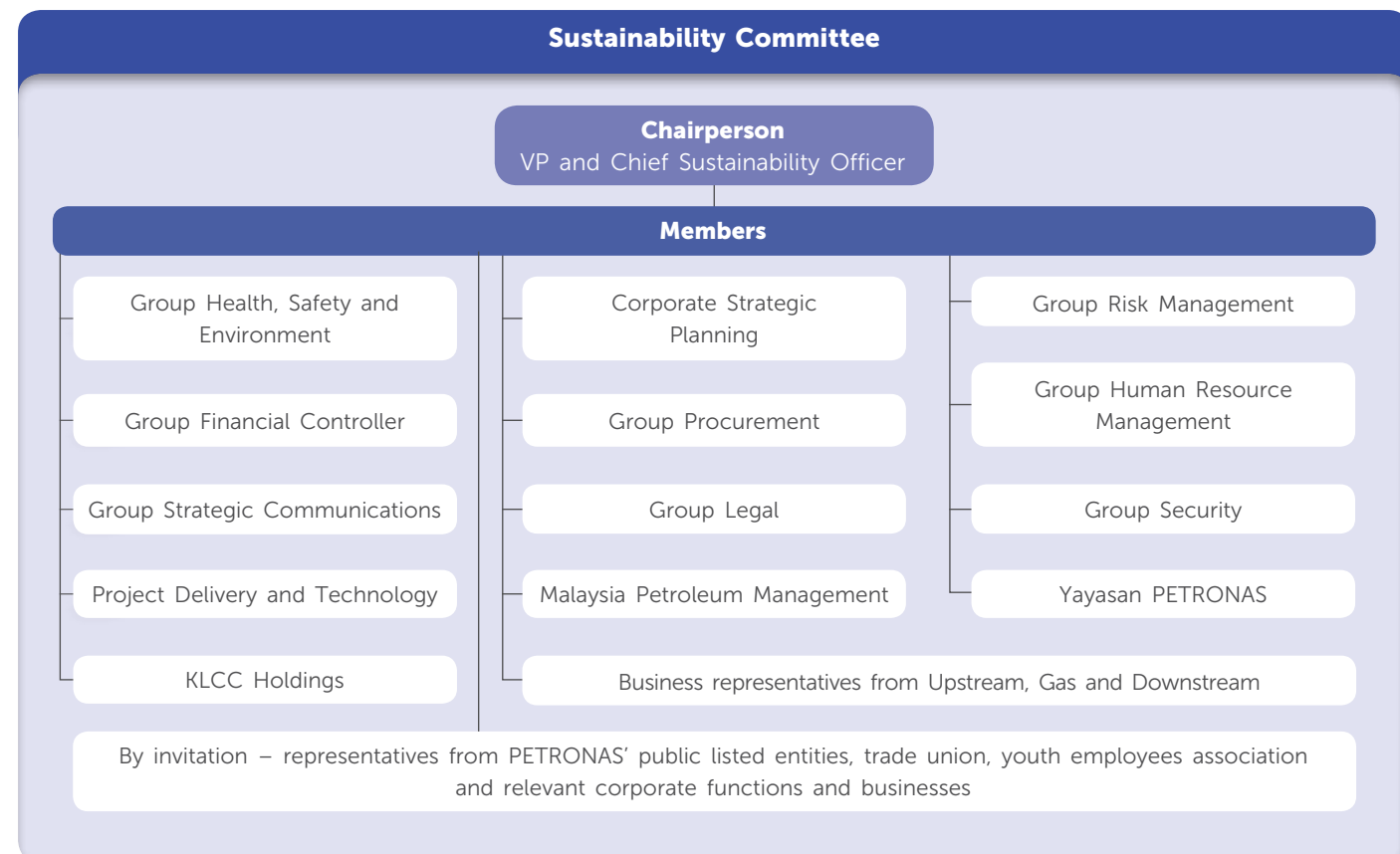
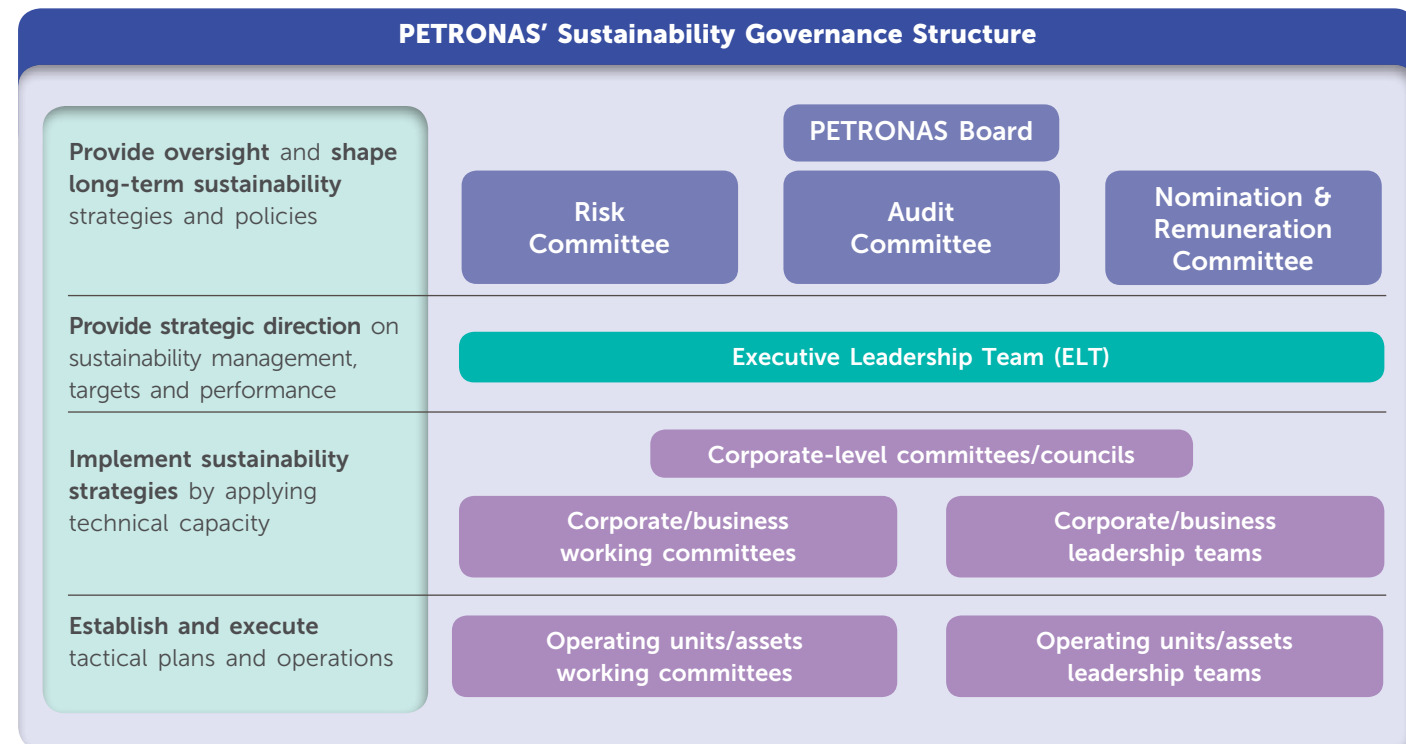
### Sustainability at PETRONAS

#### Sustainability Governance

Our commitment to sustainability starts at the core of our operations and extends throughout our value chain. We understand that countries face an energy trilemma, with security, affordability and sustainability concerns that require a unique spectrum of solutions. Therefore, a collective approach among governments, energy players, public and private sectors is necessary. By working together, we can leverage each other's strengths to achieve a sustainable, low-carbon future in a just and responsible manner.

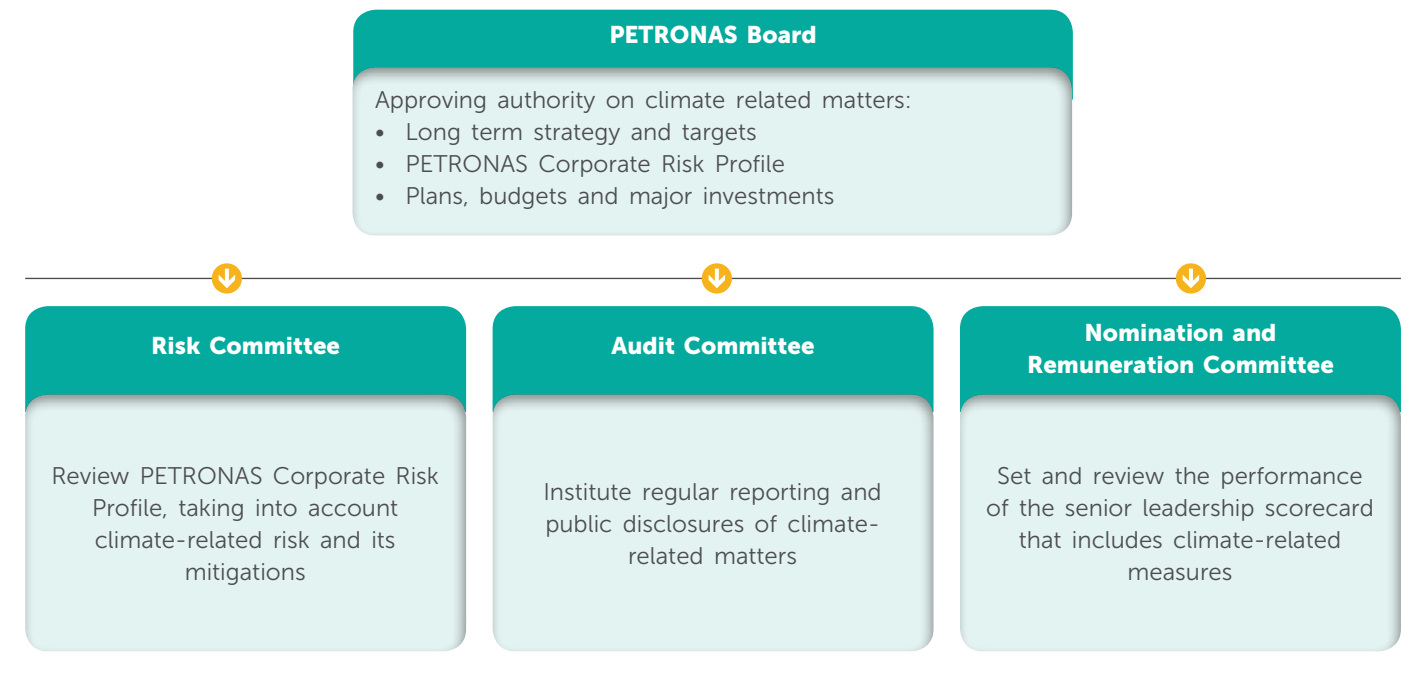
To ensure accountability and integrity, we have established a dedicated governance structure with clear reporting lines that drives our sustainability strategies, action plans, and initiatives. This structure ensures that our sustainability principles and priorities are fully integrated across the organisation, embedded in decision-making and execution of our sustainability-related matters. With this structure, we delineate roles and responsibilities clearly, enabling effective oversight, decision-making and efficient execution.

## Sustainability Statement



### Board Oversight

Our board has been taking an active role in climate-related matters discussion. We recognise that climate change is a critical business issue, contributing to a set of risks and opportunities. We are taking more deliberate actions to elevate sustainability, especially climate-related discussions at the Board, to shape the long-term strategic direction of the company.



Key activities undertaken by the Board, prepared by the Executive Leadership Team (ELT) on climate related matters in 2022 were:

- The Risk Committee reviewed the PETRONAS Corporate Risk Profile with consideration of climate-related risks and mitigation actions on a quarterly basis. The full Board approved the subsequent PETRONAS Corporate Risk Profile.
- Approved the Pathway and aligned it to the annual business plan and budget cycle.
- Approved PETRONAS Position on Nature and Biodiversity and Nature-based Climate Solutions strategy in support of the Pathway.
- Approved the long-term incentive plan for senior leadership that includes a performance measure linked to the delivery of the 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).
- Approved the formation of Gentari Sdn Bhd, an independent entity focused on providing clean energy solutions.
- Quarterly conversation series with global experts on climate-related topics which include TCFD, human rights and just transition.



## Sustainability Statement

### Management Oversight

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 27<sup>th</sup> 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:



For more details on PETRONAS Risk Management Committee roles, please refer to the Risks Linked to Creating Value section on page 86

### Memberships and Associations

As we move forward in supporting the global agenda, we believe that building relationships through trust and respect is crucial. We continuously explore and actively participate in professional associations, events, and memberships to strengthen our sustainability efforts, aligned with our strategic direction and Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway. Through our participation and engagements, we are able to better understand the concerns that need to be addressed and identify ways in which we could do to help. Our aim is to contribute to the nation-building of Malaysia and create a positive impact across industries and society.

In 2022, we further demonstrated our commitment to the industry through three additional involvements. We became a member of the Energy Transitions Commission where we aim to strengthen our leadership role in championing the energy transition agenda in Malaysia as well as in the ASEAN region.

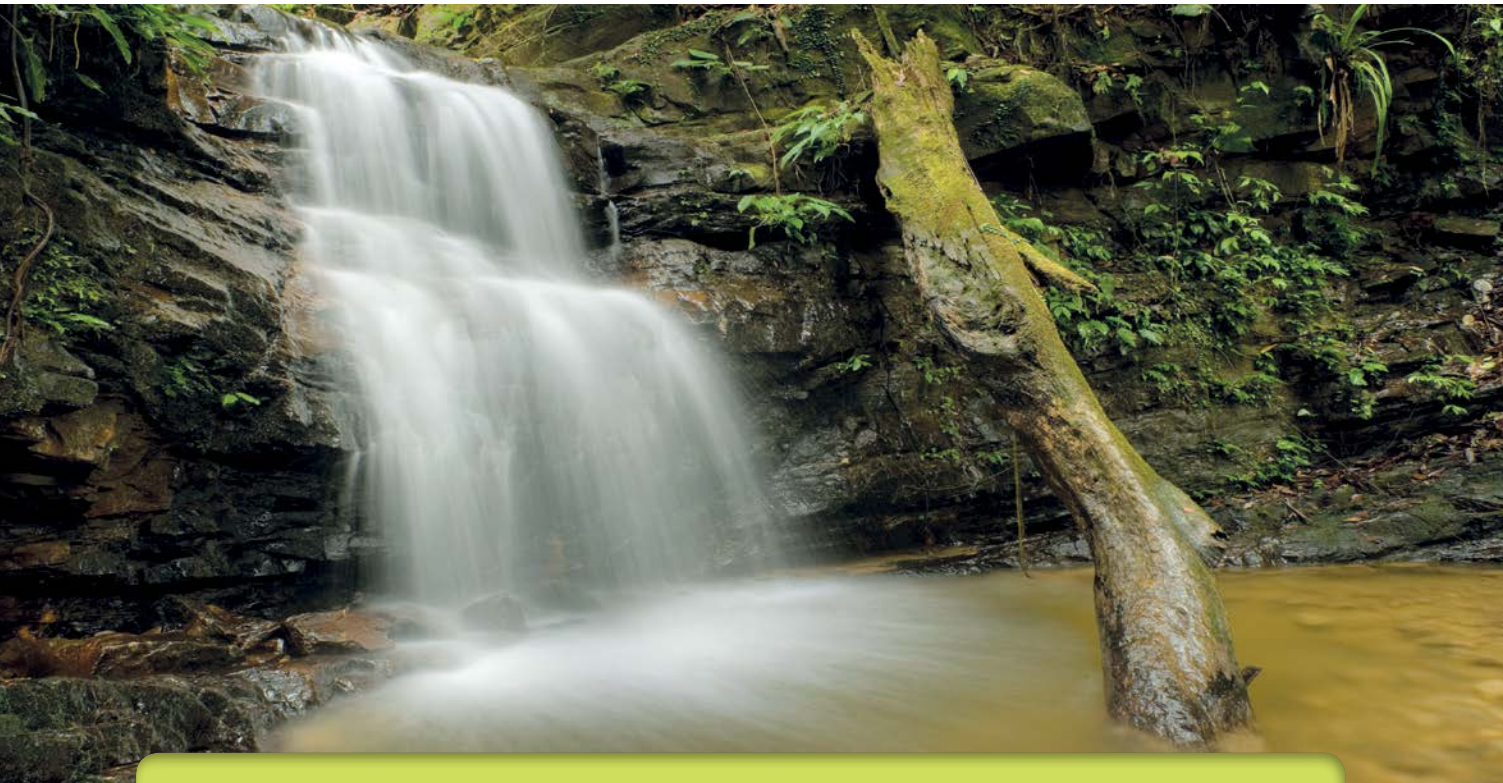
We also affirmed our methane commitments by joining United Nation’s Environment Programme (UNEP) Oil and Gas Methane Partnership 2.0 (OGMP2.0) Framework. It is a comprehensive, measurement-based reporting framework that improves the accuracy and transparency of methane emissions reporting in the energy sector.

We also joined the International Renewable Energy Agency (IRENA)’s Alliance for Industry Decarbonisation alongside other global companies across industrial sectors. The Alliance aims to contribute to the achievement of country-specific net-zero goals, foster action for decarbonisation of industrial value chains and enhance understanding of renewables-based solutions and their adoption by industry.

Further details on Memberships and Associations can be referred to on our website <https://www.petronas.com/sustainability/our-approach-to-sustainability>.

# Safeguard the Environment

Aligned to:



**We continue to accelerate our climate actions to realise our Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway. Throughout 2022, we ramped-up our efforts to advance our performance. With a resolute focus on driving progress, we will continue bridging the emissions gap and work with stakeholders to embrace the changes on the path to net zero.**

## Climate Change and Greenhouse Gas (GHG) Emissions

### Why Is It Important?

Climate science plays a significant role in driving the transition to renewable energy sources and low-carbon technologies. As awareness of the need to mitigate climate change grows, there is increasing demand for cleaner, sustainable energy. This shift creates both risks and opportunities for PETRONAS.

We risk being left behind as the world transitions to a low-carbon economy, leading to stranded assets, lost revenue streams and reputational damage. However, we see opportunity to lead in the energy transition, leveraging our legacy, expertise and resources to develop greener technologies and business models.

### What Is Our Approach?

PETRONAS is dedicated to our role as custodian of Malaysia's hydrocarbon resources and to meet customer energy demands, while contributing towards the climate ambitions of the Paris Agreement. Our NZCE 2050 Pathway was launched in November 2022, outlining the actions needed to achieve our net-zero ambitions. The

development of the NZCE 2050 Pathway was informed by our business context, national policies, international frameworks, and scientific consensus on climate change.

In driving a focused delivery of the NZCE 2050 Pathway, 20 per cent of total capital expenditure will be allocated for decarbonisation projects and expansion into cleaner energy solutions from 2022 to 2026. We will also track our GHG emissions to ensure we are on the right trajectory to meet the targets.

We aspire to proactively strengthen transparency in reporting while shaping the national climate-related risk disclosure practice in Malaysia. We have commenced to apply the framework recommendations put forward by the Task Force on Climate-related Financial Disclosures (TCFD) to our assessment of climate risk. By aligning our strategic assessment of risk with TCFD, we strive to effectively manage and capitalise on climate-related risks and opportunities and accelerate progress towards our path to net zero.

### 1 Governance

We recognise that climate change is a critical business issue, contributing to a set of risks and opportunities. We are taking more deliberate actions to elevate sustainability, especially climate-related discussions at the Board, to shape the long-term strategic direction of the company.

*[The role of the Board in climate-related matters can be referred to in the Sustainability Statement section on page 155]*

### 2 Addressing Climate-Related Risks and Opportunities

In November 2022, we defined our NZCE 2050 to accelerate and advance groupwide actions and commitment. The NZCE 2050 Pathway – with its short-, medium- and long term targets – will steer the group towards realising our ambitions.

The Pathway is two-pronged, reducing operational GHG emissions and increasing investments in business growth opportunities in the low carbon economy. PETRONAS will implement activities through four main decarbonisation levers – zero routine flaring and venting, energy efficiency, electrification and carbon capture and storage (CCS) – to reduce operational emissions as far as possible and offset remaining hard-to-abate emissions with nature-based climate solutions.



## Safeguard the Environment

### PETRONAS Energy Transition Strategy is Shaped In Response to Expectations of Changes in Customer Demand and Climate Risk Considerations

<b>Core Business</b> >>	<ul style="list-style-type: none"> <li>Operate oil and gas in a differentiated manner, with targets in place to produce carbon abated volumes at competitive cost to ensure asset portfolio is resilient to changes in demand.</li> </ul>		
<b>New Business</b> >>	<ul style="list-style-type: none"> <li>Capture growth opportunities in renewables and cleaner, less emission-intensive energy solutions, including wind and solar, hydrogen and green mobility.</li> </ul>		
<b>Specialty Chemicals</b> <ul style="list-style-type: none"> <li>Strengthen presence in the specialty chemicals business segment, with an emphasis on strong sustainability attributes.</li> </ul>	<b>Carbon Capture and Storage (CCS)</b> <ul style="list-style-type: none"> <li>Position Malaysia as a leading CCS hub in Asia by offering CCS as a service for high emitting industries around the region.</li> </ul>	<b>Bio-based Value Chain</b> <ul style="list-style-type: none"> <li>Scale up bio-based products and offerings to meet changing customer preference.</li> </ul>	<b>Renewable Energy, Hydrogen and Green Mobility</b> <ul style="list-style-type: none"> <li>Establish Gentari as our clean energy solutions arm with strong growth portfolio in renewables, hydrogen and green mobility.</li> </ul>
<b>Net Zero Carbon Emissions (Operational Levers)</b> >>	<ul style="list-style-type: none"> <li>Ongoing emissions reduction of our portfolio delivered through key abatement levers, based on their abatement potential and doability to ensure a credible Pathway to Net Zero Carbon Emissions by 2050.</li> </ul>		
<b>Zero Routine Flaring and Venting</b> <ul style="list-style-type: none"> <li>Flare gas recovery projects, improved compressor capacity, vent-to-flare conversion and vent recovery projects.</li> <li>Delivery in support of the World Bank's Zero Routine Flaring by 2030 Initiative.</li> <li>Pledged to avoid routine flaring in new oil field developments and end routine flaring at existing oil production sites by 2030.</li> </ul>	<b>Energy Efficiency</b> <ul style="list-style-type: none"> <li>Digital solutions and process equipment advancement to uplift process optimisation initiatives, by optimising gas turbine operations, superior heat transfer, furnace, and boiler efficiency.</li> </ul>	<b>Electrification</b> <ul style="list-style-type: none"> <li>Renewable energy infrastructure to power our operations and processes, which include fuel gas replacement with electricity, where feasible.</li> </ul>	<b>Carbon Capture and Storage (CCS)</b> <ul style="list-style-type: none"> <li>CCS solutions delivered through technology partnerships.</li> </ul>

[Details of Risks and Opportunities Quantification on Financial Performance can be referred on page 165]

### 3 Climate-Related Risks and Opportunities

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.

[Further details on risk governance can be referred to in the Risks Linked to Creating Values section on page 86]

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.

[Details of PETRONAS Resiliency Model can be referred to in the Risks Linked to Creating Value section on page 87]

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.

[Details of Sustainability Risk and other principal risks can be referred to in the Risks Linked to Creating Value section on page 90]

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.

## Safeguard the Environment

### Transition Risks

Transition risks refer to potential risks arising from the global shift towards a more sustainable, net-zero economy, which encompasses policy, regulatory, market and technological changes that could impact our business operations.

One of the transition risks identified is the impact of oil and gas pricing or margins, which may reduce commercial returns stemming from the change in consumer preferences, regulatory pressure and/or our approach to sustainability. This in turn may result in diminished revenue, cash generation and returns realisation.

International Energy Agency (IEA) scenarios provide oil and gas prices, which are built on underlying assumptions of socio-economic growth and climate policies and commitments' development. For instance, oil prices are expected to be the lowest in the Net Zero Emissions by 2050 Scenario (NZE), due to reduced demand for oil. This would have a material impact on our upstream business. We also recognise carbon pricing as a means of driving emissions reduction across economic activities. Carbon pricing is used to assess our potential cost impact based on the different climate scenarios.

Furthermore, the energy transition calls for better disclosures and enhanced transparency given the impact of significant climate-related issues or risks to our financials. Our inability to respond at pace will lead to reduced access to capital, inflated capital cost and limited investment types. In addition, a downgrade of our ESG score may lead to higher borrowing costs, which further limits capacity to access capital markets.

Strategic measures to manage the implication of transition risks to our organisation are highlighted in the Our Approach to Climate-related Risks and Opportunities section. These measures are aligned with the mitigations and Key Risks Indicators of the identified principal risks in the PETRONAS Corporate Risk Profile, which are Sustainability Risk, Financial Liquidity Risk, Market Risk, and Legal and Regulatory Risk in the Risks Linked to Creating Value section.

*[Further information on actions to address climate-change-related risks by our businesses can be referred to in the Business Review section]*

### Physical Risks

Physical risks resulting from climate change can be in the form of acute risks due to one-time events or chronic risks due to longer-term changes in climate patterns such as rise in sea levels and average global temperature, water shortages, and intense precipitation. Our physical assets and ongoing projects are exposed to physical risks as we have presence in more than 30 countries globally. Thus, we are 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. The re-assessment outcome serves as an imperative to strengthen our existing mitigation strategy in ensuring robustness and sustainability of our organisation moving forward.

Taking into account these factors, we will continue to pursue a deliberate energy transition strategy, balancing Core Business and New Business with our NZCE 2050 Pathway aligning with changing customer preferences, evolving regulations and increasing expectations by stakeholders for low-carbon energy solutions.

*[Details of PETRONAS Energy Transition Strategy can be referred to on page 102]*

### Risks and Opportunities Quantification on Financial Performance

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. The chosen scenarios and the corresponding climate outcomes are summarised as below:

Stated Policies Scenario (STEPS)	Announced Pledges Scenario (APS)	Net Zero Emissions by 2050 Scenario (NZE)
<ul style="list-style-type: none"> <li>Reflects current policy context based on sector-by-sector assessments of specific policies and measures affecting the energy markets that are in place and those that have been announced by governments around the world, as of mid-2021.</li> <li>Includes relevant policy proposals, though implementation measures are yet to be developed to put them into effect.</li> <li>Where policies are time-limited, they are generally assumed to be replaced by measures of similar intensity, but the scenario does not assume future strengthening – or weakening – of future policy action, except where there already is specific evidence to the contrary.</li> </ul>	<ul style="list-style-type: none"> <li>Assumes that all climate commitments made by governments around the world, including Nationally Determined Contributions (NDCs) and longer-term net zero targets, will be met in full and on-time.</li> </ul>	<ul style="list-style-type: none"> <li>Sets out a narrow but achievable pathway for the global energy sector to achieve net zero carbon emissions by 2050, with developed economies reaching net zero emissions in advance of others.</li> <li>Does not rely on emissions reductions from outside the energy sector to achieve its goals.</li> <li>Assumes that non-energy emissions will be reduced with the same proportion as energy emissions. This is consistent with limiting the global temperature rise to 1.5°C without a temperature overshoot (with a 50 per cent probability).</li> <li>Meets key energy-related United Nation's Sustainable Development Goals, in particular achieving universal energy access by 2030.</li> </ul>

Reduce our Scope 1 emissions (emissions directly associated with our operations) and Scope 2 emissions (includes the energy we buy to run them).

Establish a centralised Carbon Management Division to drive the decarbonisation of our upstream value chain.

Manage our carbon storage portfolio for emissions produced by our operations. Position Malaysia as a CCS solutions hub in the region.

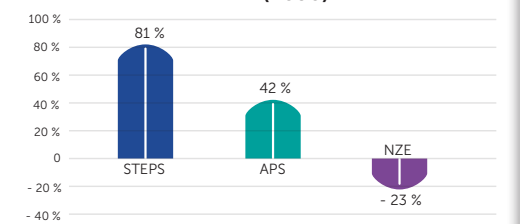
Position Gentari as a one-stop clean energy solutions provider. Designed for pace and innovation, Gentari is expected to run independently to deliver our renewables, hydrogen and green mobility aspirations.

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.

#### Estimated share of energy production in 2030



#### Potential Impact to PETRONAS Group EBITDA (2030)



\* EBITDA stands for Earnings Before Interest, Taxes, Depreciation, and Amortisation, and is used to evaluate a company's operating performance.



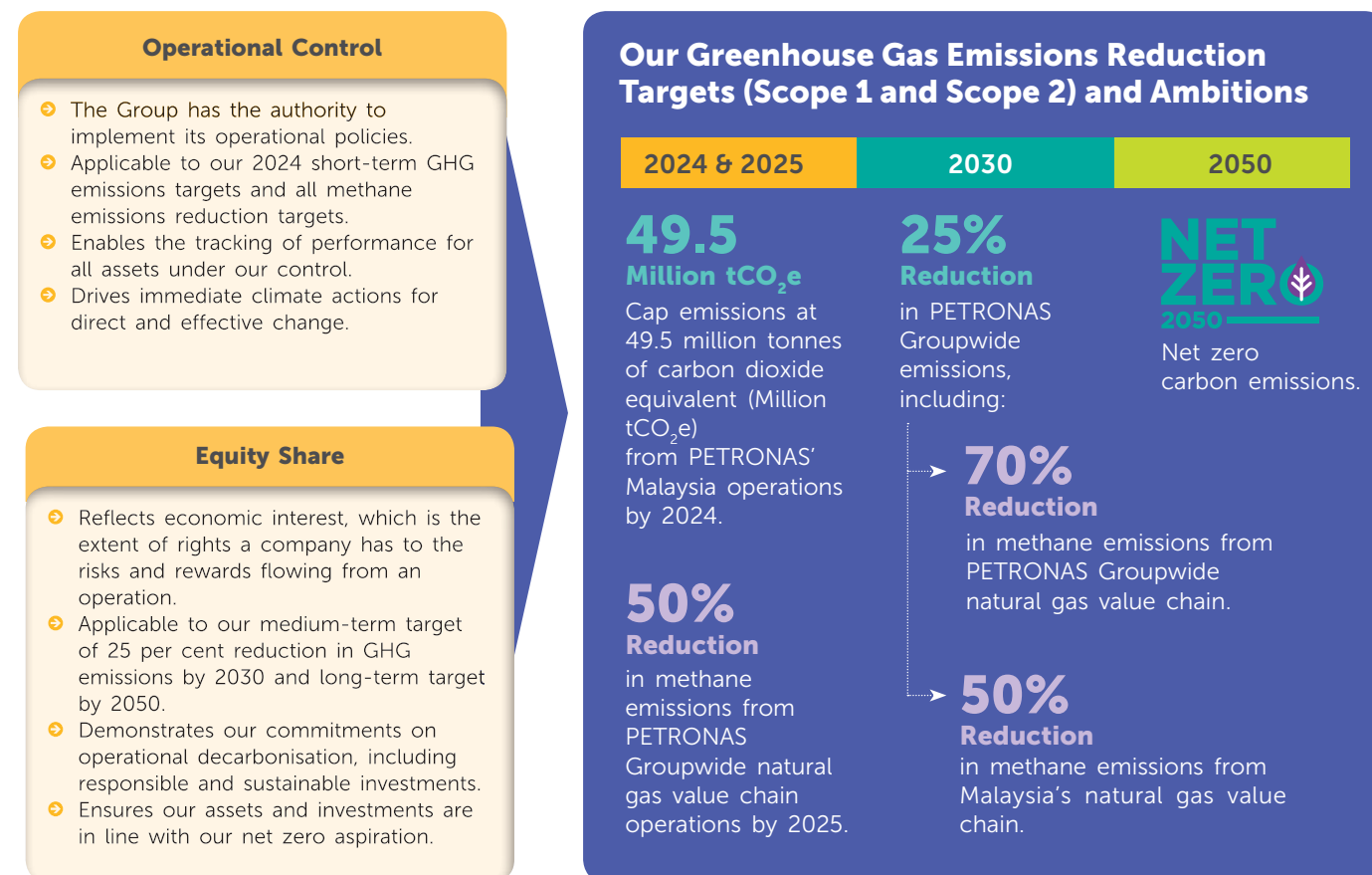
## Safeguard the Environment

### 4 Metrics and Targets

We have revised our carbon emissions accounting method to adhere to international frameworks and sector specific guidance to give us a robust basis for Scope 1 and Scope 2, and a better understanding of Scope 3 GHG emissions. The financial year 2022 marks the beginning of disclosures of GHG emissions through both operational control and equity share approaches.

In charting our NZCE 2050 Pathway, PETRONAS has adopted the equity share approach to account for our emissions inventory and performance against mid- and long-term milestone targets, with 2019 as the base year.

#### Outline of two approaches GHG Emissions Accounting



Our 2024 short-term GHG emissions target and all methane emissions reduction targets are based on the operational control approach. This allows us to track performance of all assets under our control and to drive immediate climate actions for direct and effective change.

The equity share approach will guide our assets and investments to be in line with our Pathway and be reflected in our annual integrated report. This methodology allows for business' long-term energy transition pathway development and portfolio transition tracking.

As a result of our enhanced emissions accounting practices, which includes a change in organisational boundary, we have adjusted our 2019 baseline reference to 54.87 Million tCO<sub>2</sub>e via equity share approach.

The Pathway has short-term and mid-term targets focusing on absolute GHG and methane emissions. The short-term target is to cap Scope 1 and Scope 2 emissions to 49.5 Million tCO<sub>2</sub>e by 2024 for PETRONAS operated assets in Malaysia.

We have set a mid-term target to reduce 25 per cent GHG emissions for Scope 1 and Scope 2 under equity share approach by the year 2030.

A key area of our net-zero efforts is to reduce methane emissions. Methane is a primary component of natural gas and a more potent GHG than carbon dioxide. Thus, we have specified targets for methane emissions reduction as part of our broader GHG targets.

The target is to reduce methane emission groupwide by 50 per cent by 2025 and by 70 per cent by 2030. Additionally, we are committed to drive down methane emissions beyond PETRONAS' own operations within our industry. To this aim, we have established a 50 per cent methane emissions reduction target for Malaysia's natural gas value chain by 2030. The methane emissions reduction targets will support Malaysia's commitment to the Global Methane Pledge of reducing national methane emissions by 30 per cent by 2030.

Moving forward, PETRONAS is updating internal standards and procedures, and building capabilities in GHG and methane emissions management. Commencing in 2023, PETRONAS will commission third party assurance of Scope 1 and Scope 2 GHG emissions.

**Footnote:**

CO<sub>2</sub>e = carbon dioxide equivalent. This unit converts all other GHGs into the common dominator of CO<sub>2</sub>e using Global Warming Potential (GWP) factors following Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment Report (AR4).

Guided by international principles, frameworks and standards

- Greenhouse Gas Protocol Corporate Accounting and Reporting Standard
- Ipieca/API/IOPG Sustainability Reporting Guidance for the Oil and Gas Industry
- Ipieca Climate Change Reporting Framework
- ISO 14064-1:2018; ISO 14064-2:2019; ISO 14064-3:2019
- Methane Guiding Principles
- United Nations Environmental Programme (UNEP) Oil and Gas Methane Partnership 2.0 (OGMP2.0) Reporting Framework
- American Petroleum Institute (API) Compendium of GHG Emissions Methodologies for the Natural Gas and Oil Industry (2021)

## Safeguard the Environment

### 2022 Greenhouse Gas (GHG) Emissions Management

As part of the embedment process and to ensure sustainable GHG management practice across PETRONAS operations, several initiatives were undertaken during 2022:

#### 1 Enhancement of GHG Management System

Following the mainstreaming of GHG Management as part of PETRONAS HSE Mandatory Control Framework (MCF) in January 2022, PETRONAS has conducted four internal assurance activities – second line assurance and internal reviews – based on a risk-based approach. This activity helped to identify key gaps and enablers to improve GHG accounting and reporting.

#### 2 GHG Digital Tools

PETRONAS has improved and automated the quantification of Scope 1 and Scope 2 GHG emissions in Gas business by linking activity data from plant information systems to the calculation tool, eliminating the need for human intervention in the process.

#### 3 GHG Capability

PETRONAS has identified GHG Management as a crucial skill set to be developed as an enabler to realise our NZCE 2050 Pathway. A new discipline has been established under the HSE skill group with a set of competency requirements, recommended trainings and required resources across corporate and business functions.

#### 4 Physical Impacts of Climate Change

A vulnerability assessment was conducted on PETRONAS' assets covering 1,140 locations in Upstream, Gas and Downstream in Malaysia as part of Malaysia's Fourth National Communication Report (NC4) to the United Nations Framework Convention on Climate Change (UNFCCC). Through this assessment populated in a Geographic Information System (GIS) system, climate hazards data such as sea level rise, coastal floods, river floods, droughts and temperature rise were gathered and forecasted up to year 2100 for Peninsular Malaysia, Sabah and Sarawak. This initiative has created value by identifying high risk assets and serves as an input to our adaptation strategy.

PETRONAS also has completed vulnerability assessments in South Africa for Downstream refinery and retail operations. Key climate hazards are floods and storms. A training and upskilling session was conducted for Engen staff to enable them to develop and maintain an adaptation plan.

### Accelerating Methane Emissions Management in PETRONAS

We align our methane emissions management with the Methane Guiding Principles (MGP) that prioritise key actions along the natural gas supply chain.

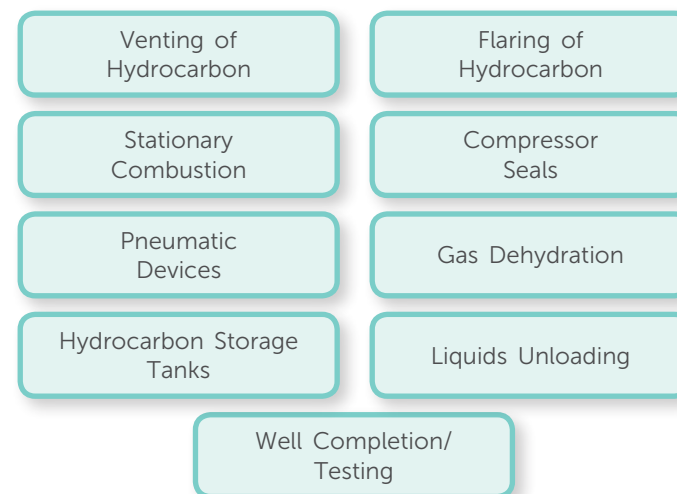
As a signatory member of the Methane Guiding Principles, we commit to advancing robust performance across gas value chains, enhancing the accuracy and quality of methane emissions data, advocating best practices, sound policies, and regulations on methane emissions, capability building and increasing the transparency of methane emissions to better manage them.

In 2022, PETRONAS became a member of the United Nations Environment Programme (UNEP) Oil and Gas Methane Partnership 2.0 (OGMP2.0) Reporting Framework, a multi-stakeholder initiative established by UNEP and the Climate and Clean Air Coalition (CCAC). OGMP2.0 provides a comprehensive, measurement-based reporting framework that improves the accuracy and transparency of methane emissions reporting in the energy sector.

#### 1 Advancing Techniques for Methane Measurement

Acknowledging the importance of reporting accurate methane emissions to facilitate effective reduction, PETRONAS is improving our quantification beyond the main emissions sources of flaring, venting and combustion. Rigorous efforts were made throughout 2022 to improve methane data accuracy for PETRONAS' natural gas value chain covering 11 common sources below:

##### Intended Releases:



##### Unintended Releases:



Methane quantification was based on best available operational data guided by internal and international standards from Oil and Gas Methane Partnership 2.0 (OGMP2.0) and Oil and Gas Climate Initiative (OGCI). Additionally, PETRONAS' Group Technical Solutions department have developed a quantification tool using location specific operational data and emission factors from the American Petroleum Institute (API) Compendium to perform the detailed quantification of methane emissions covering 11 common methane emissions sources.

Major methane sources i.e., flaring and venting, were measured using direct measurements (flowmeters) or quantified using detailed engineering calculations based on specific process parameters. For the remaining methane sources, improvements were made to the quantification by inventorying the equipment and components. Methane emissions were then estimated by multiplying the respective emission factors according to the equipment type with the number of equipment of the same type.

We are improving quantification of fugitive emissions by moving away from an estimation approach using production values, to a more detailed quantification method at component level, or using actual leak survey data where available. This method provides a better understanding of methane emissions from each source. A key finding was that quantified fugitive methane emissions using granular data were lower than calculated estimates. We also have a better understanding of our emissions from compressor seals and pneumatic devices, which were never quantified previously.

🔹 **80 per cent to 90 per cent** of our methane emissions along the natural gas value chain can be attributed to hydrocarbon venting, flaring and gas-driven pneumatic devices. We prioritise our mitigation measures to these areas through our current GHG emissions reduction projects.

#### 2 Advocating for Methane Management to Partners

As the regulatory body overseeing Upstream operations in Malaysia and collaborating with partners across the ASEAN region, PETRONAS has initiated methane advocacy efforts nationally as well as internationally with the aim to increase awareness among our partners to effectively manage methane emissions. 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.

#### The ASEAN Energy Sector Methane Roundtable

Hosted by PETRONAS and supported by Thailand's PTT Public Company Limited (PTT) and Indonesia's Pertamina.

##### Objective:

To set a networking platform among the oil and gas players in Southeast Asia to advocate and promote effective methane emissions management.

##### Outcome:

- 🔹 Attended by participants from ASEAN national oil companies, several energy companies, as well as international, multilateral and non-governmental organisations such as the International Energy Agency (IEA), World Bank, United Nations Environment Programme (UNEP) and the Environmental Defense Fund (EDF).
- 🔹 Strong network presence at the roundtables set the foundation for promoting capability building and technical knowledge sharing, improving methane emissions management practices and transparency in performance reporting, aligned with internationally recognised frameworks and standards.



## Safeguard the Environment

### USAID Workshop on Innovative Technologies 2022

Conducted in collaboration with USAID Smart Power Programme (SPP), ASEAN Centre for Energy (ACE), PTT Exploration and Production (PTTEP) and Asia Natural Gas and Energy Association.

**Objective:**

To identify and measure oil and gas sector methane emissions in Southeast Asia.

**Outcome:**

- Attended by participants from ASEAN oil and gas operators, EDF, United States Environmental Protection Agency (US EPA) and methane emissions management technology providers.

### 3 Accelerating Competency for Methane Management

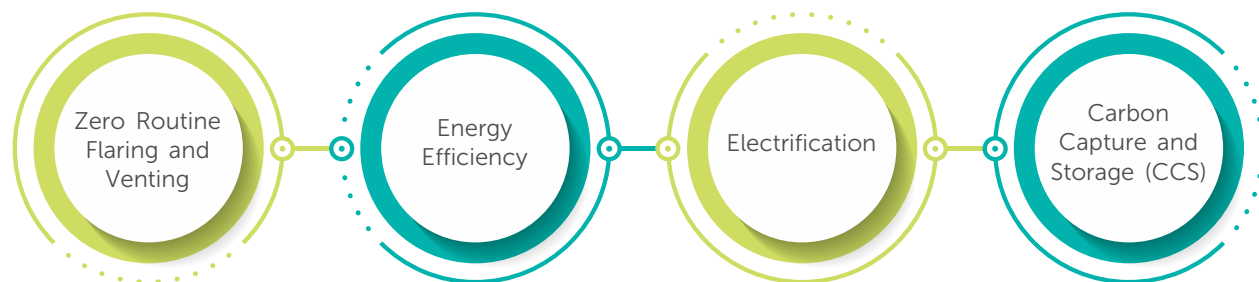
Since 2020, we have increased our efforts to raise awareness, build skills, and take action to reduce methane emissions throughout our operations. We conducted training sessions to improve employee knowledge on methane management and put into practice internal standards. These standards were aligned with industry expectations and guidance on managing methane emissions.

In addition, we developed e-learning modules on methane management to promote self-learning and increase awareness on achieving methane reduction targets.

In 2022, PETRONAS conducted five upskilling sessions on methane emissions management for 84 internal practitioners aimed at strengthening their understanding in support of operationalising our internal standards, aligning to industry expectations and guidance on methane emissions management. In addition, methane e-learning was also developed to create an avenue of self-development that could accelerate awareness on methane emissions management.

### Harnessing the Power of Technology to Aid GHG Emissions Reduction

PETRONAS is continuously finding opportunities to reduce its carbon emissions to meet our NZCE 2050 Pathway through various climate actions. In 2022, we achieved GHG emissions reductions of 0.6 Million tCO<sub>2</sub>e and cumulatively since 2013, we have reduced 18.1 Million tCO<sub>2</sub>e of GHG emissions from our operations. PETRONAS has classified its operational emissions reduction efforts into four decarbonisation levers as follows:



In 2022, PETRONAS completed 44 projects and initiatives mainly covering zero routine flaring and venting reductions, energy efficiency, and electrification categories as follows:

#### 1 Zero Routine Flaring and Venting

PETRONAS had conducted three flare reduction and one vent reduction projects in Upstream Business in Malaysia where 0.18 Million tCO<sub>2</sub>e was reduced in 2022. The projects were conducted using technologies that recover the hydrocarbon gas and monetise it.

- Three Flare Reduction: Kinabalu (0.003 Million tCO<sub>2</sub>e), Bintulu Integrated Facilities (0.09 Million tCO<sub>2</sub>e), Sabah Oil and Gas Terminal (0.05 Million tCO<sub>2</sub>e); and
- One Vent Reduction: Dulang (0.04 Million tCO<sub>2</sub>e)

#### 2 Energy Efficiency

40 energy efficiency and optimisation efforts throughout PETRONAS have also reduced 0.44 Million tCO<sub>2</sub>e in 2022.

- Upstream: Three projects and 0.09 Million tCO<sub>2</sub>e
- Gas: 15 projects and 0.19 Million tCO<sub>2</sub>e
- Downstream: 22 projects and 0.16 Million tCO<sub>2</sub>e

#### 3 Electrification

The intent of electrification is to either increase efficiency or to switch to an electric source with a lower GHG emission factor compared to the existing practice. In 2022, Malaysia LNG Sdn Bhd signed a Power Purchase Agreement with Syarikat SESCO Bhd, a subsidiary of Sarawak Energy, for 90MW of hydroelectric power import to PLC in Bintulu. This will result in about 40 per cent of PLC to be powered by renewable energy and reduce Scope 1 GHG emissions.

#### 4 Carbon Capture and Storage (CCS)

CCS efforts in PETRONAS are driven by the need to develop high carbon dioxide (CO<sub>2</sub>) gas fields. PETRONAS has been conducting research and development (R&D) on various capture technologies and patented a single and multi-stage membrane technology for onshore and offshore application in the past years. PETRONAS has also identified potential storage sites in offshore Malaysia. This has become an enabler to the development of CCS projects in PETRONAS.

Upstream business has embarked on a CCS project in the Kasawari gas field in offshore Sarawak to reinject the inherent CO<sub>2</sub> from the gas reservoir into a neighbouring depleted oil and gas field. The CCS facility is expected to be in operation in stages starting from 2024 (Phase 1), with first injection in 2026 (Phase 2).

When operations are in full swing, the Kasawari project can potentially store 3.3 Million tonnes of CO<sub>2</sub> per annum in a depleted reservoir making it the largest offshore CCS project in the world.

In 2022, PETRONAS signed several Memoranda of Understanding (MoUs) on CCS to partner and explore opportunities across the CCS value chain. Moving forward PETRONAS is also looking into building a CCS hub and becoming a leader in the CCS business within the region.

#### Methane Emissions Management

PETRONAS continues to explore the optimal top-down methane measurement via various MoUs to assess emerging technologies. 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.

PETRONAS also entered into a collaboration to test a technology that enables continuous monitoring of methane emissions from the assets through visualisation as well as measurement capabilities.

#### Striving Towards GHG Emissions Reduction Targets

As a result of our enhanced emissions accounting practices, which includes a change in organisational boundary, we have adjusted our 2019 baseline reference to 54.87 Million tCO<sub>2</sub>e (previously calculated 57.73 Million tCO<sub>2</sub>e) via equity share approach.

PETRONAS' short-term GHG emission target is to cap Scope 1 and Scope 2 operational emissions to 49.5 Million tCO<sub>2</sub>e by 2024 for PETRONAS operated assets in Malaysia. In 2022, operational emissions in Malaysia amounted to 46.11 Million tCO<sub>2</sub>e (2021: 44.12 Million tCO<sub>2</sub>e).

In 2022, we achieved 0.6 Million tCO<sub>2</sub>e GHG emissions reduction from projects and cumulatively since 2013, we have reduced 18.1 Million tCO<sub>2</sub>e of GHG emissions from the implementation of decarbonisation activities for PETRONAS Groupwide assets under operational control.

## Safeguard the Environment

The mid-term target for 2030 is to reduce 25 per cent of PETRONAS' Groupwide Scope 1 and Scope 2 GHG emissions under equity share approach, compared to the base year of 2019. To date, the reduction amounts to 8.49 per cent, delivered through projects addressing flaring and venting reduction and energy efficiency.

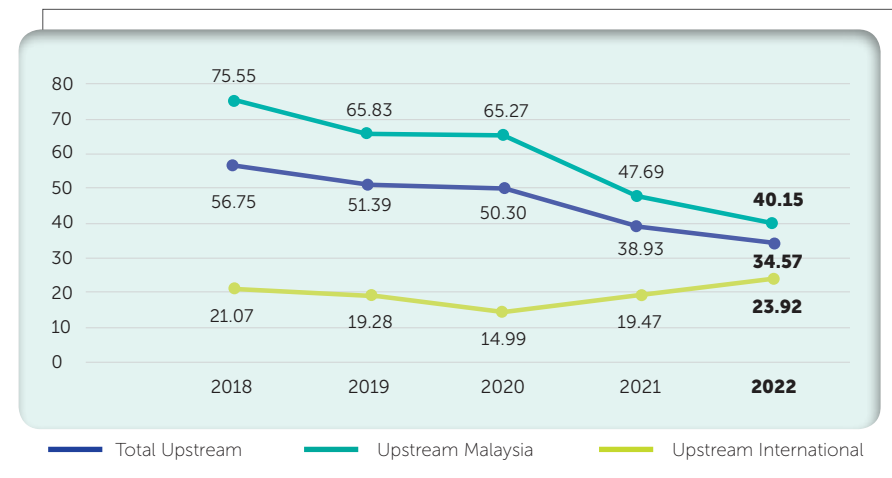
Our short-term methane target is to reduce 50 per cent of methane emissions from our natural gas value chain operations by 2025 compared to 2019. In 2022, we reduced absolute methane emissions by 49.88 per cent from 2019 levels, with Upstream flaring and venting reduction efforts playing a significant 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.

### Special Highlights

PETRONAS' commitment to the World Bank's Zero Routine Flaring by 2030 (ZRF) Initiative and UNEP's OGMP2.0 can be presented using the three key metrics below – Upstream GHG intensity, share of methane in total GHG emissions and reduction of hydrocarbon venting.

#### 1 Upstream GHG Intensity Reduction

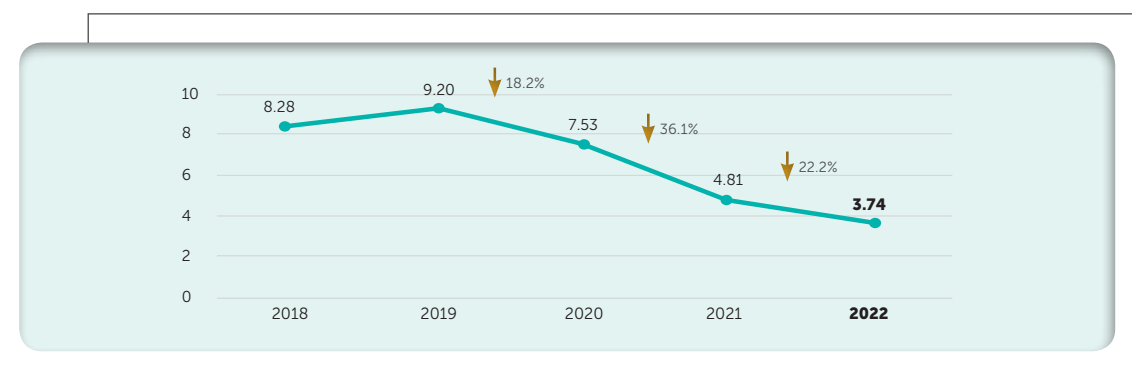
Upstream GHG Emissions Intensity under Operational Control Approach (tCO<sub>2</sub>e/kboe)



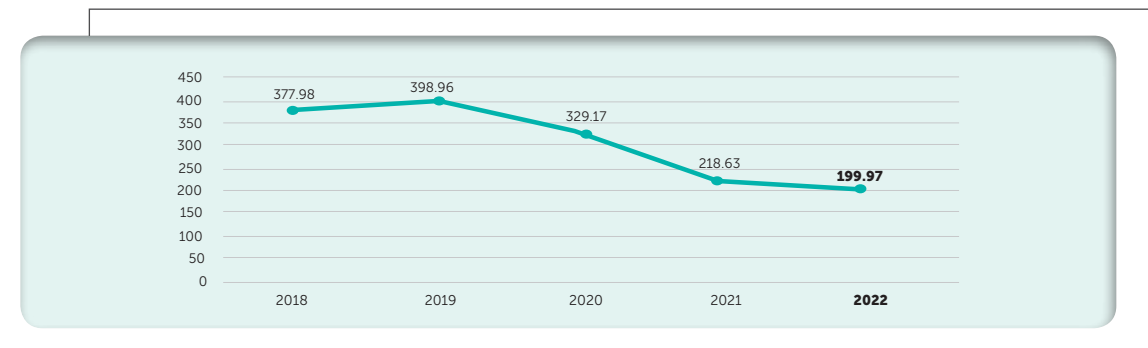
Upstream GHG intensity for total upstream operations has reduced by 32.73 per cent from 2019 driven by zero continuous flaring and venting requirement in PETRONAS Carbon Commitments.

#### 2 Reduction of GHG Emissions Including Methane Through Venting Reduction Efforts

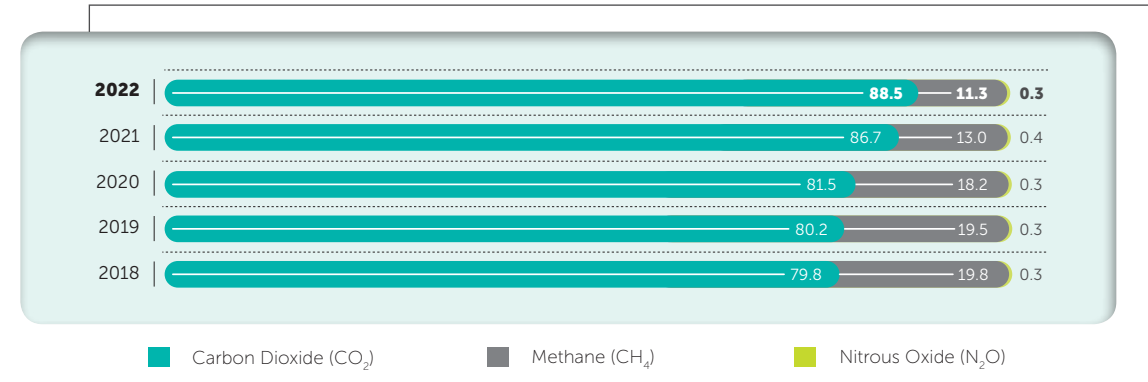
GHG Emissions Reduction from Venting under Operational Control Approach (Million tCO<sub>2</sub>e)



#### Methane Emissions from Natural Gas Value Chain – Upstream and Gas only (thousand tonnes CH<sub>4</sub>)



#### GHG Emissions Breakdown by Gases under Operational Control Approach (%)





## Safeguard the Environment

### Responsible Waste Management

#### Why Is It Important?

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.

#### What Is Our Approach?

We practice the concept of waste management hierarchy, namely remove, reduce, reuse, recycle, recover, and dispose in order of most to least environmentally preferred. Across all our sites, activities that generate waste are categorised and identified according to type, quantity, frequency of generation, handling requirements, treatment and disposal methods. Our waste management plans are regularly reviewed, while performance indicators are submitted monthly to a central reporting platform, which helps measure progress and performance. Typical waste generated from operations include oily sludge from tank cleaning activities, sludge from wastewater treatment plant, spent catalyst and spent oils.

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 was 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.

#### Guided by international principles, frameworks and standards:

- Host country requirements on waste management
- Global Reporting Initiative (GRI) Standards on waste reporting



### Value Creation in 2022

#### Waste Management

##### 1 Managing Waste

In 2022, despite facing increased waste generation, we found opportunities to improve our waste management practices and increase our waste recycling and recovery rate, contributed largely by a close and continued collaboration between our operations and waste treatment technology and waste management service providers.



Quarterly assurance assessments were also carried out at all off-site waste treatment and disposal facilities owned by our waste management contractors to verify that they meet both regulatory and our requirements.

##### 2 Reducing and Reusing Hazardous Waste

Oily sludge is one of the most common waste of our operations. In collaboration with the Shimizu Institute of Technology, we embarked on a pilot project to use carbonisation technology to treat hazardous waste, including oily sludge generated from the refining process. The initiative aims to explore broader means of a circular economy by reducing hazardous waste and reusing it for other purposes instead of merely disposing it to a licensed facility. The pilot project was funded by the Japan Cooperation Center for Petroleum and Sustainable Energy (JCCP), utilising selected sites provided by the Malaysia Refining Company Sdn. Bhd. (MRCBSB).

During the Phase 1 pilot (50kg kiln), the identified hazardous waste types generated by MRCBSB were tested in batches and was extended to other types of hazardous waste including Vacuum Gas Oil (VGO), used activated carbons, spent clay and effluent treatment sludges. The Phase 1 pilot test was completed in December 2022 and preliminary results showed promising results with 99.6 per cent to 99.9 per cent of oil recovered from oily sludge samples and a weight reduction range of 84 per cent to 97 per cent for all samples. Phase 2 pilot testing is planned in 2023, utilising 500kg kiln capacity. The pilot results will determine the feasibility for full-scale implementation.

## Safeguard the Environment

### Circular Economy

#### PETRONAS' Circular Economy Definition

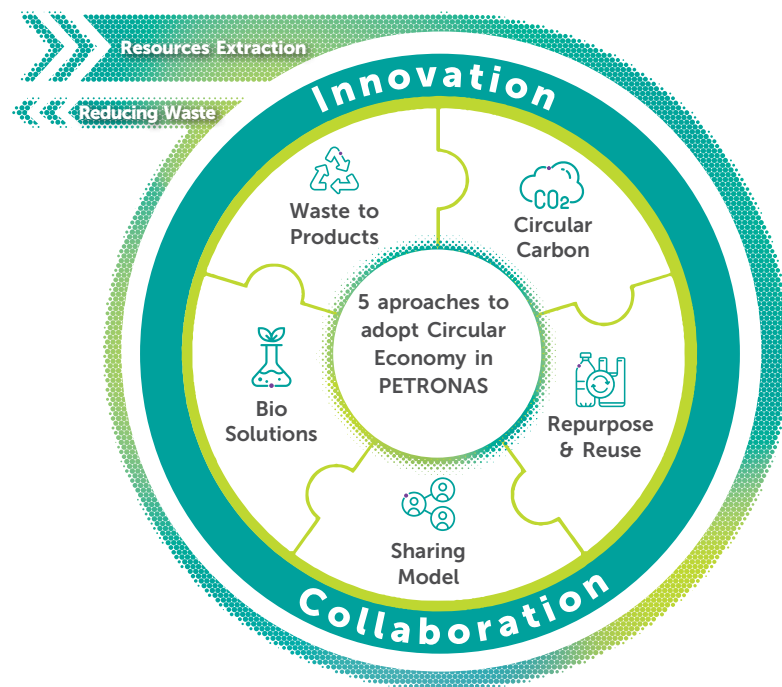
A circular economy is a systemic approach that moves away from a linear (take-make-waste) economy to one that extends the life cycle of materials and resources, ultimately reducing waste to a minimum.

For PETRONAS, circular economy is integral to our sustainability approach, embedded across the group to

- i. enable a low waste future
- ii. steward natural resources
- iii. minimise our carbon footprint

while creating value.

We aim to contribute to a circular future, providing impactful solutions to our stakeholders and the betterment of our society through innovation and collaboration.



#### Five Approaches to Adopt Circular Economy in PETRONAS

Circular Carbon	Sharing Model	Bio Solutions	Repurpose and Reuse	Waste to Products
<p><b>Closed loop system involving 4Rs (reduce, reuse, recycle, remove) to manage GHG emissions</b></p> <p><b>Example: Condensate Recovery Systems (CRS)</b></p> <p>Capturing gas volumes that would have been 'wasted', channels it into the system, and converts the gas into condensate. This then flows through our usual processes, and is made into a valuable product.</p>	<p><b>Optimisation of resources via shared platform</b></p> <p><b>Example: Liquid8</b></p> <p>An online marketplace to encourage re-utilisation of surplus inventories, which would have otherwise been idle, accumulated and eventually become waste in warehouses – participated by Petroleum Arrangement Contractors (PACs) in Malaysia.</p>	<p><b>Bio-based inputs or products (regenerate)</b></p> <p><b>Example: Sustainable Aviation Fuel (SAF)</b></p> <p>A blend of SAF made from used cooking oil mixed with conventional jet fuel.</p>	<p><b>Extending useful life of materials/resources/facilities whether for their original or a new purpose to improve efficiency</b></p> <p><b>Example: Rig-to-Reef</b></p> <p>Cleaning platforms from hydrocarbons, removing non-reefable items, designing how it should be positioned (placement and stability analysis), which supports the growth of adjacent industries such as fishing and tourism.</p>	<p><b>Changing waste to base materials or other products, creating new revenue lines</b></p> <p><b>Example: Plastic Recycling</b></p> <p>Recycles plastic waste and uses it as feedstock for producing high-quality soft and hard plastics.</p>

#### Why Plastics?

Plastics have become a vital component in the economy given its usefulness in our everyday lives. It is a durable and lightweight material that has been used widely across industries worldwide. However, when it is used or disposed in an irresponsible manner, it becomes a significant problem as it is made of non-biodegradable material. Plastic waste is a significant part of the problem, and we are addressing it by promoting a circular economy and moving toward a New Plastics Economy (NPE). By recycling plastic products, we are minimising waste, promoting innovation, and creating new business opportunities. This supports a circular supply chain, reduces carbon footprint, conserves raw materials, and lessens the use of fossil fuels, all of which contribute to a more sustainable future.

We are addressing this by promoting circular economy and moving towards a NPE. By recycling plastic products, we are minimising waste, promoting innovation, and creating new business opportunities. We believe that our shift towards circularity will have a positive multiplier

effect, as we have in place a long value-chain that serves our ecosystem partners and broader society. Our ability to do this supports a circular supply chain, reduces carbon footprint and renders better stewardship of raw materials.

#### What Is Our Approach?

Through the circular economy approach, we have taken a waste-to-products approach, where we convert waste to base materials or other products to create sustainable value. However, we believe that the circular economy is not just about recycling and reusing but, instead, solving the problem at its source to eliminate waste and pollution. This will help us realise our NZCE 2050 Pathway.

We also continue to deepen our research and technology to identify gaps and accelerate our circular economy initiatives, as this will ensure sustainable consumption. Our ability to do so will lead to creating a more resilient economy.

### Value Creation in 2022

#### 1 PETRONAS' Positioning on Plastics

The increasingly harmful impact of plastic pollution on life and the environment is prompting regulations to crack down on plastic pollution, both globally and nationally, and has intensified in the last year alone, with industries facing the greatest risk and pressure to act. Plastic's wide range of applications includes medical, hospitality, construction/building, as well as fittings and furnishings. What makes plastics 'problematic' are single-use plastics (SUPs), such as plastic bottles, cutlery, and containers that are almost certainly littered. These are the primary sources of plastic pollution, with plastic bottles accounting for the greatest volume.

This year, we introduced PETRONAS' Position on Single-Use Plastics, which centres on our strategic focus on phasing out single-use plastics.

As we have a wide footprint across the plastics value chain, both as producers and consumers, this presents a wide range of opportunities for us to transition according to our circular economy principles and sustainability approach. Through this positioning, we acknowledge that plastics are still useful in industries such as food packaging, medical equipment, household appliances, etc. and recognise the need to take steps to strengthen their design and end-use sustainability. This will be done by phasing out problematic and unnecessary SUPs. In addition, we will also develop systemic plastic collection and recycling mechanisms at our operations to stop plastic waste from polluting or leaking into the

environment. This creates value by regenerating end-of-life plastic into valuable materials hence closing the loop in plastic circularity.

PETRONAS has a considerable footprint in the plastics value chain, both as a producer and a consumer, which means there are opportunities for us to transition according to our circular economy principles and our approach to sustainability. This enables PETRONAS to continue protecting value while also being a force for good.

PETRONAS Chemicals Group (PCG) leads the NPE initiative as it has embarked on Operation Clean Sweep (OCS), which is a global programme to eliminate plastic resin leakage to the environment during production and distribution.

In support of this, PETRONAS Lubricants International (PLI) launched the Bag-In-Box in Europe. This is a new 20-litre format made with recyclable cardboard and plastic, which guarantees loading, safety, and palletisation advantages, including an integrated tap.

Based on the recently launched Plastics Positioning, plastics will now be viewed as a force of good where we leverage circularity to encourage collaborative solutions that generate sustainable plastics, moving away from the traditional linear approach.



## Safeguard the Environment

- PETRONAS Syntium Bag-In-Box (BIB) new **20-litre** format reduced plastic quantity up to **92 per cent** compared to traditional **20-litre** packs

### PETRONAS' Four key New Plastics Economy (NPE) Workstreams



PETRONAS Dagangan Bhd (PDB) redesigned their mineral water bottles to ensure they can be easily recycled. They have also discontinued retail sales of 350ml and 500ml bottles due to the non-optimal use of plastics.

## 2 Driving Plastics Circularity with ExxonMobil

PCG has joined forces with ExxonMobil to revolutionise the way plastic waste is managed, by transforming it into circular naphtha. As part of our commitment to sustainability, we are currently undertaking comprehensive feasibility studies to explore the potential implementation of ExxonMobil's advanced plastic waste recycling technology at suitable locations within PETRONAS production facilities.



## 3 Producing Waste-based Fuels

We participated in the Mid-Term Review of the 12<sup>th</sup> Malaysia Plan (RMK-12) – Technical Working Group (Oil and Gas and New Energy) Workshop by the Ministry of Economy. We presented a paper on the development of bio-economy in Malaysia, where we communicated our capabilities in leading Malaysia's bio-economy industry as a part of Malaysia's decarbonisation journey in achieving NZCE 2050. Through this presentation, we highlighted Malaysia's capabilities in being a regional leader in producing waste-based biofuels, especially Sustainable Aviation Fuel (SAF), Hydrogenated Vegetable Oil (HVO) and other biofuel products via our first bio-refinery in Pengerang. This biorefinery aims to achieve Final Investment Decision (FID) in 2023 and be commissioned by 2026.

The establishment of this bio-refinery will create a bio-economy ecosystem in Malaysia, including the full value chain for feedstock sourcing and biochemicals. Once fully operational, this bio-refinery is expected to drive the local economy, generate more than 5,000 new jobs, benefit more than 1,000 SMEs and attract more than USD2 billion in green Foreign Direct Investment (FDI) into Malaysia.

## 4 Developing Plastic Modified Bitumen

We introduced our latest technology, Plastic Modified Bitumen (PMB), consisting of plastic waste mixed with bitumen. This mix of repurposed waste gives it extra strength and higher cohesiveness while reducing the maintenance lifecycle, making it a favourable material for infrastructure.

We tested these solutions at two separate locations, namely PETRONAS Research Sdn Bhd (PRSB) in September 2021 and at the Malaysian Federal roads, Jalan Simpang Pulau-Lojing-Blue Valley in December 2022.

Given the promising results, we will be collaborating with several government agencies in 2023. We will also be showcasing this technology to potential local and international partners.

- PMB will extend the lifecycle of pavement and roads by **25 per cent**.
- Every 100 metres with plastic-modified bitumen utilises a minimum of **79kg** of plastic waste.

## 5 Achieving a Circular Economy for Plastic Waste in Malaysia

Through PCG, we have set a target to recover 100 per cent of plastic waste equivalent to domestic polymer sales by 2030. To achieve this, we will focus on four key areas: innovation, infrastructure, education and clean-up. We are collaborating with various stakeholders, including waste management concessionaires, recyclers and technology providers, to create innovative solutions and enable a plastic circular ecosystem in Malaysia. This will enhance the recyclability of plastic materials and regenerate end-of-life plastic into valuable materials.

Under the innovation workstream, we collaborated with Plastic Energy Ltd to develop innovative solutions for plastic waste. This involves turning low quality, mixed plastic waste into pyrolysis oil, which can be further processed to produce certified circular polymers.

To strengthen the infrastructure system, we partnered with waste management companies; namely Alam Flora, KDEB Waste Management, One Biosys and E-Idaman to unlock the value of plastic waste ecosystem in Malaysia. Through these partnerships, we can ensure a secure supply of plastic waste, which is a crucial feedstock for converting plastic waste into circular polymers.

## Safeguard the Environment

### Environmental Management

#### Why Is It Important?

Managing environmental quality is essential to the preservation of our planet and the protection of our natural ecosystem. Irresponsible business activities can have severe consequences, such as oil spills, air pollution and resource scarcity. These consequences not only affect the health and well-being of humans, but also pose a threat to biodiversity and the sustainability of our planet. Managing environmental quality involves responsible resource utilisation, pollution prevention and sustainable practices which can help mitigate these environmental consequences.

From a business perspective, effective management of environmental quality can result in significant cost savings and improved operational efficiency and enhanced reputation. Minimising our environmental impact through responsible and sustainable practices can reduce waste, conserve resources and limit exposure to environmental liabilities. It also builds trust among our employees and reinforces our position as a corporate citizen.

#### What Is Our Approach?

At PETRONAS, we recognise the important role we have in managing our relationship with the environment. Throughout our operations and business, we implement various assessments, practices and site-specific actionable plans to protect the environment.

We continue to make significant investments to reduce our environmental impact by implementing and inculcating a strong environmental protection culture throughout our supply and value chain. As we work with a broad range of suppliers, partners and vendors, we ensure they are also optimising their environmental footprint in key areas. We do this by encouraging them to adhere to our sustainable practices and improve their own environmental footprint as well. We also pursue collaborations with our stakeholders to ensure we gain a wider reach. By working together with our partners and stakeholders, we can create a positive impact on the environment and protect it for future generations.

#### Guided by international principles, frameworks and standards

- Host country standards for the design and operation of pollution prevention and control equipment
- World Bank/International Finance Corporation (IFC) Group Environmental, Health and Safety Guidelines (EHS Guidelines)
- World Resource Institute's (WRI) Aqueduct Water Stress Atlas
- Decommissioning Option Assessment (DOA)

#### PETRONAS' Environmental Focus Areas

##### >> Air Emissions

- Monitor, evaluate and address risks related to air emissions.
- Leverage on our online monitoring platform to provide early warning for increasing trends in emission load that will enable timely intervention.
- Measure Sulfur Oxides (SOx) and Nitrogen Oxides (NOx) emissions through continuous monitoring or periodic samplings.
- Ensure measurements are in accordance to host country requirements and internationally-accepted standards.

##### >> Oil Spill Prevention

- Embed industry best practices on spill prevention into our facility design.
- Implement scheduled inspections and maintenance programmes.

##### >> Decommissioning

- Adhere to Decommissioning Option Assessment (DOA) in disposing petroleum facilities.
- Conduct feasibility studies on transforming decommissioned oil and gas platforms into artificial reefs to maximise the lifecycle of decommissioned structures and protect marine biodiversity.

##### >> Water Management

- Implement internal standards, policies and practices to optimise freshwater withdrawal.
- Focus on three pillars – conduct water accounting, understand water availability and increase water use efficiency.
- Carry out regular tracking of freshwater withdrawal in water stress areas.
- Monitor, evaluate and address risks from waste water discharge from our facilities.

#### 2022 Environmental Quality Performance

##### 1 Water

Freshwater Withdrawal	2021	2022
Malaysia (million cubic metres per year)	70.2	<b>76.8</b>
International (million cubic metres per year)	1.0	<b>4.8</b>
Total (million cubic metres per year)	71.2	<b>81.6</b>
Discharges to Water (tonnes of hydrocarbon)	452	<b>487</b>

In 2022, our total freshwater withdrawal was 81.6 million cubic metres as compared to 71.2 million cubic metres recorded in 2021. The increase in water withdrawal was attributed by two major new sources i.e. Pengerang Integrated Complex and new processing trains in Iraq operations.

##### 2 Air Emissions

We continued to monitor air emissions from all our facilities.

	2021	2022
Total of Sulphur Oxides Emissions (tonnes)	47,954	<b>60,116</b>
Total of Nitrogen Oxides Emissions (tonnes)	133,962	62,790

In 2022, the Group's sulphur oxides emissions increased to 60,116 tonnes compared with 47,954 tonnes in 2021. The increase in emission load was attributable to higher gas production in Sarawak's Upstream asset and gas processing plant.

Total nitrogen oxides emissions for 2022 stood at 62,790 tonnes from 133,962 tonnes in 2021, mainly due to omission of emission load data from ships due to ongoing review of reporting method, and revision in calculation methodology for floating LNG and power plant.



## Safeguard the Environment

### 3 Environmental Health

#### Human Health Risk Assessments (HHRAs)

We are committed to safeguard the health of communities in areas where we operate.

We proactively conduct HHRA beyond facility fencelines to evaluate community exposure to chemicals in the ambient environment. Since 2018, we have been conducting baseline HHRAs at selected operations and continued our efforts in 2022 to establish the environmental health risk profile for our global operations. From the baseline HHRAs, we have identified areas of improvement to reduce chemical exposures in air emissions and groundwater, going beyond regulatory compliance.

### 4 Oil Spill Prevention

	2021	2022
Number of Hydrocarbon Spills into the Environment over One Barrel (Number of cases)*	2	2

\* One barrel is equivalent to 159 litres

- In 2021 and 2022, there were two cases of oil spills, compared to five in 2020.
- Several Joint Offshore Oil Spill Response (OSR) Standard Operating Procedure development workshops were conducted involving 13 government agencies in collaboration with the Department of Environment (DOE). The purpose of these workshops was to brainstorm on the effective methodology to overcome challenges during the response to oil spill incidents. This includes managing transportation from OSR service providers' bases to incident locations, chartering spotter aircrafts, mobilisation of equipment and experts from outside Malaysia.
- Document Guideline to request government assistance for oil spill response operations was approved during the National Oil Spill Operation Committee (NOSC) sitting.
- Conducted an Oil Spill Response Capability Assessment (OSRCA) for various PETRONAS OPU's
- Enhancement of OSR personnel capability via OSRL Masterclass IMO Level 3 and webinars.
- Organised 3 regional forums on Malaysia Oiled Wildlife Response (MOWReP) and developed new PETRONAS Technical Guideline (PTG) 18.41.02 Oiled Wildlife Response for Malaysia's government agencies and industry players.

### 5 Decommissioning

In 2022, we achieved the following on the decommissioning front:

- Complete the plug and abandonment of 13 wells.
- Successfully secured a preliminary agreement for the 10-year Sabah Master Reefing Plan with the Department of Fisheries (DOF), Sabah.
- Organised a Decommissioning Enhancement Workshop with Production Arrangement Contractors (PACs) and decommissioning service providers from 13 to 14 December 2022. A total of 12 papers were presented to further improve future execution of decommissioning projects. Other benefits from the workshop included clarity in future decommissioning outlook and better resource planning.
- In collaboration with DOF, the Kapal rig-to-reef site monitoring indicated a growth of fish species by ~30 per cent with an annual average fisheries' economic growth by ~5 per cent.
- Continuous active regional and international industry collaborations:
  - International Association of Oil and Gas Producers (IOGP)'s Decommissioning Committee's Expert Groups on Asset Retirement Obligations (ARO), Habitat Retention on Reefing Guidance, and Co-Chairing the IOGP Asia Pacific (APAC) Decommissioning Sub-Committee.
  - Finalised the ASEAN Council on Petroleum (ASCOPE) Decommissioning Guideline (ADG) revision draft based on inputs from the Exploration and Production Task Force (EPTF).



## Biodiversity

### Why Is It Important?

Biodiversity is the total sum of life on Earth comprising flora, fauna, microorganisms, ecosystems and habitats as well as the interdependent relationships between all of them. We depend on this web of life, both terrestrial and marine, to gain access to fresh water, food, medicine and a stable climate – all of which help sustain livelihoods, human health and economies.

Our inability to conserve and protect biodiversity will adversely affect the benefits it provides. For example, forests and wetlands are essential in our efforts to combat climate change by sequestering carbon while providing a habitat for various species, protecting coastlines and supporting surrounding communities as sources of livelihood. Where PETRONAS is concerned, our relationship with biodiversity is one of the impacts and dependencies where our activities could potentially impact the biodiversity around us.

At the same time, PETRONAS also depends on biodiversity and ecosystem services such as water, land and marine resources for the continuity of our operations.

As such, we are responsible for protecting and, where necessary, reversing biodiversity loss to avoid irreversible damage, which may impact our ability to deliver on our business goals and Net Zero Carbon Emissions by 2050 Pathway. Within this context, protecting Malaysia's biodiversity is important to PETRONAS, given our large operational footprint in the country and its large potential for forest-based carbon offsets and the fact that Malaysia is one of the 17 mega diverse countries in the world, despite its small land mass.

### What Is Our Approach?

In 2022, PETRONAS established our Position on Nature and Biodiversity (the Position) to improve oversight on our nature and biodiversity footprint at enterprise level and strengthen our attainment of NZCE 2050 aspiration. In establishing the Position, PETRONAS was guided by various international agreements and national policies such as the Convention on Biological Diversity (CBD) and Malaysia's National Policy on Biological Diversity 2016-2025, as well as industry best practices from organisations such as Ipeca (i.e., the global oil and gas association for advancing environmental and social performance across the energy transition), the International Association of Oil and Gas Producers (IOGP) and the World Business Council for Sustainable Development (WBCSD). The Position consists of five areas of action that demonstrate visible leadership in nature and biodiversity conservation, harnessing the right expertise and resources to positively impact the nation and the ASEAN region.

#### Biodiversity and Ecosystem Services (BES) management tools applied in PETRONAS

- PETRONAS Technical Guideline (PTG) on BES Management
- Integrated Biodiversity Assessment Tool (IBAT)
- BES Risk Assessments (BESRA) and Biodiversity Action Plan (BAP)
- Environmental Impact Assessments (EIA)

## Safeguard the Environment

### PETRONAS' Position on Nature and Biodiversity

The introduction of our nature and biodiversity position enables us to accelerate our momentum in establishing plans and ensuring internal alignment on nature and biodiversity matters. We will shape the necessary work processes, systems and establish a centralised database to ensure the smooth implementation of this positioning, which will be enforced in 2024. To operationalise the Position during 2023, PETRONAS will also strengthen our capacity and capability on nature and biodiversity, including setting up a dedicated Centre of Excellence (CoE). Moving forward, we will continue to focus our efforts in making progress in the below key focus areas:

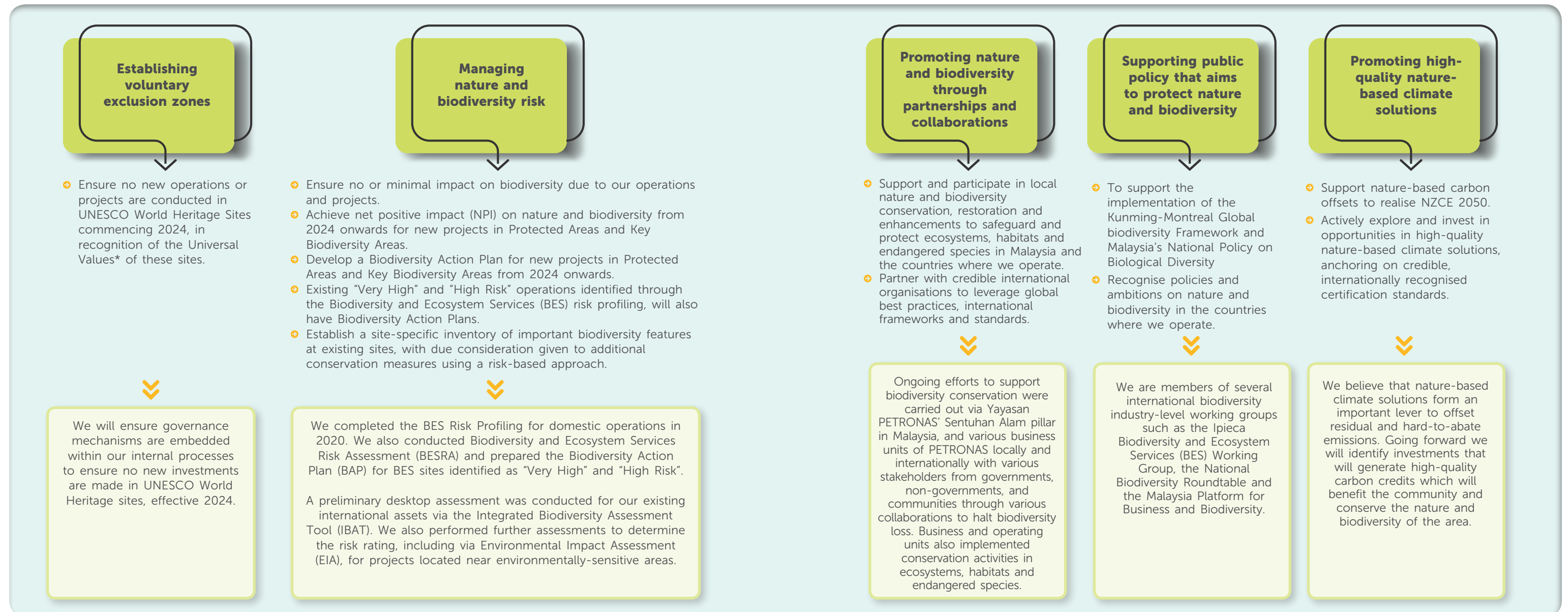


Figure 1: The Position on Nature and Biodiversity, with the work conducted on respective areas of action and/or our plan moving forward.

\* Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole. The Committee defines the criteria for the inscription of properties on the World Heritage List.



## Safeguard the Environment

### PETRONAS' Biodiversity Conservation Efforts Through Social Impact Around The World

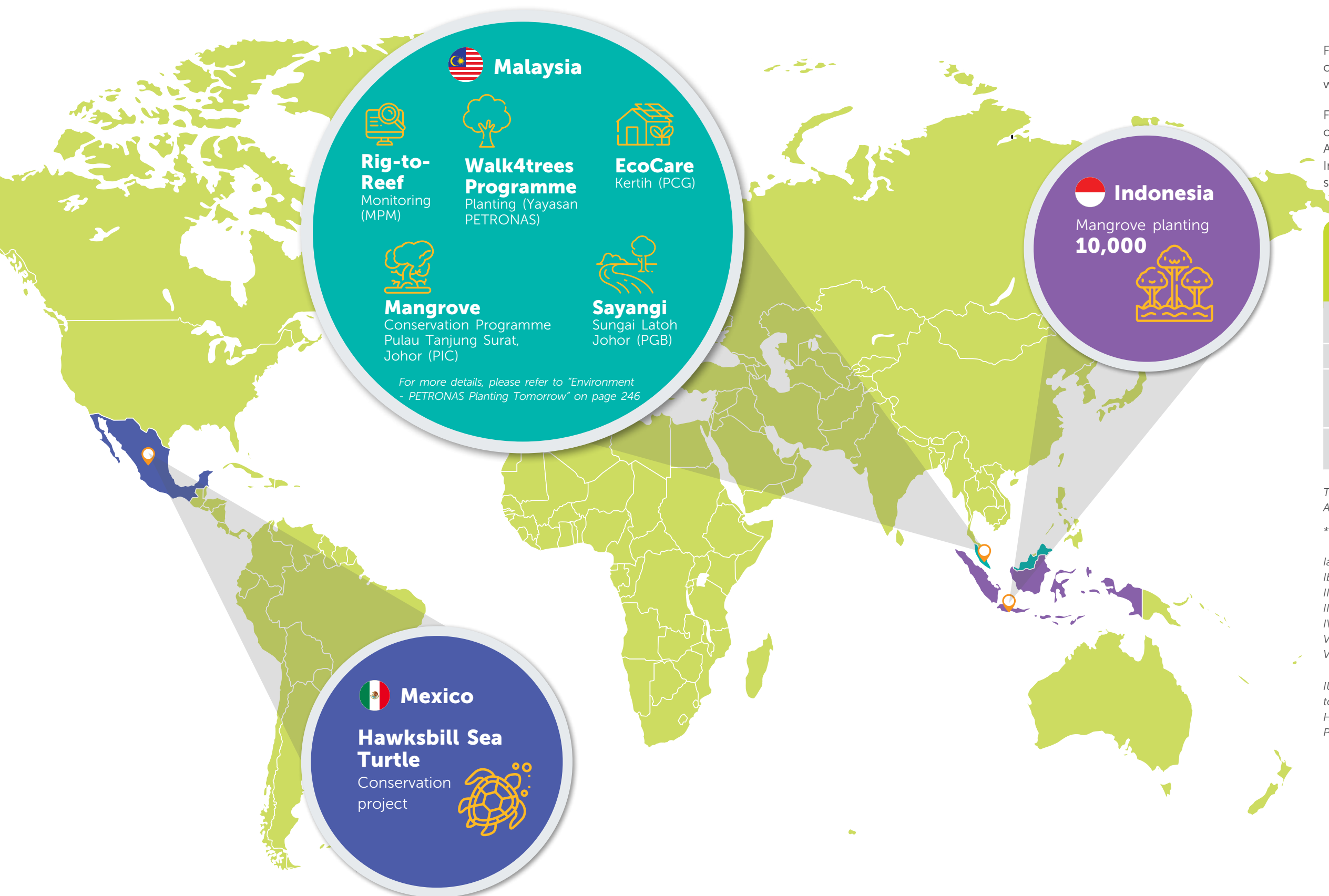


Figure 2: Map to showcase PETRONAS' biodiversity conservation efforts through Social Impact around the world\*

For 2022, we included reporting of PETRONAS Malaysia's operation site in Protected Areas and Key Biodiversity Areas. The activity was conducted utilising data from Integrated Biodiversity Assessment Tool (IBAT). The summary of results is shown as per Table 1 below:

Type of protected area	Within the boundary	Near (1-10km) (up to 10km outside of boundary of protected area/key biodiversity area)
World Heritage Site	0	0
Ramsar Site	0	0
IUCN Protected Area Category I-VI*	5	29
Key Biodiversity Area	1	2

Table 1: PETRONAS Malaysia's Operations within/near Protected Areas and Key Biodiversity Areas.

\* International Union for Conservation of Nature (IUCN) Protected Area categories are as below:

- Ia Strict nature reserve
- Ib Wilderness area
- II National park
- III Natural monument or feature
- IV Habitat/species management area
- V Protected landscape or seascape
- VI Protected areas with sustainable use of natural resources

IUCN management categories are voluntary for countries to apply to their protected areas and are not being used by all countries. However, for the purpose of standardisation of reporting for PETRONAS operations globally, these categories will be used.

# Positive Social Impact

Aligned to:



As a leading integrated global energy company, we play a crucial role in shaping the future. We take a collaborative approach to embedding sustainability into our practices, working hand in hand with our employees, suppliers, and communities to promote responsible growth.

## Health and Safety

### Why Is It Important?

The health and safety of our employees and contractors is of paramount importance to us. Given the nature of our industry, our people are exposed to a range of health and safety risks, such as hazardous environments, exposure to pressurised hydrocarbon, gas and chemicals, as well as heavy machinery and equipment. Workplace injuries and incidents can lead to severe impacts for both our business and stakeholders.

The consequences of poor health and safety practices are far-reaching and can result in regulatory fines and penalties, stop-work orders and reputational damage.

But above all, our people's physical and mental well-being are at stake, affecting their quality of life and ability to work and care for their families. Poor health and safety in the workplace can even lead to loss of life, with devastating effects on loved ones.

Four fatalities were recorded despite the increased focus on safety culture and improving safety practices. The fatalities reported were from fire, electrocution, dislodged pipeline and diving activity. Following these tragedies, we conducted four groupwide Health, Safety and Environment (HSE) stand-downs attended by 54,000 participants, underscoring our continuous commitment to prioritising the health and safety of our people. Immediate interventions have been implemented to address key issues and reduce incidents by strengthening frontliner and contractor competency, compliance to HSE requirements, as well as intensifying learning culture.

We also observed a 33 per cent increase in employee Total Recordable Occupational Illness Frequency (TROIF) compared to 2021. Food poisoning was one of the contributors with 35 cases reported. To avoid recurrences, interventions were implemented to ensure our external caterers for food and water supply are verified by the Ministry of Health (MOH).

*[For more information about our health and safety performance, please refer to page 253]*

Given the inherent risks in our industry, the ability to effectively promote a culture of safety throughout our operations enables employees and contractors to achieve their full potential, as they feel safe, secure and engaged. This will lead to a more high-performing and productive work environment. Moreover, investments in health and safety will strengthen our position as a caring and responsible organisation to retain top talent in the industry.

### What Is Our Approach?

At PETRONAS, we continuously reinforce a culture of safety across our operations, taking cue from the learnings gained over the last few years. This is important given the transformation in our work environment as the country transitioned into COVID-19 endemicity. We drive impactful interventions, mainly enhancing competencies and driving culture and assurance, enabled by digital technology. We continuously scale up contractor management and strengthen the implementation of the Generative HSE Culture (GC) programme at all levels through Accountability and Behaviour Reinforcement Programme (ABR). The ABR encourages HSE Desired Behaviours across our operations, and minimises undesired behaviours.

In addition to the current standards, guidelines, systems and processes, we pushed ahead on improving HSE First Line Assurance to drive HSE Management System and Legal Compliance groupwide, which included Self-Regulation capability development. Meanwhile, Process Safety continues to experience further improvements with the establishment of the Loss of Primary Containment (LOPC) Reduction Framework and the Fire Prevention and Mitigation Framework (FPMF).

In terms of risk management, we subscribe to Hazards and Effects Management Process (HEMP) which ensures hazards and risks are controlled. We use As Low As Reasonably Practicable (ALARP) principle to set the control levels for risks. Additionally, we continue to leverage on HSSE Integrated Risk Assessment (HIRA), a one-stop centre for risk assessment located in myHSSE, which provides analysis, trends and also common issues that require efficient intervention.

#### We have a comprehensive list of policies, guidelines and standards that ensure a culture of health and safety:

- PETRONAS HSE Policy
- PETRONAS Substance Misuse Policy
- PETRONAS HSE Management System (HSEMS)
- PETRONAS HSE Mandatory Control Framework (MCF)
- PETRONAS Technical Standards (PTS)
- PETRONAS Technical Guidelines (PTG)
- Hazard Effect Management Process (HEMP)
- Process Safety Loss of Primary Containment Reduction (PSLR) Framework
- Fire Prevention and Mitigation Framework (FPMF)
- PETRONAS Contingency Planning Standard
- Crisis and Incident Management System



## Positive Social Impact

### Digital myHSSE at PETRONAS

The myHSSE digital platform serves as our one-stop knowledge centre for all PETRONAS Health, Safety, Security and Environment (HSSE) matters.

By adopting a single information platform that houses all 16 systems of our HSSE digital solutions, each of which addresses different business pain points for users' easier access and fit-for-purpose usage.

We are also enabling users to harness the power of HSSE data to derive insights on HSSE performance, trends, emerging risks and other essential elements so that we can make proactive interventions. As we move towards our goal of realising predictive and even prescriptive HSSE analytics. Group HSE endeavours to improve this further.



<p><b>IPSS</b></p> <p><b>Integrated Process Safety Solution</b></p> <p>An integrated solution to optimise Process Safety Work processes and ensure governance in minimising human error, driving compliance and providing valuable insight for risk management.</p>	<p><b>FMS</b></p> <p><b>Fatigue Management System</b></p> <p>A centralised system to track and monitor the Hours-of-Service Limit (HSL) for PETRONAS' employees and contractors.</p>	<p><b>ICMS</b></p> <p><b>Integrated Contractor Management System</b></p> <p>A system to screen contractors and prevent unauthorised personnel from entering PETRONAS' premises.</p>
<p><b>CMIS</b></p> <p><b>Crisis Management Information System</b></p> <p>A solution to minimise human interventions by providing an assisted approach in managing a crisis through technology.</p>	<p><b>EPICS</b></p> <p><b>Environment and Social Performance Integrated and Centralised System</b></p> <p>An integrated system that provides holistic environmental and social performance data management for compliance and sustainability reporting.</p>	<p><b>UAUC</b></p> <p><b>Unsafe Act, Unsafe Condition</b></p> <p>A centralised platform to report, track and provide analytics of Unsafe Act, Unsafe Condition and Safe Observation for PETRONAS Group.</p>
<p><b>e-RGO</b></p> <p><b>Ergonomics Management System</b></p> <p>An ergonomic self-assessment adjustment and case tool to reduce the risk of musculoskeletal disorders.</p>	<p><b>HIRA</b></p> <p><b>HSSE Integrated Risk Assessment</b></p> <p>An integrated system to manage and perform HSSE-related risk assessments.</p>	<p><b>MARS</b></p> <p><b>Monitoring and Reporting System</b></p> <p>An integrated and centralised system to report, record and monitor HSSE performance indicators for PETRONAS Groupwide.</p>
<p><b>AM</b></p> <p><b>Action Management</b></p> <p>A centralised platform to record and track groupwide HSSE-related action items for PETRONAS.</p>	<p><b>HSE ABR</b></p> <p><b>HSE Accountability and Behaviour Reinforcement</b></p> <p>A digital solution to manage both positive and constructive reinforcements.</p>	<p><b>IM</b></p> <p><b>Incident Management</b></p> <p>A system to report, record and track actions on groupwide HSSE incidents and grievances for PETRONAS.</p>
<p><b>eCHEMS</b></p> <p><b>e-Chemical Management System</b></p> <p>A centralised system to request, screen and approve chemicals before purchases are made as this ensures compliance to HSE Legal Requirements.</p>	<p><b>ePTW+ 2.0</b></p> <p><b>ePTW+ 2.0</b></p> <p>A Groupwide Permit-to-Work (PTW) system that standardises the ePTW system across PETRONAS operations.</p>	<p><b>PSRS</b></p> <p><b>PETRONAS Self-Regulation System</b></p> <p>A centralised digital platform for Plant Management System (PMS) implementation.</p>
<p><b>STEWARDSHIP, HEALTH, INFORMATION AND ENVIRONMENT LINKED DATABASE (SHIELD)</b></p>		
<p><b>PETRONAS Safety Data Sheet (SDS) Portal</b></p> <p>A portal where PETRONAS product SDSs are made publicly available to all stakeholders in efforts to promote transparency and sound chemical management. Results of product risk assessments are also summarised and made available to stakeholders through Global Product Strategy Safety Summaries (GPSS) to further communicate product risk in line with our overarching objective of supporting proper product risk management throughout our products lifecycles.</p>	<p><b>myHealth</b></p> <p>Aims to support the general employee occupational health for PETRONAS. This includes the planning, execution, and archiving of Fitness-to-Work, Medical Surveillance &amp; Substance Misuse health protocols. myHealth also includes a self-service health assessment which can be done in one go and includes self-generated Letter of Undertaking, as well as a selection of preferred Approved Medical Examiners (AME).</p>	

### Value Creation in 2022

#### Culture

We continued to reiterate the importance of building a culture of Health and Safety throughout our operations and processes, as this will protect our employees, improve productivity and strengthen our reputation in the industry.

#### Shaping Generative HSE Culture Towards Self-Regulation

We strengthened our safety culture by introducing the Generative HSE Culture (GC) Framework, which promotes accountability and pace to business units, operating units and assets based on site-specific needs. Themed "Doing Things Differently", we collaborated with *Institut Teknologi Petroleum (INSTEP)* whereby INSTEP will fully manage and execute the GC training programmes, and work towards Self-Regulation (SR) certification. This was done to enable Group Health, Safety and Environment (HSE) to refocus on enhancing the overall effectiveness of this programme, maintain standards and quality, perform continuous improvements and measure impact based on its alignment to SR requirements and expectations.

Regular engagements with key stakeholders across all business units were conducted to ensure alignment with the Generative HSE Culture framework and strategy to drive the GC journey forward.

#### Generative HSE Culture Highlights:

- 25 engagement sessions to drive GC forward.
- Developed three new GC modules to align with Self-Regulation Framework.
- Total number of **1,209** GC participants trained in 2022.
- Developed governance documents on GC trainings in collaboration with INSTEP.

#### HSE Accountability and Behaviour Reinforcement (ABR)

Good behaviours often go unnoticed. But when things go wrong, we are quick to jump and forget to consider human factors. With HSE Accountability & Behaviour Reinforcement (HSE ABR), it is different.

PETRONAS continues the implementation of HSE ABR programme, which was rolled out in 2021 to elevate the HSE Culture towards achieving Generative HSE Culture. The HSE ABR is to ensure a consistent approach across PETRONAS when recognising and rewarding the Desired HSE Behaviour, and fairness when addressing Undesired HSE Behaviour.

In 2022, through the HSE ABR implementation, we achieved the following:

- Evaluated Human Behaviour Categorisation (HBC) elements in 97 per cent of completed investigations on major HSE incidents and major HSE non-compliances.
- 100 per cent domestic operations and selected international operations have HSE ABR Committee (ABRC) established.
- Successful integration of other HSE Systems with the HSE ABR system, which improves management of positive and constructive reinforcements.

## Positive Social Impact

### Towards Achieving Good Health and Well-being with MESTIfit4health

PETRONAS has taken a proactive step to prioritise employees' wellness towards achieving SDG 3 on Good Health and Well-being via MESTIfit4health, which is our signature programme. MESTIfit4health covers five main elements of Move Right (physical activity), Eat Right (healthy eating habit), Sleep Right (adequate and quality sleeping habit), Think Right (mental health and well-being) and Individual Right (responsibility of making healthy living as a choice to manage health risks). Among the initiatives for health risk reduction and management through MESTIfit4health are:

#### Think Right (Mental Health and Well-being)

##### Objectives

- Address psychosocial risks factors faced by employees.
- Encourage affected employees to reach out for early psychological support and reduce risk of developing mental health conditions.
- Implement and drive effective mental health and well-being interventions at the workplace.

##### Outcomes

- Implementation of "Towards No Meeting" after planned work hours reflected through leadership tone at all levels.
- Embedded knowledge in creating psychosocially safe work environment through leadership training modules.
- Upskilled 885 leaders on psychological safety and creating psychosocially safe work environment through Generative Culture programme and PETRONAS Leadership Centre's Strategic Excellence programme.
- Leaders conducted 24 sessions of Intentional Wellness Engagement or Leaders Reach Out with 12,500 employees focussing on mental health and well-being.
- 33 MIND-A-CARE Facilitators and 169 MIND-A-CARE Ambassadors trained through unique in-house MIND-A-CARE programme for early detection and intervention of psychosocial risk factors and subsequently to reduce mental health burden faced by employees.
- 5,380 employees including those at offshore facilities completed MIND-A-CARE Awareness training.
- 1,046 employees enrolled in the Individualised Coaching for Resiliency Enhancement (i-C4RE) programme to build mental health resiliency for coping with adversities/challenges and bouncing back from setbacks/failures.
- Structured Return to Work programme post prolonged mental illness leave.
- Strengthened and enhanced promotion of Employee Assistance Programme (EAP) and MyFriends with strong traction for early reach out and digital coaching.
- Achieved significant cost reduction on mental health treatment, 13.5 per cent lower (RM4.5 million) in 2022 compared to 2021 following the mental well-being interventions implemented. The risk of developing mental health conditions such as anxiety and depression potentially also reduced, with an estimated Return of Investment (ROI) at RM15.98 million.

#### Move Right (Physical Well-being)

##### Objectives

- Promote active lifestyle and foster team-work culture in prevention of non-communicable diseases.
- Support environment and community well-being.

##### Outcomes

- Opened 10 virtual walking trails across 10 countries, namely Brazil, Brunei, Indonesia, Iraq, Malaysia, Mexico, South Africa, Spain, Turkmenistan and United Arab Emirates.
- Achieved more than 6.4 billion steps through our virtual walking routes, exceeding the target of five billion steps.
- More than 50,000 trees have been planted at 14 sites across 11 states in Malaysia.
- Reduced approximately 200 tonnes of carbon and generated RM872,000 in income for 254 underserved people through the Walk4Trees programme in collaboration with PETRONAS Young Professionals Club (YPC).

#### Eat Right

##### Objectives

- Prevent occurrence of food poisoning incidents.
- Establish strong collaboration with the government and other stakeholders including the Ministry of Health Malaysia (MOH), food service providers, In-house Caterers (IC) and External Caterers (EC).

##### Outcomes

- Continuous implementation of Food and Water Safety programme.
- Carried out timely hygiene inspections to ensure IC and EC adhered to hygiene certifications and regulatory compliance.
- Strengthened collaboration with the Food Safety and Quality Unit, MOH.
- Introduced a one-stop digital centre for Food and Water Safety Resources, which lists out verified EC and reference materials.
- Catering of food from external service providers are only allowed to be selected from the EC listed in the one-stop digital centre.

#### Sleep Right

##### Objectives

- Reduce fatigue-related incidents among PETRONAS' staff and contractors.

##### Outcomes

- Strengthened and implemented the Fatigue Management System (FMS) for Non-Plant high risk groups (remote onshore – pipeline right-of-way (ROW), land transport and offshore).
- The Sabah-Sarawak Gas Pipeline (SSGP) emerged as the first non-plant to implement FMS across all our operations and businesses where Global Positioning System (GPS) mobile application was introduced in areas without internet connection.

**M** MOVE RIGHT!  
**E** EAT RIGHT!  
**S** SLEEP RIGHT!  
**T** THINK RIGHT!  
**I** INDIVIDUAL RIGHT!





## Positive Social Impact

### Compliance

In scaling up our efforts to improve safety performance, we proactively implemented various initiatives and measurements to ensure safety precautions are embedded throughout our businesses and operations.

#### Achieving HSE Compliance Through Self-Regulation (SR)

We continue to improve on our Self-Regulation practices and strived to achieve Self-Regulation certifications as this would result in a higher level of compliance towards legal and safety standards, as well as effective implementation measures to control hazards and minimise incidents.

We focused on driving key engagements and alignment of the Self-Regulation Implementation Masterplan with key stakeholders and completed the necessary pre-certification audits and Self-Regulation culture assessments. We also ensured Self-Regulation Department (SRD) personnel obtained the required certifications to strengthen SRD as a qualified third-party auditor for Self-Regulation implementation and surveillance audit in PETRONAS.

In terms of governance, we officialised the Self-Regulation Tripartite comprising members from Regulator (DOSH), Occupiers (PETRONAS OPU) and Third-party Service Providers (Institut Teknologi PETRONAS (INSTEP) and Universiti Teknologi PETRONAS (UTP)) as a platform that advocates Self-Regulation governance and regulations to support and sustain SR Programme journey towards operational and compliance excellence. We also completed the integration of PETRONAS Self-Regulation System (PSRS) with other relevant PETRONAS systems namely PETRONAS Risk-Based Inspection (PRBI), myAssurance and Health, Safety, Security, and Environment (HSSE) Monitoring and Reporting System (MARS), creating an integrated digital platform for the SR programme implementation which was deployed to all OPU embarking on the programme.

Conducted SR Implementation Masterplan engagement with **24** CEOs and OPU Heads including leaders from Upstream governance departments, as well as Department of Occupation, Safety and Health (DOSH) state representatives to share and roll-out the Masterplan.

Completed **seven** audits and Culture Baseline assessments in **four** OPU as part of their overall journey towards SR certification.

Achieved certification for **22** out of **27** SRD personnel with ISO45001 as Lead Auditor by Chartered Quality Institute (CQI) and International Register of Certificated Auditors (IRCA) in preparation for SRD to become the SR Qualified Third-Party for PETRONAS.

Conducted **10** stakeholder engagements and workshops with OPU and DOSH representatives to facilitate and provide the necessary advisory on the development and implementation of Self-Regulation programme.

#### Leveraging Digital Technology in Managing Crisis and Emergencies

##### PETRONAS Communication and Control Centre (COMCEN)

COMCEN is PETRONAS' one-stop centre for incident and crisis management, as well as the designated centre to coordinate and respond to emergencies and crisis. This one-stop centre manages numerous HSE and Security-related incident notifications and crisis, including issuance of various HSE advisories and warnings across our businesses.

#### Crisis Management Information System (CMIS)

Launched in 2019, Crisis Management Information System (CMIS) is a digital solution that minimises human actions and communications errors by providing technology and systems to manage emergencies and crises at enterprise level.

CMIS has allowed us to enhance crisis management best practices as it provides real-time emergency response updates to internal stakeholders seamlessly transfer data and information. We have also integrated state-of-the-art oil spill consequence modelling tool (OILMAP) into CMIS to enable swift and comprehensive emergency response to oil spill incidents.

- Conducted **16** CMIS trainings and **2** webinars across PETRONAS Group.
- Utilised in **8** Tier-2 and **2** Tier-3 emergency exercises, with positive feedback from stakeholders.

#### COVID-19 Reporting and Monitoring

As Malaysia transitions towards endemicity and business activities resume, we ensured seamless and safe normalcy interventions on readiness and implementation of processes and procedures to return to office through 50 per cent work in office and 50 per cent work from home rotation and subsequently 100 per cent with Flexi-Work Arrangement, including opening up for unvaccinated and partially vaccinated employees, without disruptions.

As part of our COVID-19 reporting and monitoring, Strategic Crisis Management in collaboration with Occupational Health (OH) division, spearheaded the introduction of Microsoft Forms and a digital dashboard to replace the conventional Notification Form (NF) used previously to report COVID-19 cases. The dashboard provided overall insights into the latest COVID-19 situation across our businesses and operations. With this in hand, the Executive Leadership Team and Corporate Command Centre (C3) were able to make data-driven decisions and decide on the right approach to be taken by its Pandemic Preparedness and Response Team (PPRT).

Our ability to make effective and swift adjustments amidst an evolving environment is considered to have led to a significant reduction in COVID-19 cases, clusters and deaths following the introduction of stringent measures and effective communications across all businesses and operations.

- Reduced **94 per cent** of manhours to produce daily COVID-19 reports and achieved cost avoidance of up to **RM300,000**.
- Zero business and reputational interruptions recorded.
- Achieved **99.8 per cent** primary vaccine uptake and booster uptake as compared to **49.7 per cent** for Malaysia's overall population.



We implemented measures to protect the health of our workforce during the COVID-19 pandemic while ensuring business sustainability through effective collaborations between Pandemic Preparedness and Response Team (PPRT) COVID-19 members, internal and external stakeholders including government and private bodies.

#### Prioritising Industrial Hygiene

One of our topmost priorities is to ensure the health of our employees and contractors within and beyond the workplace. We go beyond regulatory compliance and implement global best practices to deliver sustainable value and ensure a dedicated, productive and high-performing workforce. This include continuous efforts to address all workplace health hazards and respective risks such as chemical hazards, physical hazards (i.e., noise, radiation, thermal and vibrations), as well as biological, ergonomic and psycho-social hazards.

In 2022, we made progress on the following areas:

##### Hazardous Chemical Management

We strengthened the management of hazardous chemicals aimed to reduce overexposure to hazardous chemicals and increase compliance. One such initiative is an online digital platform named eCHEMS that manages and tracks the procurement, receiving and storage of hazardous chemicals. The digital system minimises human-interface manhours spent on verifying compliance of incoming procured hazardous chemicals and ultimately reduce the possibility of rejection at the receiving end.

## Positive Social Impact

- Zero cases of over exposure to chemicals in 2022.
- Achieved **95 per cent** compliance to chemical management in 2022.

### Noise Reduction Programme

We implemented a groupwide Noise Reduction Programme focusing on reducing noise at source and strengthening overall Health Risk Management. This was done through Noise Engineering Control studies targeting identified high noise-emitting equipment and enhanced controls.



### Digitalising the Health Risk Assessment (HRA)

Health Risk Assessment (HRA) was digitalised and integrated into HSSE Integrated Risks Assessment (HIRA). We implemented the enhanced HRA methodology, focusing on operationalisation and integration into other Safe System of Work (SSOW). The enhanced methodology includes a newly-developed psychosocial risk assessment (PsyRA), improving how workplace psychosocial risk factors are being identified and assessed.

- Operationalisation of HRA output within other Safe System of Work, and overall company health risk profile.

### Advanced Ergonomics Risk Assessment (ERA)

We fortified the Ergonomics Risk Management by implementing the Advanced Ergonomics Risk Assessment (ERA) Tool, which is known as Humantech and Ergonomics Control Inventory.

- Reduced ergonomic risk from **60 per cent** in 2021 to **20 per cent** in 2022 and achieved time saving for **50** tasks in 12 locations through Advanced ERA.

### Improved Risk Management Related to Industrial Hygiene

We continue to conduct First Line Assurance for Business Units, OPUs and our assets, which looks into managing risks related to Industrial Hygiene that are linked to day-to-day operational activities. We achieved increase in overall compliance as follows:

Programme (%)	2021	2022
<b>Chemical Management</b>	<b>95</b>	<b>95</b>
SDS Availability	91	94
Chemical Labelling	90	95
<b>Hearing Conservation</b>	<b>93</b>	<b>97</b>
Hearing Protection Zone Sign	98	99
Personal Hearing Protector (PHP) Issuance Record	94	95
<b>Radiation Protection</b>	<b>99</b>	<b>99</b>
Calibration of Measuring Equipment	91	93
Availability of Measuring Equipment	91	95
Annual Equipment Maintenance	91	96

### Safety Management

We strengthened site supervision and compliance to SSOW to address key issues and reduce incidents.

- Seven Second Line Assurances and **17** unannounced visits were conducted at selected sites to strengthen site compliance of HSE requirements.
- As an effort to better understand the human performance aspects that contributes to incidents, PETRONAS has introduced the Categorisation of Incident Causes (CIC) that further defines categories of Human Factor for every incident investigation.
- This led to improved site discipline and interventions:
  - Experienced a **55 per cent** increase in Stop Work Authority (SWA) from the previous year.
  - Reported a **20 per cent** increase in Unsafe Act Unsafe Conditions (UAUC) from the previous year.

As a lagging indicator that demonstrates improvement of safety performance, Lost Time Injury Frequency (LTIF) for the PETRONAS Group reduced by seven per cent (from 0.14 to 0.13) compared to the previous year.

	2018	2019	2020	2021	2022
<b>Lost Time Injury Frequency (LTIF) (Number of cases per one million man-hours)</b>	0.09	0.11	0.10	0.14	0.13

### Process Safety

Our commitment to Process Safety is a crucial aspect of our operations and is demonstrated by our concerted efforts to achieve significant reductions in Process Safety Events (PSE) 2022.

### Governance

- Implemented Fire and Loss of Primary Containment (LOPC) Reduction Framework (FPMF and PSLR) across all domestic and international assets through collaboration with technical experts.
- Conducted peer-review on FPMF and PSLR to verify implementation effectiveness.
- Completed engagement for domestic and international assets for an effective dynamic risk management.

### Leveraging Digitalisation to Improve Oversight

- Continue using Fire Prevention and Mitigation Framework (FPMF) and Process Safety Loss of Primary Containment Reduction (PSLR) Framework to optimise Process Safety work processes, provide governance oversight to minimise human error and ensure compliance, while providing valuable insights into risk management.
- Enhanced Integrated Process Safety Solution (IPSS) by launching and enhancing the Engineering and Organisational Change Management and Safety Review prior to starting up digital modules.
- Launched the Process Safety Awareness for Frontliners via digitalised HSE Learning modules to strengthen frontliners' awareness to manage risks and ensure business continuity.

### Strengthening Competencies

- Conducted OPUs site engagements to strengthen staff ownership of Process Safety culture.
- Partnered with the Center for Chemical Process Safety (CCPS) to encourage knowledge sharing on Process Safety for PETRONAS and the industry.
- Formed the Integrated Process Safety Management (IPSM) Committee to improve collaboration efforts in steering Process Safety requirements from various Management Systems.

We reduced LOPC by 33 per cent with an impressive 81 per cent reduction in Operational Integrity-related LOPC compared to 2021. Furthermore, we reduced Tier 1 PSE by 30 per cent.

HSE Performance Indicators	2018	2019	2020	2021	2022
<b>Number of Tier 1 Process Safety Events (Number of cases)</b>	12	9	9	10	7



## Positive Social Impact

### Capabilities and Competencies

We aim to constantly embed safety in everything we do. In reinforcing this principle, we focused on realising our Generative HSE Culture programme by enhancing HSE capability development programmes, improving the sustainability of HSE programmes while embedding HSE values and importance among our stakeholders and the larger community.

#### Drive Learning Culture as Part of a Continuous Effort in Learning from Incidents

As part of our journey in building safety culture, we emphasize on the importance of learning from previous incidents in order to avoid or minimise issues in the future.

#### Contractor HSE Management

01

Conducted **13** Reflective Learning and incident sharing sessions involving **2,724** participants.

02

Developed and published **four** lessons learned videos on PETRONAS internal platforms to improve learning from past incidents.

03

Conducted four groupwide collaborative learnings involving **1,237** participants. Learning focus areas included Electrical Fire, Auto Ignition, Piping Corrosion and Process Safety in design.

We enhanced contractor HSE management, where our contractors were required to undergo specific training to ensure they possessed the necessary competencies in order to be part of our value chain.

- The focus on contractor management is demonstrated through the continuation of the PETRONAS Contractor HSE Mentorship Programme to improve the HSE system and performance. **Fifty** contractors subscribed to the programme whereby four contractors graduated in 2022.
- Established a Community of Practitioners (CoP) as a common platform for HSE Frontliners from contractors' companies to communicate HSE requirements and sharing of best practices.
- Launched PETRONAS Safety Frontliners Development Programme in July 2022, intended to standardise Contractor Safety Practitioner roles (including Safety and Health Officer, and Site Safety Supervisor) and equip them with relevant/tailor-made knowledge.

### Collaborations and Partnerships

#### • PETRONAS Disaster Management Collaborative (PDMC) Workshop

We recognise the importance of collaborating with our internal and external stakeholders in strengthening our crisis management preparedness. Towards this end, we collaborated and involved various Government authorities and agencies in the workshop.

- **Three** PDMC workshops in East Coast and Sarawak Region (Kemaman, Miri, Bintulu)
- Participated by **31** PETRONAS operating units and **84** government authorities and agencies, involving **370** participants.



#### Improving Fire and HAZMAT Response Management

We focused on improving Fire and HAZMAT Response Management (FHRM) across our operations by collaborating with the Fire and Rescue Department Malaysia (FRDM) to strengthen our regulatory compliance. We also strengthened leadership and best practices with CEFS entities and our operations' Fire Response Unit which resulted in quarterly cross collaborations and advisory meetings between Group Health, Safety and Environment (GHSE) and Centralised Emergency and Fire Services (CEFS) entities. Collaborations with government authorities and agencies, including international stakeholders were also held.

- Introduced **five** Emergency Response Training Modules;
- Conducted study on firefighting foam with Fire Research Centre (PUSPEK) BOMBA CEFS Kerteh;
- Established guidelines in Managing Community Awareness and Emergency Response (CAER).

Our ability to develop these practices internally led to cost savings of approximately RM200,000.

- Collaboration with the Centralised Emergency and Fire Services (CEFS) and OPU's Fire Response Unit resulted in the introduction of three best practices in FHRM:
  - Standardised *Ujian Kecergasan Jasmani Kebangsaan* (UKJK)
  - Identified training module content on emergency response
  - Emergency response equipment dashboard to be implemented in 2023
- The Fire Safety and Emergency Response Community of Practitioners (CoPs) was chosen as the Top 2 Performing CoPs in PETRONAS (among 68) during Knowledge Management Day 2022, with **RM90 million** potential value creation.

### Upskilling our Emergency and Crisis Management Capabilities

#### • Natural Disaster Management Committee (NDMC)

In strengthening our crisis management capability, we established and provided guidance to our Natural Disaster Operation Committee (NDOC) and Natural Disaster Operation Coordination Committee (NDOCC) members in managing natural disasters to minimise impact on people, the environment, assets and our reputation.

Completed the Natural Disaster Contingency Plan (NDCP) for all **six** identified regions (Southern, Northern, Central, Sarawak, Sabah and Labuan).

02

Upskilled **127** members and facilitated natural disaster crisis management exercises.

01

#### • Country Contingency Plan

We reviewed and revised the Country Contingency Plan (CCP) Technical Training and made it available to all our international assets. We also introduced two new CCP Technical Trainings, namely to Japan and Australia.

Successfully upskilled Country Contingency Team (CCT) members to improve capabilities and preparedness in managing crisis in international assets.

Conducted **six** exercises on crisis management for Japan, Mexico, South Sudan, and the United Arab Emirates.

## Positive Social Impact



## Security

**We are fully committed to implementing a high-level, well-coordinated and integrated security approach that safeguards our assets, ensures the safety of our people wherever we operate and provides sustainable value for our stakeholders.**

### Why Is It Important?

Persistent geopolitical tensions, global economic uncertainties, increased competition, extreme weather patterns and accelerated technological development have increased security concerns. Given our wide geographical spread and the asset-heavy nature of our operations, we are strengthening our security preparedness further to withstand the changing risk environment.

Our business value chain including offshore and onshore assets are exposed to protests, violence, crime, insider threat, terrorist attacks and geopolitical conflicts. The increasing use of technology has also led to cybersecurity threats and consequently cyber-crimes which call for a holistic focus on enterprise security management. These interruptions may lead to incidental exposures, operational disruptions, supply chain breakdowns, ransomware, price risks and decreased productivity, which lower our ability to deliver sustainable stakeholder value. We are committed to maintain a high-level, well-coordinated and integrated security approach for the integrity of our assets and safety of our people, wherever we operate.

### What Is Our Approach?

Our emphasis is on ensuring security excellence throughout our value chain. We continuously elevate our in-house security culture, harnessing physical security infrastructure and technologies to optimise business efficiencies and productivity whilst providing a conducive workplace. We also embed a security mindset into our organisational culture, supported by coordinated cross-functional awareness measures.

We are governed by the laws and regulations of the countries where we operate. Our practices are supported by robust internal governance stipulations that are regularly updated to help us adapt to the ever-changing external operating environment. With the rising focus on digital security, we fortified our priority on digitalisation, operational and strategic security acumens, steered by governance, compliance, capabilities, communications and technology application.

We established a security academy with targeted programmes to hone a pool of capable security personnel and equip them with suitable capabilities. We offer timely security training and ground exposure that prepares colleagues to manage security effectively, particularly at our high-risk operations.

We also pursued industry-wide engagements to uphold a conducive working environment and prevent maritime security threats on our shores in Malaysia.

#### Policies and Standards:

- 🔹 PETRONAS Security Policy
- 🔹 Security Management Systems (SeMS)
- 🔹 Minimum Security Standard (MS2)

### Value Creation in 2022

#### 1 Proactive Security Risk Management

The robustness of our security controls and practices is vital to how we do our business. Gap closure efforts, assurance activities, penetration tests and security drills were some of the key activities carried out in the year under review covering selected domestic and international assets. A key effort included fortifying and streamlining compliance to our Security Policy via execution of the PETRONAS Group Management Framework, with roll-out planned in 2023. The Groupwide undertaking to enhance governance and assurance marks a formalised approach to accelerate security excellence in all that we do, through clear, concerted and coordinated initiatives, supported by improved communication on demarcation of roles and responsibilities.

Additionally, we continued to provide proactive security insights to facilitate informed management decision that take into account evolving external vulnerabilities.

#### 2 Partnering for Greater Security

We believe in fostering closer ties with various stakeholders in Malaysia, including enforcement agencies, to strengthen security excellence for propelling energy security.

In 2022, we signed a Memorandum of Understanding (MoU) with the Royal Malaysia Police to further strengthen collaboration on security awareness and the integration of best practices via cooperation in training and operational support. This aims to spur collective knowledge sharing and enhanced capabilities for PETRONAS' onshore and offshore assets in Malaysia.

The aim is to strengthen our resilience and robustness as we navigate a more dynamic business environment.

We also worked with various enforcement agencies to strengthen maritime security, deploying a range of assets for optimum surveillance of our offshore interests including unmanned platforms. The joint operations led to zero intrusion cases between June and December 2022.

We also leveraged our Auxiliary Police (AP) personnel at our onshore assets in Malaysia. The APs are entrusted with enforcement powers as stipulated in the Police Act 1967. The coverage of PETRONAS' APs also includes certain offshore platforms that have been identified as national

critical infrastructure. Targeted joint operations with the local enforcement agencies were carried out on several occasions.

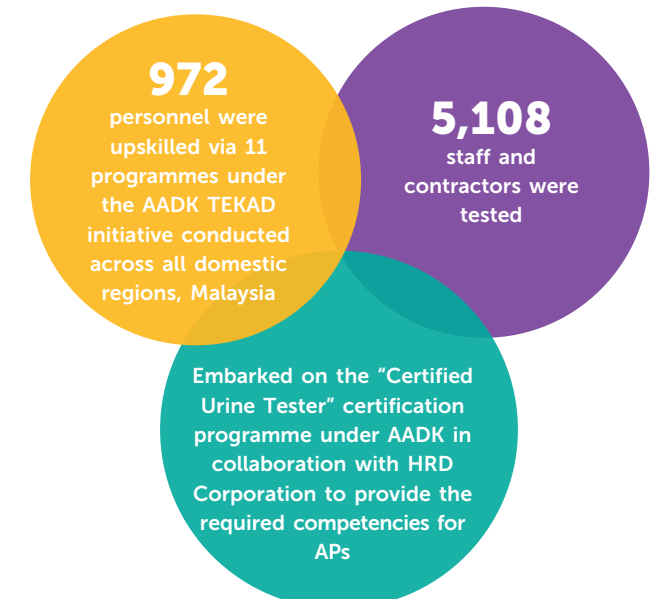
Additionally, we partnered with the industry players to drive collective action via the Sahabat Maritim programme to drive awareness on the dangers of vessel encroachment within the 500 metre safety radius surrounding our offshore operation. The programme ongoing since 2015, also educates local communities in Sabah and Labuan on wider security and safety implications.

#### 3 Preventing Substance Misuse

Substance misuse can result in security issues, leading us to embark on *Tempat Kerja Bebas Dadah* (TEKAD), a programme under the *Agensi Antidadah Kebangsaan*, AADK, Malaysia.

TEKAD is a strategic partnership to promote a workplace free of substance misuse. It promoted discussions across multidisciplinary teams on illegal, prohibited substances and arising complexities if mismanaged.

The awareness programme involving staff and contractors also included a Training of Trainers (ToT) for our Auxiliary Police (APs) to undertake urine screening for drug detection. This was conducted as per the Police Act, P.U.A 461/1970 and relevant clauses/sections from Act 234 (Dangerous Drugs Act 1952) and Act 283 (Drug Dependents (Treatment and Rehabilitation) Act 1983).





## Positive Social Impact

### 4 Strengthening Security with Technology

Our security personnel are our frontliners protecting our assets, information, employees and communities to ensure uninterrupted operations. Hence it is vital that we equip them with the latest security equipment and cutting-edge technology.

In 2022, we completed a pilot project in Pengerang, Johor, to maximise our AP's enforcement powers by expanding their focus into marine, investigation and air units. In addition to testing a drone surveillance and monitoring system at the PETRONAS Twin Towers and the East Coast Region, we introduced a facial recognition system at the PETRONAS Twin Towers to improve security at our headquarters. Concurrently, we engaged relevant authorities and agencies on proactive counter-drone measures – exploring the feasibility of drone jammers the need for streamlined standard operating procedures on drone management activities for the corporate sector in Malaysia.

We also enabled centralised monitoring with an Integrated Security Control Centre, equipped with an Emergency Communication Centre (ECC), Mobile Monitoring Control System (M2CS), and drone technology. PETRONAS was also among pioneering corporate organisations to deploy body-worn cameras at our headquarters in Kuala Lumpur, Malaysia, thereby safeguarding our premises.

- Obtained certification for **81** identified personnel (73 APs and eight executives) as drone operators, aligned with the Civil Aviation Authority of Malaysia (CAAM) regulations.

We also signed an agreement with University Teknologi PETRONAS (UTP) to collaborate on various security analytics technology initiatives. This partnership encourages participation between academic and industry practitioners to venture into research on data, cybersecurity and physical security analytics.

- Three** joint-ventures are being pursued through UTP's Centre for Research in Data Sources (CeRDAS).

### 5 Establishing a Culture of Security

Engagement is critical in upholding a robust security culture, extending existing focus beyond our staff and domestic enforcement agencies to include international constituents. We also strengthened our relationship with local stakeholders to contribute to upholding national energy security.

- Achieved a **5-star** Certification of Key Point Facilities for PETRONAS Chemicals Fertiliser Kedah (PCFK), Gas Processing Santong (GPS) Dungun and Malaysia Refining Company Sdn Bhd (MRC SB) facilities; part of an initiative led by the Malaysia Office of the Chief Government Security Officer (CGSO) of the Prime Minister's Department.



Towards this end, we conducted several key efforts, some of which included:

#### Pilot Regional Security Hub – Asia Pacific

##### Objectives

Streamline security practices across international operations for better line of sight and instil security acumen aligned with local cultures.

##### Outcomes

- Bridged the governance and operational gap between Group Security and ground operations.
- Enhanced relationships with international security stakeholders.
- Provided timely security insights and support on managing ground security complexities.
- Mitigated potential hazards through timely security controls.

#### PETRONAS International Security Symposium

##### Objectives

Establish a common platform for the industry's security practitioners to share, deliberate and network on the topic of physical security to advance security excellence.

##### Outcomes

- Over 867 virtual participants and 150 physical participants from 11 countries including Indonesia, India, Iraq, Sudan, Turkmenistan and the United Kingdom. The event held on 18 August 2022 in Kuala Lumpur, Malaysia also saw participation from PETRONAS' Board members, ELT and representatives from various companies from the Energy sector.
- Pioneered a dedicated platform on security for the energy sector featuring a suite of Malaysian and international speakers, with discussions on topics such as security's transition towards net zero to convergence of physical and digital security acumen.
- Received positive feedback from participants citing a previous absence of a formal platform bringing together the energy sector's physical security practitioners.

#### Security Awareness

##### Objectives

To propagate security via discourse on timely topics of interest in effort to drive security uptake through better understanding and appreciation of security acumen across the operational and strategic fronts.

##### Outcomes

- 10 webinars, including some for a groupwide audience. Some of these sessions attracted between 200 to over 500 participants.
- Wide range of topics including security risks, security geopolitics and security behaviours. (e.g. Terrorism, country updates and revolutionising security through technology, Kidnap for Ransom, Cybersecurity, Fix the Leak, Information Sharing and Raya Festive Season travel safety advisory).
- Developed podcasts, with three episodes dedicated to Climate Change, Security and Human Rights. The insights reflected correlation between security and sustainability, enabling better appreciation on the role of security in realising long-term business growth. These podcasts also featured PETRONAS subject matter experts and their views on how security is a vital aspect of sustainability.

We established a Security Academy to enhance our security practitioners' skills, knowledge, and capabilities, enabling them to deliver optimum value and provide equitable services as a business growth partner.

Additionally, identified personnel also attended sessions on Drone Certification, Train the Trainer, Basic Investigation Technique, Basic Forensic Technique and Basic Marine Survival among others. These sessions focused on striking a proper balance across the technical, strategic, and leadership spheres, emphasising the familiarisation of law and regulations.

## Positive Social Impact

### Human Rights

#### Why Is It Important?

Respecting human rights is essential for our social license to operate. It is our responsibility to manage human rights risks and impacts arising from areas of our operations while contributing to society in a responsible, ethical and transparent manner.

PETRONAS is committed to respecting human rights in areas of our operations, complying with our Code of Conduct and Business Ethics (CoBE) and all relevant legal requirements.

Respecting human rights across our value chain, inclusive of employees, suppliers, contractors, partners and communities where we operate is very important to PETRONAS in upholding our duty as a business enterprise. Human rights is the foundation of sustainable development and creating positive social impact comes with proper management of social risks. Upholding human rights through fair and ethical practices is fundamental to our business. It creates a safe and secure operating environment that complies with laws and regulations and meets the expectations of our stakeholders. Respecting human rights is also essential to achieve our purpose in being a progressive energy and solutions partner, enriching lives for a sustainable future.

To support our Human Rights Commitment, we integrate controls throughout our systems and processes including risk management, procurement and supply chain, HSE, human resource management, business operations, legal and security. The following standards, policies and guidelines guide us:

#### Human rights tools applied in PETRONAS

##### List of external human rights tools applied in PETRONAS:

1. United Nations Guiding Principles (UNGPs) on Business and Human Rights
2. Fundamental Principles of the International Labour Organisation
3. UNGP Effectiveness criteria

##### List of internal human rights tools applied in PETRONAS:

###### Policies:

1. PETRONAS Human Rights Commitment
2. PETRONAS Code of Conduct and Business Ethics (CoBE)
3. PETRONAS Health, Safety and Environment Policy
4. PETRONAS Anti-Bribery and Corruption Policy and Guideline (ABC Manual)
5. PETRONAS Contractors Code of Conduct on Human Rights

###### Standards:

1. PETRONAS Technical Standard on Social Risk Assessment
2. PETRONAS Technical Standard on Grievance Mechanism
3. PETRONAS Security Management System

###### Guidelines:

1. PETRONAS Technical Guideline on Human Rights Due Diligence
2. PETRONAS Technical Guideline on Indigenous Peoples Assessment
3. PETRONAS Technical Guideline on Cultural Heritage Assessment
4. PETRONAS Technical Guideline on Land Acquisition and Involuntary Resettlement

As the industry evolves with the energy transition, respecting human rights has become even more critical to our business. It shows strong alignment to respecting the best interests of our rightsholders and interested parties.

#### What Is Our Approach?

Identifying exposure to potential human rights risks and impacts, mitigating and addressing them are important in our operations. Salient potential human rights issues material to PETRONAS are:

Labour and Working Conditions	Community Well-being	Supply Chain	Responsible Security
<ul style="list-style-type: none"> <li>Forced and trafficked labour in contractors' and subcontractors' workforce.</li> <li>Child labour.</li> <li>Condition of employment and work.</li> <li>Discrimination in hiring and contractual terms.</li> <li>Freedom of association and collective bargaining.</li> <li>Workers' health and safety.</li> <li>Workers' camp conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Community health and safety.</li> <li>Access to natural resources for health, cultural needs and livelihood.</li> <li>Land acquisition and involuntary resettlement with/without economic displacement.</li> <li>Indigenous peoples.</li> <li>In-migration.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor/supplier performance related to labour and working conditions, community well-being and security.</li> </ul>	<ul style="list-style-type: none"> <li>Use of force and conduct of third-party security.</li> <li>Provision of Human Rights training for staff and third-party security.</li> </ul>

Our human rights approach is embraced and advanced by our leaders, with clear governance processes to ensure implementation and accountability. Our commitment is led from the top, our work in human rights is overseen by the PETRONAS Board and ELT.

The Board and ELT regularly discuss human rights as part of our approach to sustainability, reviewing issues with actual or potential impact, where a business-critical decision needs to be taken, or where substantial financial investment may be needed to address the impact.

Efforts to uphold human rights are integrated throughout our organisation and extend to our broader ecosystem, including suppliers, contractors, partners and the communities we serve.

#### Our Due Diligence

To minimise social risks and their impact on our employees, partners, contractors and communities, we have established technical standards and guidelines on due diligence that include assessments on indigenous peoples, cultural heritage, land acquisitions and involuntary settlement as well as grievance mechanism. Our Social Performance technical practitioners lead our due diligence programmes, identifying, mitigating, tracking, and monitoring potential human rights issues.

We also require human rights due diligence for potential mergers and acquisitions. As we transition to a low carbon future, we ensure our processes, tools, and practices remain updated and applicable in identifying how new energy infrastructure and developments impact human rights. We also share best practices with our supply chain partners to ensure the effective implementation of human rights due diligence.

Throughout 2022, there were no reported violations involving indigenous peoples' rights. There was also no activity on land acquisition and involuntary resettlement.

As part of our policy, we do not practice discrimination on any grounds. We continuously conducted reviews, strengthened policies and practices to ensure employees rights on equality and non-discrimination were upheld.

There were no complaints of discrimination received in 2022, based on our Industrial Relations data.

#### Access to Remedy

Grievance mechanisms create channels for dialogue, problem-solving and investigation and are applied to provide timely and fair remedies when needed. Workers and other rightsholders can raise complaints freely and with the expectation of obtaining effective and transparent resolutions. It also helps to identify country-specific solutions and actions to avoid recurrence.

Our grievance mechanism covers HSE, security, labour and working conditions, and supply chain concerns where we operate. We have designated personnel, community liaison officers and online complaint channels to manage grievances.

Additionally, PETRONAS contractors are required to establish a grievance mechanism for their workforce within our value chain. This mechanism shall be made known and communicated in relevant languages, providing a way to report grievances while ensuring that the identity of the person filing the grievance is protected. The grievance mechanism must adhere to the United Nation Guiding Principles (UNGP) 'access to remedy' pillar.



## Positive Social Impact

### Value Creation in 2022

#### Strengthened Governance

##### 1 Included Human Rights Section to the Revised PETRONAS Code of Conduct and Business Ethics (CoBE)

In 2022, we updated the PETRONAS CoBE to include a human rights section under Part III: Workplace, Culture, and Environment. The revised policy mandates all employees, contractors, partners and those involved in our operations to uphold the principles of respect for human rights and take measures to mitigate social and human rights risks, prohibit child labour, engage in or support human trafficking or modern slavery, including forced, bonded, or involuntary labour.

##### 2 Sustained PETRONAS' Commitment to Zero Forced Labour and Child Labour in Malaysia-Based Supply Chain

We continue to uphold our pledge to eradicate forced and child labour in all our operations as part of our firm commitment to respecting human rights.

We comprehensively assessed our contractors performing high-risk activities from 2019-2022 to ensure full compliance with our human rights policies and practices. Bureau Veritas Certification (M) Sdn Bhd, a third-party verifier, assessed our supply chain due diligence on qualitative and quantitative data related to our key performance indicators for the PETRONAS Contractor Code of Conduct on Human Rights (CoCHR). The results affirmed that PETRONAS has adequate supply chain due diligence, and there was no evidence of child or forced labour practices within our supply chain.

We found no incidents of child and forced labour in the reporting year. To further strengthen the awareness and understanding of risks related to child and forced labour among our employees, we have organised an engagement as well as a Masterclass on Forced and Child Labour on 5 July 2022, with a speaker from the International Labour Organisation (ILO), and a Masterclass on Standard and Industrial Research Institute of Malaysia (SIRIM) 50<sup>1</sup> Social Accountability Standard on 17 November 2022.

<sup>1</sup> SIRIM 50 is a Malaysian social accountability standard that assesses an organisation's compliance with health and safety regulations and Malaysian labour laws and ethical practices. It defines social accountability requirements consistent with those in other international social standards such as ISO 26000 and SA 8000.

These efforts were organised to promote and elevate our employees' awareness and knowledge of child and forced labour risks. Understanding the child and forced labour indicators and why they are essential, ensures our employees can identify potential child and forced labour risks in their respective operations.

##### 3 Strengthened Social Risk Assessment Implementation

An evaluation on the effectiveness of social risk assessment (SRA) implementation was conducted by sampling 20 per cent of total SRAs for the past five years. No deviations were found from our SRA technical standard, indicating effective implementation of the assessment process. Enhancements were also made to our digital SRA tool from the review, with an upgrade of the SRA documentation from guideline to standard.

##### 4 Human Rights Due Diligence (HRDD) in India

We reviewed the adequacy of controls to manage potential child and forced (bonded) labour risks in our operations across India.

The risk of child or forced labour is low due to compliance with regulatory requirements, strict penalties, and limited activities for contractors in our facilities in India. We have recommended further improvements to minimise our risk exposure, as listed below:

- Enhancement of contractor management to include human rights awareness briefings, and fit-for-purpose contractor self-assessments on labour, potential collaborations with partners or within joint ventures (JVs) on respect for human rights initiatives, revision of Codes of Conduct and relevant processes to align with revised CoBE, assessment of adequacy of controls on forced or bonded labour risks across the value chain, as well as assessment of forced and child labour risks across key contractors and suppliers.
- These include source material to comply with regulatory requirements such as the Factories Act 1948, The Child Labour (Prohibition and Regulation) Act 1986, Bonded Labour System (Abolition) Act 1976 and The Payment of Minimum Wages Act 1948.

## 5 Contractors Code of Conduct on Human Rights (CoCHR)

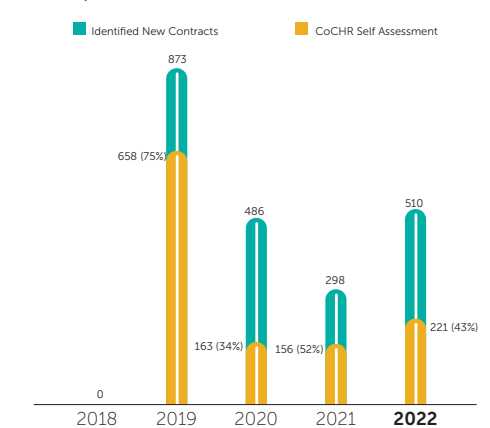
We continue to reinforce our commitment to human rights across our value chain, by assessing compliance on our Contractors Code of Conduct on Human Rights (CoCHR). The CoCHR is our supply chain due diligence on labour and working conditions, requiring ethical practices from our contractors in compliance with the PETRONAS Human Rights Commitment. We value contractors who share our commitment to integrity, anti-bribery and anti-corruption practices and sustainable development. Compliance with the CoCHR, including the principle of freedom of association and collective bargaining, is mandatory for all contractors. This requirement has been embedded into our procurement processes in Malaysia, where respect for human rights has become a contractual obligation for all goods and services providers who participate in our procurement process.

### New Suppliers Screened Using Social Criteria

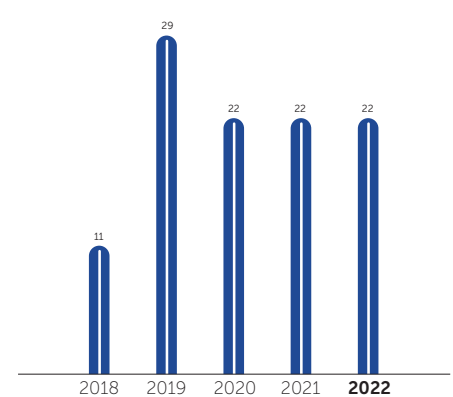
Under the PETRONAS Contractors Code of Conduct on Human Rights (CoCHR), we require our contractors to respect internationally-recognised human rights and comply with the PETRONAS Code of Conduct and Business Ethics (CoBE). We expect our contractors and suppliers to adhere to labour and working condition principles: freedom of labour, prevention of child labour, wages and benefits, working hours, grievance mechanism, non-discrimination, freedom of association, humane treatment and foreign and migrant workers.

1. From 2018 to 2022, PETRONAS conducted CoCHR Self-Assessments for identified new contracts and performed CoCHR Compliance Assessments based on the Self-Assessment results.
2. In 2022, the CoCHR survey was sent to 510 contractors.
3. Out of the 510 contractors, we identified 22 contractors with high risk exposure on human rights in 2022 and we completed 100 per cent CoCHR compliance on those contractors to understand their situations and challenges. Generally their gaps were on informal grievance mechanism within their workforce and lack of grievance management within their supply chain.

Participation Rate of CoCHR Online Self-Assessment

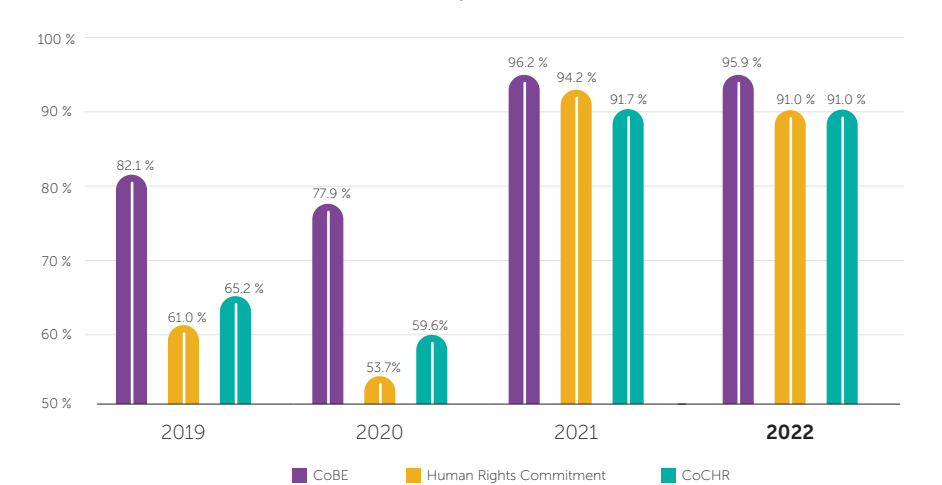


Number of CoCHR Compliance Assessments Conducted



Results from the online surveys conducted from 2019 – 2022 indicated that we managed to maintain more than 90 per cent awareness building among contractors for two consecutive years. Using CoBE as our baseline, the gap has narrowed to less than 5 per cent in 2021 and 2022, compared to about 20 per cent in 2019 and 2020.

Awareness on PETRONAS Governance Documents on Human Rights (Survey 2019 - 2022)



We conducted several engagement sessions with our employees to raise awareness of the risks associated with child or forced labour practices. We also collaborated with the Department of Labour Peninsular Malaysia to share our initiatives and gain a deeper understanding of the revised regulations.

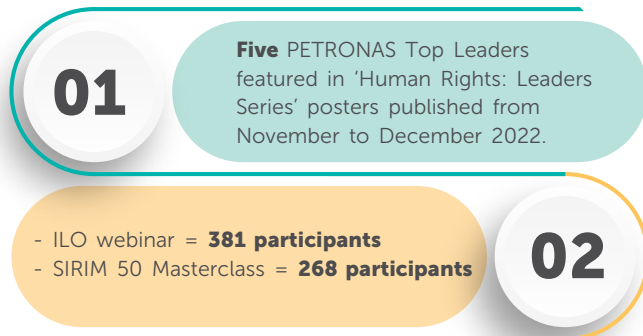
## Positive Social Impact

### Engagements

#### Human Rights Leaders' Series Campaign

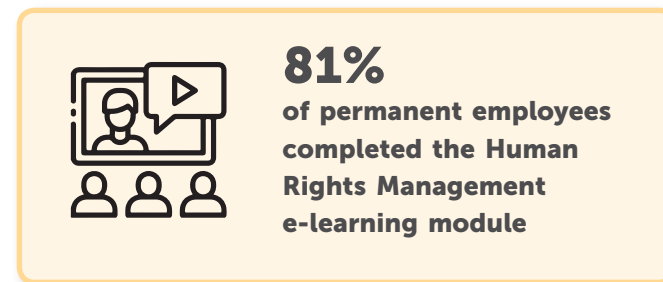
To elevate the importance of human rights leadership, a Human Rights Leaders Series campaign was curated to promote and relate human rights management best practices in various functions across PETRONAS.

### Capability Enhancements



#### Human Rights Management

We conducted an engagement session between the Department of Labour Peninsular Malaysia and the Project Delivery HSE team with Social Performance practitioners to understand the updated requirements and share on PETRONAS' human rights management practices. The engagement allowed both parties to better understand the revised regulations governing the labour practices across our business and supply chain.



#### Upskilling of Contractors and Vendors

We conducted several human rights awareness and upskilling sessions for our partners and contractors on human rights legislation and practices. These were delivered as part of the Strategic Partners Engagement, Vendor Development Programme and other activities.

On 29 September 2022, 680 participants joined a webinar on our Special Oil and Gas Services and Equipment Financing Programme. Topics on human rights were presented, including on business and human rights and principles to practice towards a sustainable supply chain.



### Assessments

#### Social Risk Assessment Functional Checklist (SRA FC)

We developed a Social Risk Assessment Functional Checklist (SRA FC) to measure the effectiveness of SRAs conducted, as well as to identify good practices and gaps by sampling 20 per cent of SRAs conducted in PETRONAS.

This initiative did not find any deviations from the PETRONAS Technical Standards, indicating effective implementation of the assessment process, although we made enhancements on our SRA digital platform to further improve monitoring of the SRA mitigation plan.

#### Social Risk Assessment with Local Communities

Social risk assessments were conducted throughout our projects and operations to ensure we could identify, assess and mitigate any social and human rights risks which may affect the communities where we operate.

In 2022, we conducted seven Social Risk Assessments at our projects and operations. Based on the findings, there were no significant actual and potential violations involving rights of the communities surrounding our operations.

### Grievance Management

#### Evaluation of Effectiveness of First Line Assurance

We have a Grievance Mechanism First Line Assurance (GM FLA) that acts as the first point of contact for resolving issues, thus addressing complaints swiftly and effectively.

An evaluation of the effectiveness of the grievance mechanism (GM) implementation was conducted by sampling 100 per cent of GM FLA. Results found that 97 per cent of operating units comply with the GM requirements, with a 47 per cent increase in assurance implementation from 23 per cent in the previous year. First line assurance by the operating units is risk-based.



#### Grievance Mechanism e-Module

We ensure our employees are kept updated on our Grievance Mechanism processes.



#### Managing Community Grievances

We received seven grievances in 2022, as listed below:



All seven grievance cases were closed in 2022. The number of grievances do not necessarily describe the effectiveness of the system as it is the outreach, trust and confidence in the system that is critical to us.

The evaluation on the effectiveness of our grievance mechanism processes in 2022 shows positive results, and we also acknowledge that there is room to further encourage our rightsholders to continue using our GM channels towards managing potential risks and impacts to the community, employees and contractors where we operate.



## Positive Social Impact

# Supply Chain Management

**A Resilient and Agile Supply Chain is Essential for our Operations and Stakeholders.**

### Why Is It Important?

PETRONAS relies on a range of products and services throughout our value chain, sourced from a vast global network of suppliers.

Ethical and sustainable supply chains aid in product development, safeguard workers' rights, and enhance operational safety. We view our supply chain as an opportunity to contribute to positive socio-economic impacts. It allows us to channel financial capital into businesses, including Small and Medium Enterprises (SMEs), empowering their growth in environmental protection, responsible sourcing and procurement practices.

### What Is Our Approach?

Our suppliers must adhere to policies and standards in managing environmental and social impacts across our integrated oil and gas value chain.

We have zero tolerance towards non-compliance, including our environmental and social standards. We conduct capacity building and engagement sessions to build capability and strengthen the resilience of the industry. To this end, we have been collaborating with nine financial institutions on the Vendor Financing Programme (VFP) to facilitate access to funding for vendors since 2018. We have also introduced Special Oil and Gas Services and Equipment (OGSE) Financing which targets underserved vendors with less than five years of experience. In driving sustainability, we partnered with industry players and government agencies by participating in the National OGSE Industry Blueprint roadshows in the Klang Valley, Sabah and Sarawak. We also participated in strategic forums such as the National OGSE Sustainability Forum.

We collaborated with OGSE industry players through our Vendor Development Programme (VDP) and SMEs to promote local entrepreneurship to contribute to socio-economic growth and improve communities through an increase in employment opportunities.



### Policies and Guidelines

- PETRONAS Contractors Code of Conduct on Human Rights (CoCHR).
- PETRONAS Code of Conduct- and Business Ethics (CoBE).
- PETRONAS Anti-Bribery and Corruption (ABC) Manual.
- PETRONAS Whistleblowing Policy.

## Value Creation in 2022

### 1 Screening for a Sustainable Supply Chain

PETRONAS' suppliers and contractors are encouraged to embrace sustainability principles and be accountable for its 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.

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. 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.



- **342** participants attended the 101 Sustainability Awareness programme to strengthen the awareness of PETRONAS' pool of vendors on our approach to sustainability.
- **383** participants attended the second sustainability awareness session – Shifting Towards Sustainability.

### 2 Simplifying Procurement with Technology

Our supply chain productivity and efficiency have been greatly enhanced through technology adoption. By digitising and automating our procurement process, we have been able to optimise our resources, reduce costs and effectively respond to disruptions. Our focus was process automation to enable contactless buying experience for low value purchasing activities.

As a result of these efforts, as well as internal cost optimisation and efficiency initiatives, we enabled local OGSE industry players to serve PETRONAS more efficiently while improving the pace of the end-to-end procurement process.



## Positive Social Impact

### 3 Improving the Industry Through Our Supply Chain

As an integrated energy solutions provider, we play an important role in promoting Malaysia's OGSE industry development, guided by the National OGSE Blueprint 2021-2030. This is to ensure we meet market demand, harness efficiency and drive innovation and opportunities for local companies to expand into new markets. The aim is to promote a healthy ecosystem, improve competitiveness on a global scale while safeguarding strategic national interests and contributing to the country's economic growth.

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).



## Product Stewardship

### Why Is It Important?

Product stewardship is a vital aspect of ensuring that our products meet customer needs and sustainability considerations. When developing innovative products and solutions, we take a life cycle approach in meeting stakeholder expectations through minimising impact on health, safety and the environment throughout a product's entire life cycle.

Product stewardship in PETRONAS comprises a range of cross-functional disciplines, including product safety and regulatory compliance, toxicology, ecotoxicology, environmental health, product sustainability and life cycle assessment. We also collaborate with stakeholders across extended product supply chains, going beyond compliance to improve our offerings, ensuring safer and sustainable products that are in line with customer preferences.

### What Is Our Approach?

We remain steadfast in our commitment to managing risks and enhancing the performance of our products across their entire life cycle. Our approach to Life Cycle Thinking ensures that we take comprehensive steps to systematically assess, control, and communicate product HSE risks. These elements are integrated into our operations, from R&D and raw material sourcing to manufacturing, distribution, product application, consumer use and disposal.

Product safety and risk assessments are regularly performed, updated when necessary and communicated in order to ensure we do our part in safeguarding the environment and enabling our products to have a positive social impact through responsible use and application. We conduct comprehensive raw material assessments and product Life Cycle Assessments (LCA) to add value to products by meeting emerging stakeholder expectations and managing future product risks effectively. These practices are embedded into our standards and systems to ensure robust and responsible governance processes are in place which enables continuous improvements to product stewardship performance.

In addition to ensuring efficient procedures and effective communication with our partners and customers, we leverage digital and toxicology laboratory technology to safeguard our product compliance (licence to operate) in new markets, build customer loyalty and drive technical competency. Our commitment to managing product risks and enhancing performance is integral to our continued success.

#### Guided by international principles, frameworks and standards

- United Nation's Globally Harmonised System of Classification and Labelling of Chemicals.
- Organisation for Economic Co-operation and Development (OECD) Guideline for the Testing of Chemicals.
- ISO 14040/44 Environmental Management – Life Cycle Assessment.



## Positive Social Impact

### Key Highlights of 2022

#### Product Stewardship and Toxicology

##### 1 Operation Clean Sweep

Working closely with the Malaysian Plastics Manufacturers Association (MPMA), PETRONAS Chemical Polyethylene Sdn Bhd and PETRONAS Chemical LDPE Sdn Bhd officially registered our pledge under Operation Clean Sweep® (OCS) which is the global plastics industry initiative that aims to reduce polymer pellets, flake and powder loss to the environment. PETRONAS Chemicals Group Berhad (PCG) became the first OCS signatory in Malaysia, demonstrating our commitment to safeguard the environment in this important area by performing detailed onsite assessments and implementing solutions to prevent polymer loss to the environment. Recognising the importance of industry-wide participation, moving forward we endeavour to drive this important agenda by encouraging wider adoption of OCS within our polymer supply chain.



##### 2 Establishing PETRONAS' Maiden Toxicology Laboratory

We are establishing PETRONAS' first toxicology laboratory to support R&D of safer and sustainable chemicals. The laboratory will enable early screening of key health and environmental hazards of candidate chemicals at pre-prototype stage. This will provide a feedback loop for product design improvement to create less hazardous products and minimise impact on the environment and human health. The laboratory emphasises non-animal test methods to ensure wider regulatory compliance as well as future regulatory preparedness.

##### 3 Ecotoxicology Assessments

We continuously assess the environmental performance of our products to promote the use of safer and sustainable chemicals. Data from internationally accepted and reliable ecological tests based on the Organisation for Economic Co-operation and Development (OECD) test guidelines were utilised to improve relevant product hazard profiles.

Produced water risk-based assessments continued to be conducted at our selected onshore terminals in order to address the ecological risk of discharged produced water on sensitive receptors in coastal and marine ecosystems.

##### 4 Strengthening Product Safety and Regulatory Compliance Governance

Operating internationally through integrated supply chains with a broad spectrum of products poses its own unique challenges. We place importance on product safety and regulatory compliance governance to ensure alignment with PETRONAS' overall objectives and aspirations. We have leveraged PETRONAS Group product stewardship situational assessments in order to:

- Identify areas of risk and enhance internal product stewardship standards with leading practices to ensure our products continue to be safe for intended use through evidence-based approaches.
- Identify areas for simplification and/or optimisation in managing our product regulatory compliance processes, as evident in the roll-out of a dedicated emergency response number to ensure any product-related emergency calls are professionally managed, with adequate coverage internationally.

##### 5 Raw Material Compliance

As part of our efforts to drive product safety and sustainability, product raw material assessments have been identified as a key lever. With the introduction of our Raw Material Information Request (RAWMIR) process, key product stewardship information regarding presence of Substance of Very High Concern (SVHC) and conflict minerals<sup>1</sup> have been curated for the majority of our products and specific cases for phase out or substitution have been initiated.

Due diligence on 250 raw materials used in PCG's products revealed that no conflict minerals were supplied to PETRONAS. Efforts are ongoing to complete conflict minerals due diligence across the wider Downstream and Upstream businesses.

The RAWMIR process was also extended to Oil Field Chemicals (OFCs) in order to obtain key environmental performance related to the Offshore Chemical Notification Scheme (OCNS). Data pertaining to aquatic toxicity of OFCs was obtained to enhance our efforts to reduce risk from produced water discharges.

##### 6 Life Cycle Assessment (LCA)

We continued to drive and embed Life Cycle Thinking across our businesses and operations, as well as for new projects and product development. The LCA approach was also used to quantify and prioritise the usage of low environmental impact raw material formulations, including formulating products with lower carbon footprint. This allowed us to capitalise on new business opportunities and generate income for PETRONAS.



**36 LCA studies completed for products across Downstream and Gas businesses.**

We conducted a cradle-to-gate assessment, beginning from resource extraction (cradle) to the factory gate (before it is transported to the consumer). This approach is aligned with our integrated value chain, ranging from extraction to downstream product completion.

Engagements with relevant stakeholders were conducted to encourage knowledge sharing on the concept of LCA and gain the necessary information to develop life cycle inventory data. In the absence of suppliers' information, we leverage our experience in developing the PETRONAS LCA database.

<sup>1</sup> In politically unstable areas, conflict mineral trade can be used to finance armed groups, fuel forced labour and other human rights abuses, and support corruption and money laundering. Conflict minerals are tin, tungsten, tantalum and gold (refer to EU Regulation 2017/821).

## Positive Social Impact

### Employee Well-being

#### Why Is It Important?

Our people are our most valuable asset and their well-being is our priority. As we recognise that a healthy work-life balance is essential for our employees' productivity and job satisfaction, we encourage flexible work arrangements, provide access to wellness programmes and offer a range of other initiatives to promote employee well-being. By investing in our employees, we promote a more motivated and engaged workforce that is better equipped to contribute to our business success.

In addition to promoting employee well-being, we are also committed to promoting diversity and inclusion in our workplace. We believe that embracing diversity brings new perspectives, fresh ideas and a wealth of talent to our organisation. This allows us to tap into a wider pool of talent, foster innovation and improve decision-making. Our commitment to create an inclusive work environment where everyone feels valued, respected and supported will contribute to wider positive societal impact, and is also a key driver to our progress. A diverse and inclusive workplace is essential for creating value and driving sustainable growth.

#### What Is Our Approach?

We take the time to understand the unique needs of our employees and introduce relevant programmes anchored on PETRONAS Cultural Beliefs and Shared Values to create an environment where they can thrive and help us achieve our strategic priorities.

We believe that connecting with peers both within and outside their scope of work allows employees to nurture their professional and personal interests. We encourage participation in various clubs, company-wide initiatives and volunteering activities that contribute to a positive workplace culture — instilling a sense of belonging, safety, passion and purpose over the long term.

Our commitment to diversity and inclusion is guided by the PETRONAS Diversity and Inclusion (D&I) programmes, focusing on four key areas: gender, multinational, age and culture. Meanwhile, our Wellness Steering Committee oversees employee health and well-being, including mental health.

PETRONAS also has processes and controls in place to ensure we comply with applicable wage laws. We conducted market analysis to ensure competitive compensation. In Malaysia, compensation is on average, 20 per cent above minimum wage thresholds.

#### Value Creation in 2022

#### Empowering People through Flexibility

##### Flexible Working Arrangement (FlexiWork)

We introduced FlexiWork to allow our people to balance between their professional and personal commitments, ultimately being their best selves while delivering for the organisation. We put in place safety measures to ensure a smooth back-to-office transition for our employees post COVID-19 pandemic. We reinforced awareness on the existing FlexiHours and FlexiWear that complement the current FlexiWork Arrangement.

We also established the PETRONAS Work Hub to enable employees who work either from home or the office to access information on best practices, digital tools and available support to help them sustain and where necessary improve their productivity levels. Consistent communication was also carried out on COVID-19 Standard Operating Procedures (SOPs) to ensure the safety of our employees and those that they encountered, at work and at home.

#### Caring for Our People's Support System

##### Employee Assistance Programme (EAP)

The EAP named myFriends was launched together with our MESTIFit4Health wellness programme in 2017 as part of PETRONAS' effort to care for the welfare of our people by providing psychological interventions to build personal resilience, reduce emotional distress and destigmatise mental health issues. In 2021, Enhanced EAP or EAP 2.0 was introduced, integrating our EAP with advances in psychology and coaching programmes via a digital platform accessible all day with comprehensive multidisciplinary support by digital physical and mental health care provider, Naluri Hidup Sdn Bhd to employees and sponsored students globally.

We extended the EAP 2.0 in 2022 to family members to help them cope with their mental well-being as an important measure to support our employees' overall health and performance.

- 🔸 **282** employees received counselling with a total of 954 hours, a **15** per cent increase from 2021.
- 🔸 **70** per cent of employees who received counselling reported the therapy to have been effective.
- 🔸 Digital coaching increased by **119** per cent from **533** individual sessions in 2021 to **1,166** individual sessions in 2022.
- 🔸 Number of callers to the EAP Careline dropped **14** per cent to **700** from the previous year's **811**.

#### Creating an Inclusive Culture

We remain focused on creating an intentionally inclusive culture. We do this by reinforcing the right behaviours and mindset to sustain an environment that will help us progress and accelerate our ability to deliver on our commitments. Our talent composition in 2022 comprised of 29 per cent women, which was an improvement from 28 per cent in 2021. We employ over 100 nationalities and 40 per cent of our total population is aged 35 years and below.

#### Driving Diversity and Inclusion (D&I)

Diverse ideas, views and backgrounds create a more progressive work environment which in turn delivers better outcomes. In creating an intentionally inclusive culture, we drive change through leadership and governance, communication, education and culture.

#### 1 Leadership and Governance

The Board of Directors approved our baseline and targets as we work towards more focused efforts on D&I. We are governed by requirements in areas where we operate and aim to seek and nurture local talents for senior management roles across the Group.

We collaborate through reputable associations and organisations, such as the International Association of Oil & Gas Producers (IOGP), World Business Council for Sustainable Development (WBCSD) and the World Economic Forum (WEF) to network and benchmark global practices of Diversity, Equity and Inclusion (DEI). In 2022, our Senior Vice President of Group Human Resource Management was assigned the role of Commissioner in the Business Commission to Tackle Inequality (BCTI) by WBCSD.

In ensuring diversity of thought at all levels, myTalentX was introduced in 2022 as a digital platform to identify potential leaders through a process of transparent and effective succession planning.

#### 2 Communication

Strategic conversations with the Board were held on the topic of 'Equity'. The conversations covered the foundation and fundamentals of Diversity, Equity and Inclusion (DEI), leading best practices, priorities and commitment going forward on the matter. The Board were also updated on PETRONAS' progress and efforts towards D&I.

#### 3 Education

The Conscious Inclusion Programme was rolled out to raise awareness on the importance of D&I to PETRONAS. We conducted engagement sessions with the Board and upskilled and trained more than 250 PETRONAS leaders groupwide.

We launched e-Learning modules on Inclusive Mindset for middle managers and executives which were attended by 278 participants.



#### 4 Culture

In strengthening a culture of D&I, we rolled out the D&I module via the PETRONAS e-Survey to encourage employees to speak up on the topic. We conducted a forum on building an inclusive workforce featuring internal and external speakers. It was attended by 1,600 employees virtually and in-person.

We introduced myCareerX, an integrated HR platform that enables employees to take charge of their own career journey. The platform promotes transparency within the organisation and gives employees equal opportunities to explore other roles available across PETRONAS. This allows for a more diverse and inclusive talent pool as we work towards developing the workforce of the future.



## Positive Social Impact

Great progress was made in 2022 through our various efforts to drive D&I awareness. We achieved several important performance milestones and exceeded some 2024 targets based on the four D&I focus areas, as follows:

Activity	2022 Results	2024 Targets
Women in Senior Leadership	29%	28%
Young employees (35 years and below) involved in project leadership roles	34%	25%
Multinationals in Senior Leadership	10%	11%
Different perspectives respected and valued*	3 <sup>rd</sup> quartile	3 <sup>rd</sup> quartile

\* Measured using employee survey, POCS 2022

The PETRONAS Leading Women Network (PLWN) continued to bridge the gender gap across our business and operations. We collaborated with industry players by leveraging the Malaysian Women in Energy (MyWiE) network to host a sponsorship programme with university students. Through this programme, three PETRONAS leaders participated in the Speed Mentoring and panellist session at the Offshore Technology Conference (OTC) Asia 2022, and five representatives joined the Women in Energy Reception hosted by the United States (US) Embassy.



We initiated conversations on careers in the energy industry by taking part in the Women's Global Leadership Conference on Energy (WGLC).

We also believe in the value that neurodivergent individuals can bring to the organisation, hence we intend to create a robust ecosystem to engage and retain neurodiverse talent and tap into their full potential for PETRONAS' growth.

We foster a sense of belonging among our employees through the establishment of various clubs and associations within the organisation. Through clubs such as the PETRONAS Sports and Recreation Club (KSRP), Association for Wives and Women Staff of PETRONAS (PETRONITA) and the Young Professionals Club (YPC), activities catering to diverse interests are organised and carried out.

### Cultivating the Right Behaviour and Mindset

We recognise that resilience is a key factor that will help us overcome our future challenges. Therefore, it is important to reinvigorate and improve the way we do things, bravely expanding beyond our traditional business areas, guided by our Statement of Purpose, Shared Values and PETRONAS Cultural Beliefs.

#### 1 PETRONAS Organisational Culture Survey (POCS)

We actively listen to the voices of our employees through POCS, where employees were given the opportunity to provide feedback about the organisation. It also helps to identify challenges that hinder high performance. The response rate for POCS 2022 was 90 per cent.

#### 2 Top Leaders Dialogue (TLD)

Recognising that the right behaviour and mindset start at the top, the Top Leaders Dialogue (TLD) sessions were conducted to facilitate continuous engagement, alignment and collaboration on business direction. We collaborated with the PETRONAS Leadership Centre (PLC) to conduct several sharing sessions with well known industry thought leaders to enhance the enterprise perspective of 180 of our top leaders comprising senior general managers and above.



#### 3 Continuous Improvement (CI) Mindset

The Continuous Improvement (CI) mindset is an essential component in sustaining our presence as a Fortune Global 500® company, and needs to be embedded in our people's mindset and behaviours as we progress. We focused on streamlining our business processes through simplification to drive performance.

- Making Impossible Possible Awards and Convention (MIPAC)

This operational excellence platform was designed to drive improvement, innovation and value-focused mindset among employees, encouraging them to push boundaries and deliver operational excellence. The two-day in person event hosted 1,500 attendees and the virtual event spanning one month engaged around 4,500 participants.

- PETRONAS Lean Six Sigma (PLSS)

PLSS is an internal programme to drive Continuous Improvement in PETRONAS, tailored to our energy industry environment. It was established in 2016 and has since received international accreditation from the Council for Six Sigma Certification (CSSC) and International Association for Six Sigma Certification (IASSC).

- Business Process Management (BPM)

BPM focuses on the development of PETRONAS Business Architecture and actively documents processes in a digital repository towards a fully integrated process in PETRONAS. As at 31 December 2022, the journey has seen an accumulation of over 31,000 digitised processes, which will further drive effective process integration and targeted improvement.

- Community of Practitioners on Process Excellence and Recognition (COPPER) 2022

The annual COPPER 2022 event brought together over 900 attendees to exchange knowledge as well as celebrate and showcase achievements in process improvement initiatives that drove organisational productivity.

### Trade Unions

We maintain a harmonious relationship with our trade unions to co-create solutions in supporting business strategies and driving growth.

We formed a strategic partnership with the Unions to conduct a series of leadership talks and engagements on organisational productivity and sustainability.



### Nurturing Employees' Interests

We encourage and support employees to connect and engage on matters beyond work commitments via our three clubs, namely KSRP, PETRONITA and YPC.

#### PETRONAS Sports and Recreation Club (KSRP)

KSRP fosters camaraderie among employees through sports and recreational activities that promote a healthy lifestyle and well-being, catering to employees' interests, while harnessing their passion and skills. The club as at 2022 has 18,169 members.

##### 1 KSRP Sports and Wellness Day 2022

Open to all employees, the event aims to strengthen the bonds between club members and their respective family members.

More than **1,000** club members and their families participated in the event.

**82** teachers and students, from a charitable centre joined the fun activities.

##### 2 Sukan KSRP Wilayah (SKW)

This signature event was organised for all regions in Malaysia and included more than 10 types of indoor and outdoor activities, such as volleyball, badminton, netball, tennis, futsal, snooker, darts, table tennis, bowling and chess.





## Positive Social Impact

### 3 Introduction of New Clubs

Through the KSRP myHobby initiative, new clubs such as Hikers, Zumba, Move2Fit, PetTari and Bookcycle were established to accommodate members' diverse interests.



A total of **400** members joined the new clubs with **33** activities carried out in 2022.

### 4 KSRP Kids Camp 2022: A Day @ Petrosains

Recognising the importance of family relationships, we encouraged employees to participate in this event to foster stronger family bonds as part of our efforts to care for the well-being of our employees and their support systems.

**100** employees and their families participated in the event at our science discovery centre, Petrosains.

### Association for Wives and Women Staff of PETRONAS (PETRONITA)

PETRONITA was established to foster unity and closer relationships among employees' spouses and women employees through recreational, charitable and experience-sharing activities.

#### 1 Distribution of Eid festive Cookies to Auxiliary Police (AP) and Drivers for Top Management

PETRONITA distributed *Hari Raya* cookies to our AP Groupwide and the drivers for top management. Currently in its seventh year, this project is an important cultural gesture among Muslim staff in Malaysia and aims to instil a sense of belonging among employees at all levels.



**1,896** Auxiliary Police and **29** drivers for Top Management received Eid cookies.

### 2 Orchid Run and Ride

The Orchid Run & Ride 2021 Virtual Edition was conducted from December 2021 until January 2022, garnering a total of 3,060 participants.

The Orchid Run & Ride 2021 Medical Research Grant was officially awarded by PETRONITA in 2022 to Universiti Teknologi PETRONAS (UTP) and Universiti Kebangsaan Malaysia (UKM) to sponsor their research on Developing ASD Biomarker: Utilising Deep Learning Analysis on Electroencephalogram (EEG) Signals as a Biomarker for Autism Spectrum Disorder (ASD) Diagnosis and Severity.

The **RM217,000** sponsorship was evenly distributed between UTP and UKM.

### 3 Project Payung 2.0

PETRONITA collaborated with KSRP, *Badan Kebajikan Islam* PETRONAS (BAKIP), Young Professionals Club (YPC), SEEd.Lab and the Malaysian Red Crescent Society (MRCS) to assist employees and communities affected by the floods that occurred in Kuala Lumpur and Selangor in January 2022. We donated cash which was channelled through the MRCS to procure essential items for the affected flood victims.

Disbursed **RM409,509** to assist **448** affected employees and members of the communities.



### Young Professionals Club (YPC)

The YPC acts as a progressive community partner for our young talents. It is a platform to unite and empower them towards excellence. Key initiatives in 2022:

#### 1 Collaboration with PETRONAS' Dana As-Syakirin and BAKIP

Through this collaboration, we contributed to underprivileged communities, namely aiding schoolchildren from low-income families in rural areas.

**74** children benefitted from donations amounting to RM9,698, which included Eid cash packets and cash assistance.

Provided **534** primary school students with back-to-school preparation, totalling RM113,800 through the Early School Aid Programme.

#### 2 Strengthened Relationships with Stakeholders

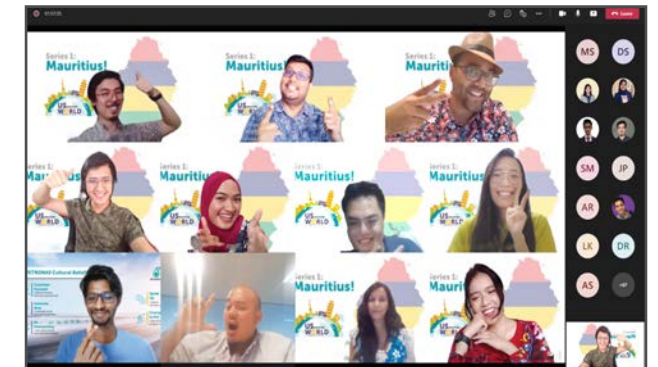
YPC collaborated with KSRP, Twin Towers Fitness Centre (TTFC), KLCC Urusharta Sdn Bhd (KLCCUH) and the Malaysian Red Crescent Society (MRCS) to conduct COVID-19 vaccination drives for employees and their family members in September, October and November.



**2,522** employees, contractors and their family members benefitted from this vaccination initiative.

### 3 Us Around The World (UATW) Programme Series

YPC collaborated with Engen Mauritius, Engen South Africa and MISC Brazil to celebrate D&I and encourage cross-cultural exchange among young professionals (YPs) located in different regions around the world where we operate.

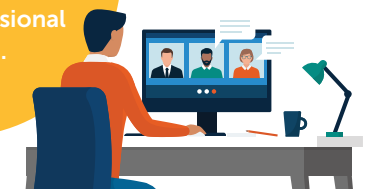


Approximately **400** YPC members Groupwide attended this event virtually.

### 4 Science, Technology, Engineering and Mathematics (STEM) Mentorship Programme

YPC conducted a mentoring programme with Young Inspiring Mentees in Science, Technology, Engineering and Mathematics (STEM) or YAMS to drive the development and adoption of STEM among the upper secondary school students in Sabah, as part of our goal to drive long-term holistic development of the future Sabahan workforce. Coaching and empowering sessions were held to help them achieve their potential in pursuing careers in STEM.

**40** upper secondary students were coached by 20 young professional mentors.





## Positive Social Impact

### Talent and Future Pipeline

#### Why Is It Important?

We are currently in the midst of an era of energy transition, which is predominantly driven by the need to transform the global energy system for a low carbon future. To capitalise on opportunities that the transition brings, our most valuable asset – our diverse group of talented employees – must be equipped with skills, capabilities and experience that are relevant for the future.

As competition for talent increases, we are focused on transforming our workforce to be ready to achieve our strategic priorities, including delivery of our Net Zero Carbon Emissions by 2050 (NZCE 2050) Pathway. By empowering and nurturing existing and potential talents, we can create a more equitable and sustainable future and contribute to economic growth, while positioning ourselves as a preferred employer in the industry.

#### What Is Our Approach?

We believe in upholding a high-performance culture, where we attract and retain talents with critical skills and offer opportunities for upskilling and reskilling. We recognise that our employees are crucial for business sustainability and we want to ensure that they are equipped with the right skills, mindset and behaviour; hence, we invested RM264 million in employee training and development in 2022.

Our five key Capability Development Priorities for developing our people to meet evolving needs are:

<b>Sustainability</b>	<ul style="list-style-type: none"> <li>Elevate sustainability practices by expanding awareness programmes.</li> <li>Equip or acquire talents with technical expertise to embed sustainability into decision-making and daily operations.</li> </ul>
<b>Continuous Improvement (CI), Agile and Innovation</b>	<ul style="list-style-type: none"> <li>Agile and Innovation skills to ideate, incubate and scale new ideas. Continuous Improvement (CI) play a big role in delivering business results to maximise cash flow and improve efficiency.</li> </ul>
<b>Digital</b>	<ul style="list-style-type: none"> <li>Accelerate digital solutions through digital literacy programmes.</li> <li>Equip or acquire talents with technical expertise in automation and advanced analytics to improve productivity, enable better decision-making and utilise data for competitive advantage.</li> </ul>
<b>Technical and Functional</b>	<ul style="list-style-type: none"> <li>Technical and functional capabilities needed to grow our businesses.</li> <li>Equip or acquire talents with expanded technical and functional expertise.</li> </ul>
<b>Leadership</b>	<ul style="list-style-type: none"> <li>Nurture leadership at all levels to ensure talents deliver desired results expected from their roles, establishing a robust and sustainable succession plan for driving Core and Growth business respectively.</li> </ul>

Our aim is to redefine the talent experience by focusing on people, processes and platforms. We want to create an empowered, agile and enabled workforce that can make meaningful progress and have a sustainable impact. To achieve this, we focus on developing future skills in areas such as analytics, sustainability and digitalisation. We also encourage our employees to take charge of their career progression by enhancing relevant talent management principles and processes.

In developing future talents, we provide education sponsorships to students as well as industrial and technical training opportunities for new graduates. We offer talented young people learning opportunities at our industry-recognised learning institutions such as Universiti Teknologi PETRONAS (UTP), Institut Teknologi Petroleum PETRONAS (INSTEP) and Akademi Laut Malaysia (ALAM) that provide energy industry-related curriculum and training programmes.

#### Value Creation in 2022

##### Existing Talent

For our existing talents in the company, we focused on the five key Capability Development Priorities, supported by our in-house learning institutions and platforms, enhanced talent ecosystem and a sustainable pool of leaders.

##### Sustainability

We scaled up efforts in building our people's knowledge and capabilities in the area of sustainability to accelerate our ability to deliver our NZCE 2050 Pathway and fortify trust among stakeholders.

##### Sustainability Capability Development Framework

The Sustainability Capability Development Framework was developed as part of our efforts to equip employees with sustainability-related knowledge, practices and processes. We also identified learning pathways and priorities for leaders and top talents, functional sustainability practitioners and the broader employee population.

##### Advancing Sustainability Conversations

###### Engagement with Leaders

We engaged leaders through conversations to raise awareness on the need for change and to improve understanding of how the organisation's performance can be enhanced.

We engaged with members of the PETRONAS Board and the Board of Directors of our public-listed companies to help oversee sustainability-driven strategies and guide stakeholder-oriented long-term goals. Executive leaders received guidance in developing a strategic direction that is aligned to organisational purpose, strategy and business models that contribute towards society and the environment.

One of the Top Leaders Dialogue sessions in 2022 featured the launch of our NZCE 2050 Pathway and provided our leaders with greater clarity on sustainability challenges and targets. As a result of this dialogue, leaders felt more engaged, aligned, inspired and united in purpose.

On a global level, we also took part in sustainability conversations and leadership programmes provided through our membership in the World Business Council for Sustainable Development (WBCSD), a network of around 200 leading companies committed to advancing sustainable business practices.

##### Improving Sustainability Knowledge and Skillsets

Colleagues from across the Group benefitted from a range of learning opportunities made available to enhance relevant knowledge and functional skills to drive and shape future sustainability practices.

- 101 employees completed training programmes on sustainability delivered by the Cambridge Institute of Sustainability Leadership, Yale School of Management, Harvard Kennedy School, Institute of Management Development and Centre for Sustainability and Excellence.
- 132 sustainability change agents were appointed.
- 84 employees were upskilled with Level 1 Methane Emissions knowledge.
- 289 employees including top leaders, have attended sustainability masterclasses.

We also carried out awareness-building initiatives for all employees to ensure they were able to apply the knowledge obtained on sustainability, its drivers, tools and approaches in their daily actions. Towards this end, a sustainability e-learning module was also made compulsory for all new hires.

## Positive Social Impact

- **30,000** employees completed the Sustainability e-Learning module.
- All Trade Unions Executive Committee members from *Kesatuan Kakitangan PETRONAS (KAPENAS)* Peninsular Malaysia, Sarawak, Sabah, Labuan including *Kesatuan Pekerja-pekerja Optimal Chemicals Malaysia Sdn Bhd (KEPKO)*, attended our sustainability-themed engagements and information sessions.

### Continuous Improvement (CI), Agile and Innovation

We believe that being agile and innovative are critical factors in realising our transition towards a low carbon future. At the same time, we also need to effectively drive business performance and maximise cash flows.

#### Continuous Improvement (CI)

As a business entity, we continue to equip our people with the right knowledge, methodologies, skills and mindset to understand and improve our current business processes. This will ensure sustainable operations and cost efficiency in meeting customer needs and business objectives.

Since PETRONAS Lean Six Sigma (PLSS) was introduced in 2016, production performance has become more sustainable, with reduced cost, increased productivity and enhanced customer satisfaction. We have upskilled more than 11,000 employees on CI Awareness and developed almost 2,000 PLSS practitioners.

The PLSS process is subject to an annual Maturity Assessment to sustain the deployment of LSS across the organisation. In 2022, six operating units reached the status of PLSS Matured Organisation, namely Project Delivery and Technology (PD&T), Malaysian Refining Company Sdn Bhd (MRC SB), Global HR Services (GHRS), Engen Limited, Malaysia LNG Sdn Bhd (MLNG) and PETRONAS Chemicals Methanol (PC Methanol).

- **143** PLSS improvement projects were executed.
- Saved **216,821** manhours.
- Over **4,000** employees upskilled in CI Awareness.
- **299** practitioners were certified in PLSS: 228 Yellow Belts, 66 Green Belts, five Black Belts.
- **185** practitioners were trained in PLSS: 148 Green Belts, 31 Black Belts and six Master Black Belts.
- Achieved **57.77 per cent** Process Cycle Efficiency (PCE).

### Agile

In response to the dynamic pace of change experienced across the energy industry, we intensified efforts to develop more agile capabilities through our Agile Leadership and Capability Programmes. This will enable our people to ideate, incubate and scale new ideas and deliver customer solutions at pace.

As part of our goal to strengthen talent capabilities, we continued to enhance the Agile Coaching Enablement (ACE) programme by integrating it into the PETRONAS Leadership Centre to improve agile-based knowledge and application. We also strengthened the agile leadership platform by improving exposure to outside-in good practices on business agility through key engagements and learning programmes. In addition, we infused agile leadership topics into key leadership programmes and engagements such as the Top Leaders Dialogue sessions.

- **32** employees appointed as Agile coaches to support agile teams and pods across the business.
- **16** employees received Agile Coach (ICP-ACC) certification.
- **31** employees received Agile Leadership Certification.
- Launched the first e-learning module on Agile via myLearningX with participation from more than **800** employees.
- **6,690** employees upskilled with Agile capabilities programmes since its launch in 2018.

### Nurturing Innovative Capabilities

We continued to strengthen our employees' capabilities in order to build an innovation ecosystem across the Group. Taking advantage of the rapid progress made in building the foundation for innovation in 2021, the PETRONAS Working Backwards (PWB) Methodology and innovation framework was expanded to business divisions in PETRONAS and the Innovation Masterclass was established as a permanent offering at the PETRONAS Leadership Centre (PLC).

As a result, innovation practitioners are actively ideating and incubating high potential projects, contributing to the innovation opportunity funnel and boosting new business possibilities for growth in Core and New Business areas.

To inculcate a comprehensive innovative mindset and culture, learning modules and engagements are seeded into key activities, events and digital platforms such as the Knowledge Series, information sessions, Venture Build Fireside chats, and exhibitions throughout the year.

Key highlights in building innovation capability in PETRONAS through PWB:

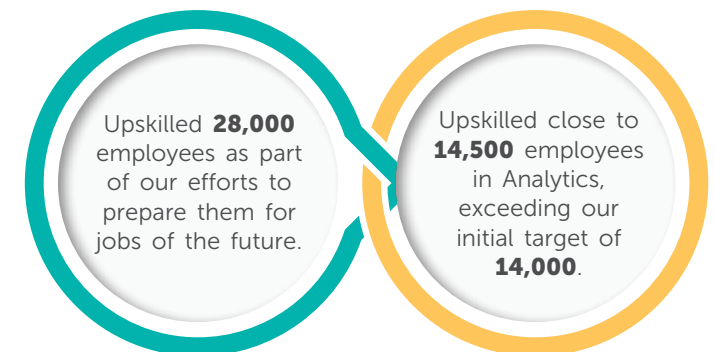


### Digital

Digitalisation and technology play a heavy role in our transition towards net zero carbon emissions. We recognise that the future of work will involve increased cross-functional collaborations and automation to improve productivity and decision-making, supported by data to drive competitive advantage. Therefore, we need to equip our employees and acquire new talents with the right technical depth, tools and methodologies in automation and advanced analytics to harness value from digital solutions.

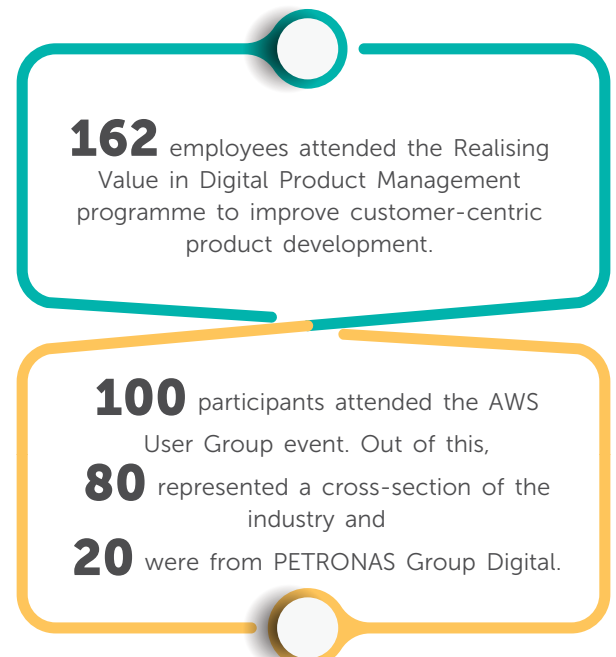
### Shaping a Digitally-Competent Workforce

In our efforts to shape a digitally-competent workforce, we conducted upskilling sessions and introduced tools, techniques and methodologies on analytics that can be applied to better solve business pain points and improve day-to-day operations.



### Collaboration with Industry Players

We collaborated with Microsoft and Tata Consultancy Services to share new perspectives in our Knowledge Series webinars. We strengthened our position in the digital segment over the long term, partnering with Accenture to develop a customer-centric approach to building digital products. We also co-hosted the Amazon Web Services (AWS) User Group Meet-Up, where we extended our PETRONAS Cloud Community of Practice (CoP) to external cloud enthusiasts.





## Positive Social Impact

### Technical and Functional

We focused on strengthening the foundational capabilities of our people in our efforts to further grow our traditional portfolio of oil and gas, as well as prepare them in our pursuit of non-traditional growth to ensure PETRONAS' long-term survivability. To achieve this, we aim to increase our capability strength to 75 per cent by 2025.

- Recorded a **62.5 per cent** capability bench strength for Technical Skill Group (SKG) and 40.4 per cent for Business SKG.

We recognise that capability building is especially important for our new businesses such as Renewable Energy; carbon capture and storage (CCS); and Remote Autonomous Operations (RAO). As such, we continued to upskill our people via formal learning and On-the-Job learning (OJL).

Various upskilling programmes were also conducted and tailored to the needs of the respective businesses as we continued to develop our people in strengthening our core business. Programmes included Multi-Skill Acceleration Programmes for technical non-executives from the Upstream business and digital marketing for the marketing and trading teams from the Downstream and Gas businesses, while Project Delivery and Technology (PD&T) employees were provided training based on our new focus areas. A Capability Development Framework review was conducted for Risk Management fraternity while Finance saw the establishment of the Finance Academy, a structured learning platform to strengthen core or niche skills in support of new business areas.

### Leadership Development

Continuous development of leaders at all levels is essential in creating a robust talent pipeline and sustainable bench strength for effective succession. Working with reputable partners, we focused on three key areas to develop leadership skills, equipping senior leaders to lead and steer the workforce towards achieving organisational goals, continuously building a pipeline of leaders and supporting competency upskilling or reskilling programmes and new ways of working for talents.

**84** Senior Managers graduated from the Tactical Excellence programme.

**38** General Managers attended the Strategic Excellence programme in 2022 and are expected to graduate in 2023.

**109** Managers graduated from the Managerial Excellence programme.

**91** Executives completed the Professional Excellence programme.

**90** Executives completed the Building Leaders programme.

### In-house Learning Institutions and Platform

We continued to accelerate capability development by leveraging our specialised learning institutions namely the PETRONAS Leadership Centre (PLC), Institut Teknologi Petroleum PETRONAS (INSTEP), the Centre for Advanced and Professional Education at Universiti Teknologi PETRONAS (CAPE UTP), Akademi Laut Malaysia (ALAM), as well as the myLearningX virtual learning platform. In creating a future-relevant workforce, these learning institutions and platforms provide opportunities for our talents to be upskilled on leadership and the energy industry as a whole.

### PETRONAS Leadership Centre (PLC)

The PETRONAS Leadership Centre (PLC), previously known as PERMATA when it was established in 1989, was created to develop progressive leaders that would not only make an impact on our organisation, but also the global energy industry. The new PLC campus was completed in 2022.

### Developing and Nurturing Leaders

The programmes at PLC are designed to equip leaders with the skills and knowledge required to tackle the most pressing challenges faced across their diverse functions and industries. Towards this end, we ensure that our content is consistently relevant and delivered via the latest learning and development practices.

### Powering Innovation

We recognise the need to change the way we think and work as an organisation as we navigate towards a just transition. Towards this end, we have created an ecosystem where ideas are incubated, tested and scaled to market by supporting key PETRONAS innovation initiatives, namely PETRONAS Innovation Garage (PING), SEEd.Lab and FutureTech Accelerator.

### Driving Sustainability

In line with our net zero carbon emissions 2050 pathway commitments, PLC serves as a platform to upskill leaders in sustainability and at the same time build sustainability advocacy across the organisation, from the environmental and human capital perspectives. We have also designed and built a new campus to drive our sustainability efforts.



PLC also hosted several key events, namely the PETRONAS Race2Decarbonise Hackathon and a roundtable forum on Road to COP27: Alignment on Energy Sector Decarbonisation to support National Narratives on Net Zero GHG Aspirations, with the Malaysian Government's Economic Planning Unit (EPU) to demonstrate our strong commitment in lowering our carbon footprint in support of Malaysia's environmental agenda.

### Sustainability Efforts at PLC

Aligned with PETRONAS' approach to sustainability, PLC's campus is built with a green vision. It is environmentally responsive with energy-saving architecture as well as green and digital technologies in place. Our campus has achieved the Platinum status of the Green Building Index Malaysia Certification and Leadership in Energy and Environmental Design (LEED) Platinum status of the US Green Building Council.

- Biodiversity**
  - Total area of 35 acres (including lakes, streams and landscapes) to provide habitats for flora and fauna such as indigenous plants, butterflies and dragonflies.
  - 2,160 trees planted, which can potentially absorb 64.8 tCO<sub>2</sub>e equivalent to the amount of carbon dioxide produced by 127 air conditioners running for a year.
- Wastewater Management**
  - Greywater**
    - Wastewater generated from hand-washing basins is collected, filtered and used for toilet flushing, which reduces water demand and costs.
  - Rainwater Harvesting Tank**
    - Rainwater is stored in four storage tanks with a maximum storage capacity of 1,368 m<sup>3</sup> and is used for landscape irrigation. This capacity can wash up to 228,000 linen bedsheets.
- Waste Management**
  - A maximum of 150,124 kg of food waste per year can be fed into a vessel composting system. This generates an estimated 10,509 kg of compost per year that may be used as fertiliser for PLC's landscape.
- Reduction of Heat Island Effect**
  - Man-made lake with water volume of 14,203 m<sup>3</sup> (equivalent to approximately 5.7 Olympic-sized swimming pools), reduces the air temperature surrounding the building.
  - Main building facade is orientated north-south to minimise solar heat gain.
- Energy Generation**
  - 4,066 photovoltaic (PV) panels installed to generate an estimated 2.3 million kWh/year, equivalent to the ability to power up 327 double-storey houses per year.
- Daylight Harvesting and Glare Control**
  - Reduce reliance on artificial lighting through specially designed glass panels which are strategically placed for optimum natural light.
  - High performance glazing to reduce energy consumption through the building envelope.
- Electric Vehicle (EV) Chargers**
  - 17 Gentari EV charging points are available at PLC.
- Health and Well-being**
  - Open spine area allows for well-ventilated social spaces.
  - Use of MERV 13 rated air filters for better indoor air quality.
  - Selection of Low Volatile Organic Compounds (VOCs) paints and adhesives.
  - CO<sub>2</sub> sensors to maintain the quality of fresh air within air-conditioned building environment.
- Efficient Systems**
  - Air Conditioning and Mechanical Ventilation (ACMV) system with high system co-efficient performance.
  - Lighting system with automated light (lux) sensors and motion sensors.

## Positive Social Impact

### Institut Teknologi Petroleum PETRONAS (INSTEP)

Institut Teknologi Petroleum PETRONAS (INSTEP) was established in 1981 to accelerate human capital development for the oil and gas industry through experiential learning and customised programmes. We leverage INSTEP to upskill our people to support the growth of the energy industry, anchored on its world-class facilities and industry-experienced instructors.

- More than **13,000** employees were upskilled via the following programmes:
  - Professional Development Programmes (PDP) for engineers and technicians.
  - Assessment and Certification (A&C) Programmes in meeting statutory requirements.
  - HSSE Generative Culture programmes.
  - Customised modules that fit specific business requirements.

### Centre for Advanced and Professional Education, Universiti Teknologi PETRONAS (CAPE UTP)

We established the CAPE UTP at Universiti Teknologi PETRONAS (UTP) in 2016 to enhance individual and team capabilities through a unique blend of post-bachelor degree programmes and professional short courses. At CAPE UTP, we prioritise human-centred learning solutions that combine academic knowledge with industry insights that maximise the value of technology and accelerate the adoption of technical capabilities.

In 2022, more than 1,000 PETRONAS employees were upskilled at CAPE UTP through open and customised courses related to the energy industry.

### Akademi Laut Malaysia (ALAM)

The Akademi Laut Malaysia (ALAM) is the leading maritime training academy in Malaysia. Through ALAM, we have been shaping maritime leaders and professionals at our fully-equipped 67-acre campus in Melaka.

Since its inception in 1977, 751 cadets have been awarded with sponsorships, with a total investment of RM24.2 million.

- ALAM won the Malaysian Society for Occupational Safety and Health (MSOSH) Gold Merit Award under the category of Educational Sectors, Petroleum, Gas, Petrochemical and Allied Sectors, affirming its move towards a generative HSSE culture.
- Successfully obtained ISO 9001:2015 for Quality Management Systems, reaffirming the commitment of ALAM to continuously improve its systems to enhance customer/student satisfaction.
- Introduced **18** new programmes to cover other segments of the maritime industry; four Ministry of Higher Education (MoHE) approved diploma programmes, four Marine Department (MARDEP) approved programmes and **10** market-ready customised programmes based on industry demands.
- Collaborated with five universities and seven industry partners to enhance education outcomes.

### myLearningX

We established myLearningX in 2021, our digital learning platform that offers personalised and flexible learning options to nurture a self-learning culture across the organisation and encourage inclusive growth. We enriched the learning content through partnerships with reputable learning providers.

We understand that people who share the same interests could improve their professional and personal growth by socialising and sharing expertise through learning communities. We formed over 100 learning communities on myLearningX in 2022 with more than 12,000 employees as members.

Additionally, recognising the rapid changes in the energy industry and in the organisation, coaching has become even more vital in untangling challenges and unlocking our people's potential to grow.

**30,647** learning objects available for training via curriculum, events, online courses, videos and external content.

**43,633** participants (**97.1 per cent** active learners).

Achieved **50.1** learning hours per employee via myLearningX.

**1,567** active coaches with **315** coaching relationships.

The refreshed EPM via myCareerX has enabled easy access for our employees and their managers to monitor performance and facilitate continuous performance conversations.

We also enhanced the Underperformer Management system to proactively carry out early intervention for identified employees.

We changed the PETRONAS Cultural Beliefs Behaviour Evaluation (BePCB) Guidelines into a 360-degree evaluation from the earlier 180-degree version. With this change, our employees' direct managers and team members were able to give feedback, as well as managers and members from other teams whom they have worked with.

We also embedded open and transparent values in BePCB to encourage employees to speak up in performance-related conversations, with a focus on learning and development aspects.

### Talent Ecosystem

We empower and enable our people to drive their career progression through a robust talent ecosystem.

In 2022, we continued to enhance our principles and processes, particularly in the areas of employee performance management, career progression and personal marketability, all of which are supported by an integrated HR platform called myCareerX.

### Refreshed Employee Performance Management (EPM)

We refreshed our EPM for the wholesome development of our employees and an enhanced end-to-end talent journey for them by nurturing a growth mindset and behaviour. The refreshed EPM aligns performance objectives with individual aspirations, commits employees to roles and responsibilities with the needed competencies and promotes a self-driven culture based on continuous feedback and coaching.

### Enhanced Career Progression Principles

We introduced our enhanced career progression principles in late 2021, which enables role-based progression anchored on competency, and a simplified decision-making process from 2022 onward.

We initiated a pilot programme within the Human Resource fraternity, focusing on the following areas:

- Enabling our people to progress within and across roles while balancing business and talent needs, in line with matching employees' aspirations with organisational goals.
- Promoting competency-based progression through fit-for-purpose assessments, with performance managed through EPM.
- Simplifying the decision-making process by empowering line managers to make progression decisions for manager-level and below.



## Positive Social Impact

### Enhancing Personal Marketability via Talent Profile

We encourage our people to drive their own talent journey within the organisation. With this in mind, we introduced Talent Profile in myCareerX, which is a digital resume to allow our employees to be visible within the organisation, market themselves and attract managers and team leaders who are looking to build their team.

Close to **20,000** employees were able to access Talent Profile to build their personal marketability.

Over **10,000** users have used the Talent Profile to update their personal information and explore potential roles.

Talent Profile was intentionally used for talent deliberation in PETRONAS.

### A Sustainable Pool of Leaders

Effectively identifying potential leaders is key to successful succession planning. myTalentX was designed to ensure a sustainable pipeline of leaders through comprehensive insights on talent, succession planning and position requirements across PETRONAS, leveraging AI-enabled recommendations to identify best fit talents as successors for key positions. In addition, myTalentX provides real-time data on top talent for faster decision-making in meeting business demands.

### Future Talent

We continued to invest in identifying and nurturing our pipeline of future talents through our sponsorship programmes and learning institutions.

#### Sponsorships

##### PETRONAS Education Sponsorship Programme (PESP)

Since 1975, we have successfully awarded education sponsorships to more than 38,000 young students with high academic calibres from diverse ethnic and economic backgrounds, with the majority from underprivileged families. Through PESP, we offer young Malaysians and others the opportunity to pursue their studies at UTP as well as other leading local and international universities.

In 2022, 587 scholarships were awarded to Malaysian students. In addition, we began offering PESP to students who were already enrolled at universities recognised by PETRONAS with a minimum of one remaining year of studies as well as students who were offered placements at universities recognised by PETRONAS. Three scholars have benefitted in areas such as Economics and Mechanical Engineering at University of California, Berkeley, University College London and Imperial College London.

During their undergraduate years, PESP scholars undergo a structured development programme via the PETRONAS Readiness for Employment Programme (PREP) to ensure they are continuously nurtured until graduation. Students are also given the opportunity to interact with our leaders to inspire and help them achieve their potential.

- Invested more than **RM174 million** through education sponsorships awarded to **587** Malaysian students.
- 64 per cent** of our scholars were recruited to work for the organisation upon graduation.
- Seven per cent** of our graduates were recruited by other companies.
- Five** engagement sessions between scholars and PETRONAS leaders were conducted both locally and internationally to inspire students to push their potential towards success.

### PETRONAS Education Sponsorship Programme for Postgraduates (PESP<sup>2</sup>)

The PETRONAS Education Sponsorship Programme for Postgraduates (PESP<sup>2</sup>) is an extension of PESP, serving as a platform for deserving students to strengthen their knowledge and capability through postgraduate studies in specific key areas that support PETRONAS' growth strategies.

Since its inception in 2018, 83 scholars have benefitted from the programme in various areas of expertise such as Drilling, Fluid Tech Solutions, Autonomous System (Robotics), Renewable Energy and Carbon Capture.

- Invested over **RM4 million**, benefitting **20** recipients.

### Industrial Training Programmes

We provide industrial training opportunities for graduates and tertiary students through the Graduate Employability Enhancement Scheme (GEES) and internship programmes for on-the-job learning (OJL). These will help prepare students for better employment opportunities which would contribute towards improving their standard of living ultimately contributing to the socio-economic upliftment of the community.

#### Graduate Employability Enhancement Scheme (GEES)

GEES provides graduates with actual working experience as part of our soft skills training programme, in support of the Malaysian government's Protégé Ready-to-Work initiative. It is a 12-month on-the-job training that aims to enhance the employability of new graduates towards securing long-term employment. We do this by instilling positive work attributes, including entrepreneurial training to encourage them to establish and manage their own business. We also provide technical bridging training to upskill students in relevant technical skills to facilitate their transition into the job market.



Since its inception in 2011, the programme has benefitted 4,683 participants.

### PETRONAS Internship Opportunity Programme

We provide undergraduate students with industry experience and learning under our internship programme where they are able to gain knowledge outside of their academic setting. Our aim is to enable students to integrate theories and knowledge obtained from learning institutions and actual work situations in a professional manner.

Through this programme, students will gain their first working exposure in the energy industry and the opportunity to engage across various operational areas. This enables them to put their learning into action and equip themselves with useful skills upon joining the workforce.



## Positive Social Impact

### Leveraging our Learning Institutions

Our industry-recognised learning institutions such as UTP, INSTEP and ALAM continued to introduce relevant programmes to nurture and encourage young talents to achieve their potential.

#### Programmes Implemented in 2022

**UTP** 01

1. PETRONAS scholars at UTP:
  - More than 1,000 active scholars at UTP.
  - Over 200 scholars graduated from UTP.
2. UTP-AMG Internship Programme:
  - As part of the PETRONAS Readiness for Employment Programme (PREP) Framework and through collaboration and partnership with Mercedes-AMG PETRONAS Formula One Team, we sponsored students for internships at the Team's plant in the United Kingdom. The internship programme enabled PETRONAS scholars at UTP to gain technical knowledge and valuable experience in a highly competitive environment.
  - 75 PETRONAS scholars benefitted from the programme since inception.

**INSTEP** 02

1. Sponsored students at INSTEP:
  - More than 300 students were sponsored at INSTEP, with RM12.3 million invested.
  - 35 scholars from the 2021 intake have been recruited (91 per cent by PETRONAS, 9 per cent by others).
2. Structured development programme for scholars:
  - Technical Enrichment Programme (TEP) learning framework, focusing on competency and experiential learning throughout a 10-month programme.

**ALAM** 03

1. Sponsored students at ALAM:
  - 75 out of 340 cadets with investment of RM883,170 via Post Sea Programme.
  - Sponsored students at ALAM by Eaglestar:
    - 94 out of 142 new cadets with investment of RM10,254,883.
2. ALAM provided graduates with employment opportunities by assisting 51 eligible cadets at 16 shipping companies and 11 eligible able seafarers at multiple shipping companies.

## Community Engagement

### Why Is It Important?

Active engagement and community development are essential for building trust, establishing goodwill and maintaining positive relationships with the communities where we operate. By engaging with local communities and stakeholders, we understand their needs, reduce conflicts and minimise the risk of project delays or cancellations. This demonstrates our commitment to sustainable operations and nurtures a positive reputation. Investing in local communities stimulates economic growth, improves quality of life and creates a more supportive environment for our business. Building strong partnerships creates shared value contributing to our overall success and sustainability.

### What Is Our Approach?

At PETRONAS, we are committed to building strong, resilient and empowered communities through community engagement efforts. Our initiatives aim to improve the standard of living, enhance livelihoods, promote equitable growth and increase environmental awareness. We take a structured and systematic approach by developing a community engagement strategy that aligns with our business objectives and values while addressing the needs and aspirations of surrounding communities. Our Social Impact programmes focus on education, community well-being and development, and the environment, to encourage sustainable livelihoods and equip communities with the necessary skills for a just energy transition, a fair and inclusive process that aims to ensure no one is left behind.

### Identification Process for Social Impact Activation





## Positive Social Impact

PETRONAS invested close to RM900 million for our Social Impact activations in 2022, benefitting over 1.5 million beneficiaries in Malaysia and internationally. The goal of these investments is to champion the pursuit of knowledge among students and educators, provide access to essential resources for underserved communities and to empower them to reach their full potential as well as creating awareness and promoting the importance of biodiversity conservation.

Yayasan PETRONAS also conducts a significant portion of our Social Impact activations across the country, benefitting over 116,600 beneficiaries with an investment of around RM49.53 million.



### Value Creation in 2022

#### Education – PETRONAS Powering Knowledge

Quality education is a fundamental building block for creating a strong workforce, empowering communities and supporting the nation's socio-economic growth. To this end, we have developed a range of programmes that cater to students from primary to tertiary levels, as well as the general public, with a focus on Science, Technology, Engineering and Mathematics (STEM). We have also initiated programmes to improve educational and vocational opportunities for all.

In 2019, we set a target to achieve 24,100 beneficiaries from PETRONAS' Educational Programmes by 2024. This was in line with our objective to provide access to quality education, as well as strengthening teachers' capability in STEM and to serve as role models in enhancing higher order thinking skills through STEM which enables communities to progress collectively as a nation. In 2022, we managed to achieve the target two years ahead of schedule, reaching 42,839 education beneficiaries cumulatively from 2020 to 2022. The education programmes include our PETRONAS Education Sponsorship Programme (PESP), *Program Duta Guru* (Teacher Ambassador programme) and the Vocational Institution Sponsorship and Training Assistance (VISTA) programme, among others. Moving forward, we aim to continue providing better opportunities with sustainable impact to underprivileged students, and are in the process of developing other Social Impact measurement systems. We will be focusing on high impact initiatives through strategic partnerships and collaborations, and aspire to include more beneficiaries both domestically and internationally, especially in the areas where we operate.

### 1. Learning Institutions

Our commitment to nation-building is strongly linked with our industry-recognised learning institutions, which contributes to producing skilled talents for the workforce of the future and providing innovative solutions that enable Malaysians to achieve their full potential. By driving people forward through education, we are actively contributing to the growth and development of the nation, building a brighter future for all.

#### i. Universiti Teknologi PETRONAS (UTP)

A wholly-owned subsidiary of PETRONAS, UTP has produced more than 23,000 graduates from over 60 countries. It has emerged as one of the main feeders within the region producing competent talent for the workforce.

- Offered **60** academic programmes (one foundation, **13** undergraduate and **46** postgraduate programmes).
- 6,648** students were enrolled in UTP, with **1,217** in foundation programmes, **4,340** in undergraduate courses and **1,091** in postgraduate studies.
- 1,438** students graduated.

#### ii. Institut Teknologi Petroleum PETRONAS (INSTEP)

INSTEP has become an internationally-recognised learning solutions partner with customers from over 35 countries. It has successfully produced more than 130,000 job-ready technical workforce serving in more than 30 refineries and petrochemical plants, in addition to 100 platforms globally. INSTEP continues to push boundaries by providing technical talents with innovative solutions allowing them to grow with their respective organisations and achieve their potential.

- Offered over **70** programmes, with **11,660** enrolment.
- 116** students, sponsored by Sarawak Petchem Sdn Bhd, graduated from the Technician Training Programme.

#### iii. Akademi Laut Malaysia (ALAM)

ALAM offers courses with comprehensive curriculums to prepare its graduates as officers, engineers, researchers and consultants in the global maritime industry.

- 550** students enrolled in ALAM's cadetship diploma programme, maritime studies programme, able seafarers programme, advanced post sea courses and short courses.

#### iv. Kimanis Training Centre (KTC)

We established the KTC in collaboration with the Sabah State Government to assist in developing local youths' technical capabilities in fields related to the oil and gas industry. KTC has since produced qualified skilled workers to contribute and benefit from the East Malaysia Development Plan under the Sabah-Sarawak Integrated Oil and Gas Project (SSIOGP).

Currently managed by INSTEP under PETRONAS Technical Training Sdn Bhd (PTTSB), KTC is the first institution in Sabah to be recognised as an Accredited Centre by the Department of Skills Development under the Ministry of Human Resources to conduct a three-year full-time trainings in Industrial Instrumentation and Control, System-Monitoring and Control (Level 4) and Malaysian Skills Diploma (DKM). PETRONAS has invested RM34.6 million since KTC's inception in 2011, producing 231 graduates.

- Invested **RM4.4 million** in developing the capabilities of Sabahans.
- 20** students started their studies at KTC.

## Positive Social Impact

### 2. Collaboration with Higher Education Strategic Initiatives (CHES)

We collaborated with Malaysia's higher education sector to bridge industry-academia knowledge sharing in technical areas aligned with PETRONAS' Education Agenda and Sustainable Development Goals (SDGs) under quality education. CHES became one of the channels for us to share our knowledge and best practices in project management, engineering solutions, technology and digital delivery as part of our commitment to contribute to the nation.

Through these initiatives, we aim to create more platforms for Technical Professionals (TPs) and Subject Matter Experts (SMEs) to perform Technical Professional Excellence responsibilities and build rapport with the Higher Education sector and young Malaysian top talents in creating awareness and interest in the oil, gas and energy industry.

- We conducted:
  - more than **90** webinars and face-to-face sessions covering topics on engineering, technology and digital, as well as Career Talks with all **20** universities under the CHES initiative;
  - syllabus or curriculum reviews with seven universities;
  - adjunct lectures at six universities;
  - internship and industry visits, including a site visit to Malaysian Refining Company Sdn Bhd (MRCSB);
  - the Digital Young Graduates Programme (YGP) where seven Universiti Teknologi Malaysia (UTM) students received work-based learning placements; and
  - three oil and gas conferences and events.
- We provided industry supervisors and coaches for students' final-year projects, established mentor-mentee programmes and included them in the universities' industrial advisory and accreditation panels.
- We partnered with four universities for research collaborations in the oil, gas and energy field.

### 3. Proactive engagement with students

We continuously engage with students from primary to tertiary levels through several programmes to raise awareness on the importance of gaining knowledge, fostering interest in STEM and exposing students to opportunities in the oil, gas and energy industry.

#### i. Discover PETRONAS at School (DPS)

Since its establishment in 2014, PETRONAS has invested RM2.7 million, benefitting 24,000 students. The programme helps secondary school students learn more about the oil, gas and energy industry and the various career opportunities available across PETRONAS. This programme serves as a guide for students to choose the right education sponsorship application course, matching their career and future aspirations.

Through DPS, we engage with secondary school students to:

- strengthen knowledge and understanding of the PETRONAS Education Sponsorship Programme (PESP);
- instil interest in the oil and gas industry and related careers;
- build and enhance PETRONAS brand awareness and image;
- establish a sustainable network and mutual relationship with the Ministry of Education, schools and students.

DPS consists of career forums and booths where our volunteers conduct interactive engagements and experimental learning.

- Over **2,000** students benefitted from the DPS programmes conducted at four centralised locations: Kota Samarahan and Mukah, Sarawak; Kuala Nerus, Terengganu and Segamat, Johor.
- **52** schools participated in DPS 2022.
- Invested about RM1 million.
- **92** PETRONAS employees volunteered.



#### ii. PETRONAS Vocational Institution Sponsorship and Training Assistance (VISTA)

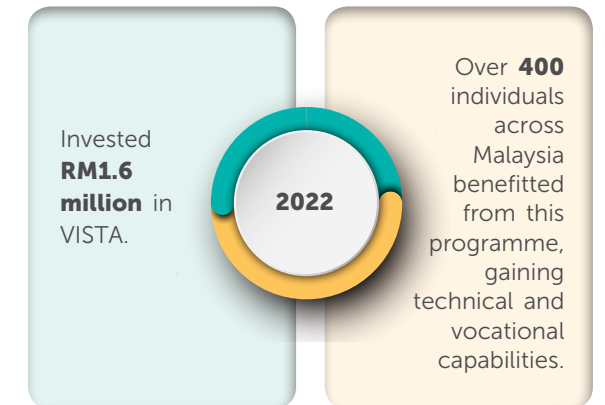
PETRONAS VISTA was introduced in 1992 as a flagship programme to assist in delivering technical courses at selected institutions under our Technical and Vocational Education and Training (TVET) process, emphasising on job-oriented learning and training.

We collaborate with government agencies and state governments of the selected institutions on infrastructure, equipment, trainers, or programmes readiness (depending on needs) to ensure the chosen technical courses will be delivered successfully as per the oil and gas industry requirements.

In 2022, 18 institutions were identified to be part of the VISTA programme. These institutions are expected to produce more than 1,000 technical talents annually.

Six new certifications have been introduced under the three-year programme implementation (2023-2026): Mechanical Fitter, Rigger, Crane Operator, Welding Inspector, Diploma in Oil and Gas, and Diploma in Process.

Since its inception, VISTA has benefitted more than 12,000 graduates with over RM90 million invested and has collaborated with 27 TVET institutions all over Malaysia.



#### iii. Digital Equity Programme (DEP)

Introduced in 2022, the Digital Equity Programme (DEP) was designed by Petrosains to increase STEM interest among students in Sabah, Malaysia, cultivating 21<sup>st</sup> century and technical skills in a fun and engaging manner to prepare participants for the workforce of the future.

This initiative exposed teachers to the innovative ways they can explore to ease the teaching process and guide students in enhancing their digital comprehension level, adding value to everyday solution design and curation. Students also gained a better understanding on the four elements of STEM, enhanced their problem-solving skills and discovered career opportunities in the field.

We upskilled and enhanced the capacity of teachers in technical-and digital-related skills, as well as democratised digital creation activities for students from low-income families to deepen their interests in STEM. Teachers and students also were given opportunities to expand their knowledge through the formation of a district-level committee and school-level technology clubs that are linked to other key players in the ecosystem.

- Invested around **RM500,000** in DPS.
- **80** teachers and **82** students from **39** secondary schools in Sandakan and Tawau, Sabah benefitted from the two sessions conducted.



## Positive Social Impact

### iv. BeDigital Bootcamp

We curated the BeDigital Bootcamp to strengthen young graduates' digital literacy and help them prepare for the jobs of the future. The intensive learning exposure brings participants through the concepts of design thinking, data storytelling, transitioning into the working world, digital entrepreneurship and concluding with a shark tank session in front of expert evaluators. Outstanding participants are offered roles in PETRONAS or its recruiting partners.

In order to elevate the employability of graduates and ensure they are future-ready, we collaborated with Sabah state government and other partners: PETROSAINS Sdn Bhd, SEEd.Lab, Center of Applied Data Science, Tata Consultancy Services, Microsoft, Universiti Malaysia Sabah, Universiti Teknologi MARA Sabah, University College Sabah Foundation, Sabah Net Sdn Bhd, Malaysia Board of Technologists, KLCC Urusharta Sdn Bhd, Sabah Energy Corporation, Four Seasons and Internspoon.

- Recorded more than **60** participants.
- 50 per cent** of total participants stood out during the bootcamp and received a conditional offer each from PETRONAS and other companies.

### v. Young Aspiring Mentees in STEM (YAMS)

YAMS is a mentoring programme by PETRONAS' young professionals that was established in 2022. We introduced this programme to coach and empower upper secondary school students in Sabah to help them achieve their potential by pursuing STEM careers and become future leaders. Our goal is to drive long-term holistic development of the Sabahan workforce, as this is part of PETRONAS' efforts in caring for the communities that we serve.

This programme consists of virtual check-ins, checkpoints and physical camps, where each young professional is assigned two students to coach. Mentors also received comprehensive training and clear guidance on the syllabus and resources to coach their mentees.

- Invested more than **RM170,000** in YAMS.
- Identified **40** science students from disadvantaged families in upper secondary schools in Sandakan and Tawau, Sabah.
- 20** PETRONAS young professionals were chosen as volunteers to mentor.

### vi. PETRONAS Leading Women Network (PLWN) – UTP Mentoring Programme

The PLWNxUTP Mentoring Programme started in 2021 to mentor UTP students selected by the university. Through this initiative, students are mentored by experienced mentors to build their confidence, learn networking skills and to be flexible, adaptable and empathetic at work.

- 20** mentors from technical and non-technical backgrounds were identified from across PETRONAS.
- 20** mentees from petroleum engineering and petroleum geoscience courses benefitted from the programme.
- Four online sessions were conducted throughout the programme, with about 100 participants on average per session.

### vii. Young Technologist Programme

This programme is aimed at increasing lower-secondary students' confidence in enrolling in STEM programmes and securing jobs in the future work environment. The programme focused on improving their competency in Communication, Collaboration, Critical Thinking, Creativity (4Cs).

- 2,040** students from Terengganu benefitted from this programme.

### viii. Engen Mathematics and Science School

We designed the Engen Mathematics and Science School to improve the education quality and expand access to education or training for students in South Africa. The programme offers free Mathematics, Physical Science and English classes to students from grades 10 to 12.

## 3. Providing Opportunities through Student Sponsorships and Bursaries

We recognise that the path to gaining knowledge and pursuing tertiary-level education can be challenging for certain students. We assist through sponsorships to help the younger generation gain access to education and vocational learning opportunities.

### i. Yayasan UTP

Yayasan UTP (YUTP) was established in 2007 to promote and enhance education while supporting the development of UTP as an academic institution of excellence. In addition to its role in seeking donations and forging partnerships, it also allows students to pursue knowledge, especially in science and technology. The assistance also helps students prepare to be part of the future workforce in an increasingly challenging global economy.

Since its inception in 2012, Yayasan UTP has provided financial assistance to 2,423 beneficiaries through Yayasan UTP's scholarships and bursaries.



### ii. Tabung Amanah Zakat UTP (TAZU)

We believe in making education accessible to all by providing opportunities through *zakat* (alms) collection from UTP and PETRONAS employees. 50 per cent of the collection is returned to TAZU, which is then distributed to underprivileged students to ensure their continuous development and sustainable education.

Since TAZU was incepted in 2011, it has provided financial assistance to 5,600 beneficiaries through tertiary education sponsorship at UTP.

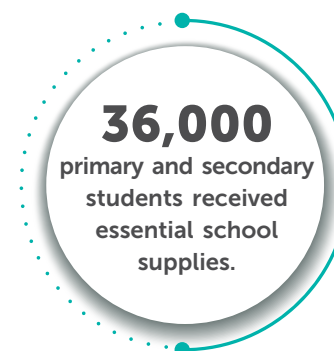
- 1,788** deserving students at UTP received financial assistance from the *zakat* contributions to cover university fees (registration, academic and hostel fees) and special assistance (laptop allowance and stipends).
- Introduced a Full Foundation Sponsorship Programme to sponsor **100** Asnaf students to further their studies at UTP.

### iii. Building Brighter Futures Programme

This programme provides financial assistance to indigenous students in Canada. The programme gives indigenous learners the ability to complete post-secondary education. It also includes mentoring, youth conferences and educator support.

### iv. Back to School (BTS)

We continued to reach to primary and secondary school students via Yayasan PETRONAS to help them prepare for the new academic year with essential school supplies. While the programme lessens the financial burden of their B40 (below the poverty line) parents, the school supplies are also intended to raise students' enrolment and participation.



## Positive Social Impact

### 4. Creating Conducive Education Environments

A conducive learning environment, with the right tools, materials and space allows students to feel empowered to acquire knowledge. Recognising the importance of a conducive environment, we provide a proper infrastructure for students as part of our contributions to nation-building.

#### i. Facilities Improvement Programmes in Iraq

The development of three new classrooms and renovation of the main hall of the teachers' Union office has provided access to quality education and safe, non-violent, inclusive and effective learning environments for over 500 students between seven to 12 years old in the surrounding Garraf Contract Area.

#### ii. Construction of MARA Junior Science Colleges (MRSM)

We are collaborating with the Sabah and Sarawak state governments (via Yayasan Sarawak) and Majlis Amanah Rakyat (MARA) to construct two MARA Junior Colleges in Ranau, Sabah and Bintulu, Sarawak. This collaborative effort aims to provide students access to quality education and promote their interest in STEM while developing their talents. Each MRSM can accommodate 450 students. Construction began in 2019 and the first student intake by MARA is targeted to be in Q1 2024.

The locations and sites of both MRSMs were determined and provided by the state governments. The buildings were designed according to the facilities requirements by MARA, with PETRONAS as the main sponsor for the overall construction, provision of furnishings and equipment. Local consultation firms and contractors were hired to support both projects.

The colleges will be handed over to the state governments and MARA for operation upon completion. It will also be the fifth MRSM in Sabah and the fourth MRSM in Sarawak.

- Achieved **94 per cent** physical progress for MRSM Bintulu.
- Achieved **94 per cent** physical progress for MRSM Ranau.
- Invested more than **RM220 million** for both MARA Junior Colleges.

### iii. Bridging the Online Learning Divide Programme

We remain committed to supporting students from all backgrounds despite the challenges posed by the COVID-19 pandemic, which forced schools to close and shift to online learning. Students from low-income communities (B40) needed help with their studies due to a lack of internet access and relevant devices. We have provided internet-enabled digital devices to students from B40 communities in Perak, Selangor, Johor, Kelantan, Sabah and Sarawak to help them engage in remote or hybrid learning and gain immediate learning support in early English literacy.

Lack of internet access and relevant devices resulted in dire challenges for students from low-income families. We responded to the need by providing internet-enabled digital devices. The tablets were equipped with digital resources and tutoring took place via WhatsApp, enabling volunteers based anywhere in Malaysia to tutor students nationwide.

- **2,000** underprivileged students from **B40** communities received tablets with a year of internet connectivity.

### 5. Building STEM Awareness Across Our Communities

PETROSAINS Sdn Bhd is our wholly-owned subsidiary that leads and steers the business and visit operations of Petrosains, The Discovery Centre and the PETRONAS Twin Towers.

#### i. Petrosains, The Discovery Centre

Through Petrosains, The Discovery Centre, we strive to deepen our relationships beyond school walls and build trust by engaging with the community through our interactive, experiential and hands-on programmes at the Centre.

Since its establishment in 1999, Petrosains has welcomed around eight million visitors as of 2022. The centre, approximately 7,000 square metres, hosts about 300 interactive exhibits within specific themed galleries. In 2022, Petrosains recorded the highest number of visitors since its establishment with 515,982 visitors.

As a PETRONAS Education initiative, Petrosains, The Discovery Centre provides an immersive learning experience, especially in science, technology and sustainability. We are committed to making a positive social impact and are driven to do our part in building a society equipped with skills needed for the future, in line with The PETRONAS Education Agenda.

We also aim to educate our people on the evolving digital era driven by the convergence of advanced technologies such as robotics, artificial intelligence (AI) and the internet of things (IoT) to enable the creation of innovative solutions towards shared progress for all, where no one is left behind.

Petrosains has positioned itself as a credible solution partner to various stakeholders in delivering impactful programmes, particularly in STEM Education, business and sustainability-related thematic learning. Some of these programmes include Discover PETRONAS @ Schools, Digital Equity Programme, BeDigital Bootcamp, Government-Linked Companies Open Day, PETRONAS Cub Prix, Meet The Expert, PETRONAS StreetSmart Design Thinking Challenges and Café Mesra operation.

Petrosains collaborated with:

- Ministry of Education for the *Seminar Pendidikan* STEM Digital session for educators, and Educators Brunch with the State Education Department;
- Mercedes-Benz for The Vision of an Electric Future and Sustainable Mobility for Tomorrow programme to inspire secondary and tertiary students to proactively think about responsible energy planning towards sustainable and safer living; and
- Offshore Petroleum Industry Training Organisation (OPITO) for My Energy Future



- Delivered learning programmes to **6,479** beneficiaries.
- Scored **85 points** (above 80-point baseline) for delivering five Learning dimensions knowledge and understanding; skills; attitude and values; enjoyment, inspiration and creativity; activity, behaviour and progression.

LIVE, an OPITO-led STEM project designed to engage and inspire the energy leaders of the future. School students from across Malaysia participated in the event and showcased their futuristic innovations.

Petrosains expanded its learning approach on digital platforms especially in the aftermath of the COVID-19 pandemic by partnering with content partner DELIMA (an online learning platform by Malaysia's Ministry of Education), conducting Virtual Visit via PIXEL and SkyWalk 360, and other virtual learning programmes leveraging open platforms and social media. These activations netted 107,393 in virtual reach.

Petrosains learning includes creating awareness that resonates with PETRONAS' material topics towards a sustainable future.

In 2022, Petrosains delivered sustainability-based content to enrich the school curriculum and equip the public by providing valuable hands-on learning experience using world-class activities designed to upskill and increase understanding of STEM. Contents included Energy Capsule through PETRONAS Innovation Catalyst Project (PICP) and thematic programmes: Chemsolve; Carbon Capture, Utilisation and Storage (CCUS); Digital, Automation and Robotics (DART); Chemical Energy Solutions. This underscores Petrosains' commitment to support net zero carbon emissions by 2050 by creating positive social impact.

#### ii. Petrosains PlaySmart™ and Maker Studio

Petrosains PlaySmart™ is an outreach programme implementing a hands-on learning approach in Johor, Pahang, Sabah and Sarawak. It acts as an education hub for surrounding communities through partnerships with the local state libraries in Malaysia. The various locations make STEM more accessible, fostering awareness and



## Positive Social Impact

increasing STEM literacy where Petrosains PlaySmart™ played its role in extending the immersive STEM learning experience to the community.

Petrosains PlaySmart™ also offers the Maker Studio, a space for hands-on and creative activities to encourage the public to design, experiment, build and invent as they engage in Science, Technology, Engineering, Arts and Mathematics (STEAM) through coding, design thinking, prototyping and robotics.

- Petrosains PlaySmart™ was able to reach out to more than **269,000** visitors physically via its centres in Johor, Pahang, Sabah and Sarawak. Outreach programmes with local communities were held consistently through collaboration with the respective State Government and PETRONAS Regional Offices.
- Petrosains accelerated STEM learning through its Visit to School and invitation programmes, allowing for interaction with students, community and general public outside of its physical facilities while also providing STEM learning opportunities. These initiatives generated **12,707** reach in 2022.
- Petrosains PlaySmart™ is also positioned as a credible solution partner through the Inspire Together Programme, which allowed for a wider range of **20,000** reach in the communities, providing access to STEM learning and experiences to underprivileged groups.

Petrosains PlaySmart™'s extension, the Maker Studio is currently available at Petrosains' main centre in Kuala Lumpur and Petrosains PlaySmart™ in Johor, Sabah and Sarawak, with the Maker Studio Tanjung Aru, Sabah operations officially handed over to the Sabah State Library in 2022.

### iii. Petrosains RBTX Challenge

The Petrosains RBTX Challenge is another effort to boost interest in STEM, allowing robotics enthusiasts to compete with their robotic creations in an open-source software

environment. The Sports and Arts Education Division, Ministry of Education, Malaysia, endorses the challenge as it aims to democratise STEM learning by providing participants, regardless of backgrounds, with unlimited open-source coding software and a diverse range of robotics equipment. Since its inception in 2018, it has attracted more than 7,000 participants of all ages.

In 2022, the programme continued to create value for Petrosains and its beneficiaries not just through traditional financial measures but also by bringing intangible value to communities, our brand image and through the creation of new innovations guided by the Malaysia Education Blueprint 2030, National Fourth Industrial Revolution (4IR) Policy thrusts, PETRONAS Education Framework, Four Sustainability Lenses, and Petrosains Strategic Framework - Progress.30.

Besides supporting the vision and aspirations of the Malaysia Education Blueprint through mastering higher order thinking skills and the ability to innovate, the challenge is also tailored to provide school students with basic designing, coding and sensor training in robotic development.

Petrosains RBTX Challenge 2022 contributed to the increased value in STEM learning for robotics enthusiasts through partnership with professional advisors from academic institutions and industry players. To prepare interested participants for the signature robotics competition, Petrosains' working team travelled across Malaysia months ahead of the competition to conduct workshops, mainly in areas such as basic designing, coding and sensor training.

- Reached out and provided training for **2,334** young people.
- Attracted 28 international teams involving **77** participants from Indonesia, Tunisia and the United States of America (USA).
- A total of **1,035** teams participated, with over **3,000** taking part in the competition and **243** teams advancing to the Grand Finals in Kuala Lumpur.

The strong participation in the Petrosains RBTX Challenge 2022 is testimony to the efforts towards democratising learning for all.

**Malaysia Book of Records** awarded a certificate of achievement to Petrosains for having the **Most Participants in a Robotic Interactive Learning Event** for RBTX2022.

### 2. Programme Duta Guru

Yayasan PETRONAS' flagship programme, *Program Duta Guru*, is a nationwide industry-linked programme conducted to strengthen the capabilities of STEM teachers serving schools with a majority of B40 students.

- **253** teachers completed the two-year programme and took on their roles as *Duta Guru* (Teacher Ambassadors) to increase STEM interest and competency among students in secondary schools.

### empowerAkademik

We continued to reach out to students from less privileged communities through Yayasan PETRONAS' *empowerAkademik* programme to improve their academic performance for *Sijil Pelajaran Malaysia (SPM)* or the Malaysian Certificate of Education and enable their progression towards tertiary education. It is a comprehensive programme that takes a three-pronged approach, involving students, teachers and parents to empower the communities via the academic path to create a more balanced, inclusive society.

Supported **1,000** SPM students through the *empowerAkademik* programme.

**94.7** per cent (947 students) passed SPM 2021 with **5.7 per cent** achieving 5As or more.

**100** per cent (57 students) of 5A students and **94** per cent (892 students) of those that obtained 4As and below secured placements in tertiary institutions.

## Community Well-being and Development – PETRONAS Uplifting Lives

We continuously reach out and extend a helping hand to our communities to help them empower themselves through skills and entrepreneurship training, access to better health and other programmes to improve their quality of life.

### Memampankan Ekonomi Asas Rakyat (MEKAR) Programme

Through Yayasan PETRONAS, we uplifted the livelihoods of the B40 community in Kelantan, Kedah, Terengganu, Johor, Pahang, Perak and Sabah leveraging the MEKAR Programme. Under the programme, we provided aid under three categories:

- Basic necessities  
We provided the communities in Pitas, Sabah and Kluang, Johor with access to water and solar power to help them improve their quality of life.
- Skills and Entrepreneurship Development  
We uplift the lives of B40 communities through the provision of skills and entrepreneurship development programmes. The programme which runs over two years is also embedded with a culture of innovation to help them improve their income streams. In 2022, we completed the earlier cohorts in Kedah, Perak, Kelantan, Terengganu, Pahang, Johor and Selangor.
- Go-to-Market  
We also helped communities improve their income generating skills with entrepreneurial training to enhance their quality of life and ensure a sustainable income stream.



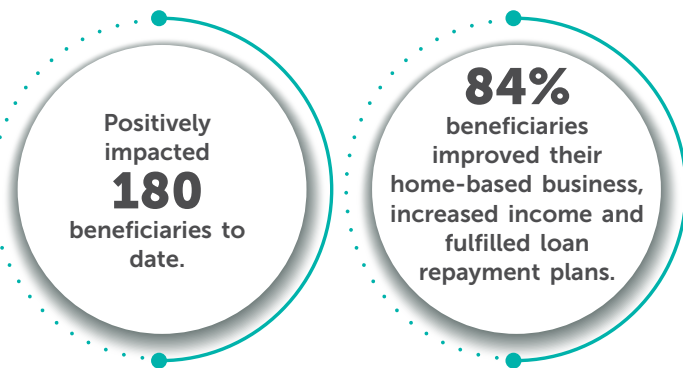
## Positive Social Impact

### Improving Youth Employability in Sabah

The Entrepreneurship Programme helps local entrepreneurs expand their business scale and find new market opportunities. The programme consisted of five training modules on ideation, conceptualisation, marketing strategy and business analysis which aims to equip participants with basic entrepreneurial skills. Agrobank provided information on financial management.

Working closely with the Giatmara Training Programme, we aim to upskill local youth and improve their employability. Youths from Lawas and Baram were exposed to courses such as welding and metal fabrication, automotive technology and building technology through the Towards Uplifting Lives Programme (TULiP).

- 22 participants from Lawas completed the Entrepreneurship Programme.
- 10 local youths graduated from the Giatmara Training Programme.



### MyLady Assistance Scheme

Yayasan PETRONAS supported the MyLady Assistance Scheme programme to empower single mothers and women living with HIV to get out of poverty. Through this scheme, these women were given access to microcredit business loans, entrepreneurial training and peer support, to assist them with their home-based enterprises.

- 30 single mothers and women living with HIV received assistance through the MyLady Assistance Scheme.

### SAGA Health Access Programme (SHAPE)

Through the Malaysia Aids Foundation (MAF) SAGA Health Access Programme (SHAPE), Yayasan PETRONAS assisted B40 patients with HIV, Thalassemia and Paediatric illness from rural Sabah to attend their treatment appointments by subsidising the high logistical costs to local hospitals or clinics.

- Assisted **180** patients under the SHAPE programme.
- 95 per cent** attendance rate (HIV beneficiaries) adhered based on scheduled appointments.

### Supporting Cancer Research

Yayasan PETRONAS continued to support cancer research for the Asian population and paediatric patients by providing grants to Cancer Research Malaysia (CRM) and Hospital Canselor Tuanku Mukhriz (HCTM) in 2022. These grants will drive new research to address cancer more effectively, from prevention to detection and treatment.

### Community-based Disaster Risk Management

Yayasan PETRONAS collaborated with the National Disaster Management Association Malaysia (NADIM) to introduce Community-Based Disaster Risk Management (CBDRM) training to local communities in Tumpat, Kelantan and Pekan, Pahang. Seasonal floods impacted both areas for several years.

CBDRM aims to strengthen community resilience by enhancing their capabilities and skills in pre-disaster training provided to help communities prepare for disasters to minimise its impact on their assets and lives. The training also allowed local emergency responders and agencies to forge stronger relationships.

- Equipped **200** participants, including community leaders with pre-disaster training.

### Training for People with Disabilities

The Perlis Special Teens Centre (PeSTeC) under the management of the Perlis Special Children Community Rehabilitation Organisation upgraded its facilities as a result of a grant received from Yayasan PETRONAS in 2022. This further supported PeSTeC in helping special needs teenagers adapt to society by providing them with skills training and instilling a sense of independence.

### Breaking the Cycle of Poverty Among Malaysia's Indigenous Communities and Extreme Poor

PETRONAS collaborates with a dedicated government department for the indigenous community (*Orang Asli*), *Jabatan Kemajuan Orang Asli* (JAKOA) and NGOs for a programme aiming to uplift the lives of *Orang Asli* across Malaysia. The programme focuses on providing access to clean energy, clean water and education.

- The programme was expanded in 2022 to include access to clean water and learning programmes.



In 2022, installing solar power systems under the programme impacted 156 Orang Asli homes across six villages. Each household benefitted from six hours of additional electricity and light per night, adding six hours of productivity which the community can spend on their daily routines such as domestic chores and other community activities. The installations have also reduced the community's energy expenses to approximately RM400 per month for each home. They previously purchased diesel fuel generator sets for their power supply.

As of 31 December 2022, more than 232,000 productivity hours were achieved from the installations and a savings of RM406,152.

The programme was expanded in 2022 to include access to clean water and learning programmes. The pilot solar-powered filtration systems were completed in Kampung Gakuyah in Bera, Pahang. Three units of the system provide clean water to 12 homes for each unit.

Access to clean water protected the community from waterborne diseases, reducing their healthcare expenses and improved the mortality rate among children. It also increased the community's awareness of personal hygiene and healthy living.

Meanwhile, a pilot learning programme was completed in Kampung Kepong in Bentong, Pahang. This programme is ready to be scaled-up further in 2023.

### MERCY Malaysia

We are committed to doing our part in assisting those in need. We contributed to MERCY Malaysia to support its flood relief efforts in Pakistan and offered aid through Yayasan PETRONAS to flood-prone districts throughout Malaysia.

- Contributed **RM2.5 million** to MERCY Malaysia for flood relief assistance in Pakistan.
- Delivered **5,000** care packages worth close to RM1 million through Yayasan PETRONAS to flood prone districts in Malaysia.

### SEEd.Lab Social Enterprise Programme

Through our end-to-end incubator programme, Social Enterprise Education Lab (SEEd.Lab), in partnership with Tata Consultancy Services, we tackle social pain points by building self-sustaining social enterprises that forge solutions for specific beneficiaries within communities. For the second cohort, our social enterprises address specific social challenges that exist within five domains namely Food and Agriculture, Health and Hygiene, Education and Skills, Personal and Financial Security; and Entrepreneurship in Sabah. The first of its kind in comprehensiveness in Malaysia, SEEd.Lab has enriched the lives of over 13,000 people and counting.

### Yayasan PETRONAS' festive programme

- Provided more than 11,800 families and nine welfare homes with essential food supplies and festive hampers via Yayasan PETRONAS' festive programme during major festive celebrations.

### Yayasan PETRONAS' Homeward programme

- Donated home medical equipment worth RM2.2 million to 965 beneficiaries under the Homeward programme by Yayasan PETRONAS, working with *Jabatan Kebajikan Masyarakat* (JKM) and *Jabatan Perkhidmatan Kebajikan Am Sabah* (JPKAS). The beneficiaries from 13 states and two federal territories (except Putrajaya) received 609 hospital beds, 44 oxygen concentrators and 312 wheelchairs.



## Positive Social Impact

### Environment – PETRONAS Planting Tomorrow

We recognise that achieving environmental awareness is a continuous journey that requires collective action. Therefore, we constantly work with our local communities to support environmental conservation and minimise our impact on the environment.

#### Environmental Conservation

Through Yayasan PETRONAS, we contributed towards carbon sequestration via tree planting activities. We did this by working with local communities in 11 states namely Kedah, Penang, Perak, Selangor, Kuala Lumpur, Melaka, Johor, Terengganu, Pahang, Sabah and Sarawak, where we provided them with the appropriate education, supported the setting-up of nurseries, participated in planting activities and monitored the survival of the trees. These actions help in improving the community's income levels and quality of life.

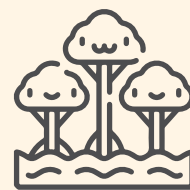
- Continued to support environmental conservation under the PETRONAS Walk4Trees Challenge, a nationwide tree-planting project. A total of 61,584 trees have been planted across 11 states since this project began in September 2020.
- Three peat swamp forests in Selangor, Sabah and Pahang were rehabilitated and irrigation control management was implemented as part of fire prevention.

We conducted the mangrove conservation programme in Johor and Terengganu. In Johor, it was carried out in support of the Johor State Government's plan to develop Sungai Johor Estuary into an ecotourism attraction by planting 14,500 mangrove trees. In Terengganu, this was part of PCG's conservation and rehabilitation awareness programme along Sungai Kertih. The programme covers more than 14,000 square metres, with over 20,000 mangrove trees planted.

#### Biodiversity efforts:

- We are also doing various conservation efforts to prevent and minimise impacts to biodiversity and the ecosystem, while restoring and rehabilitating the ecosystems surrounding where we operate.

Our Upstream business planted over 15,000 trees, including mangroves, converted shipwrecks into artificial reefs, conducted coral restoration works and deployed mini *unjam*, a fish aggregating device, to provide alternative breeding grounds for marine life, especially fish. These efforts helped improve the marine ecosystem services to ensure food security, sustainable economic and coastal livelihood development (ecotourism) and shoreline protection.



### Beach Cleaning Activities

We collaborated with several Non-Governmental Organisations (NGOs) and government ministries to clean up beaches. In Melaka, as part of our participation in World Clean-Up Day, we partnered with Solid Waste and Public Cleansing Management Corporation (SWCorp), the city council, *Majlis Bandaraya Melaka Bersejarah* (MBMB), and the state's legislative assembly development and coordination committee, *Jawatankuasa Pembangunan dan Penyelarasan Dewan Undangan Negeri* (JAPERUN).

The collaborative effort saw 100.2 kilogrammes of waste collected. In Terengganu, we collaborated with a local NGO, *Geng Plastik Ija* and the state's Department of Statistics Malaysia branch to collect 1,897 kilogrammes of waste, with 844 kilogrammes of recyclable waste materials.

Collected **100.2kg** of waste by collaborating with SWCorp, MBMB and JAPERUN in conjunction with World Clean-Up Day in Melaka.

Collected **1,897kg** of waste, including **844kg** of recyclable waste in Terengganu.

### Sea Turtle Conservation in Mexico

We contributed to conservation efforts by building a larger and more protected nesting area for endangered sea turtles, increasing hatching rates by 30 per cent since 2020. In addition, we enhanced workers' living conditions, boosting morale and performance, and provided a safer, more efficient warehouse for equipment and materials storage.

**240,891** turtles were released as compared to **294,660** in 2021.

#### Helping fishermen

- We uplift the lives of the fishermen community in Sabah, Sarawak and Terengganu with programmes tailored to their needs. These include safety awareness, educational activities focusing on the environment and contributing essential supplies and life jackets.
- The engagements, awareness sessions and outreach programmes have enhanced the community's safety awareness. This is reflected in a **60 per cent** reduction in oil rig encroachments and zero fish bombing activities.
- Additionally, the disposal of seized boats and the contribution of *unjam*, a traditional fish aggregating device, created fish breeding grounds for marine ecosystems to thrive and provided alternative fishing spots for the community

#### Clean water

- PETRONAS is positively impacting local communities in South Sudan, Sudan, Iraq and Indonesia by providing access to clean water. As a result, business and farming in South Sudan and Sudan have improved health and economic opportunities.
- PETRONAS also contributed water filters in Iraq and implemented a clean water programme in Indonesian schools, improving students' education and hygiene awareness.

#### Student Voices

The Student Voices competition provides a platform for future generations to share their ideas and solutions for some of the world's biggest challenges.

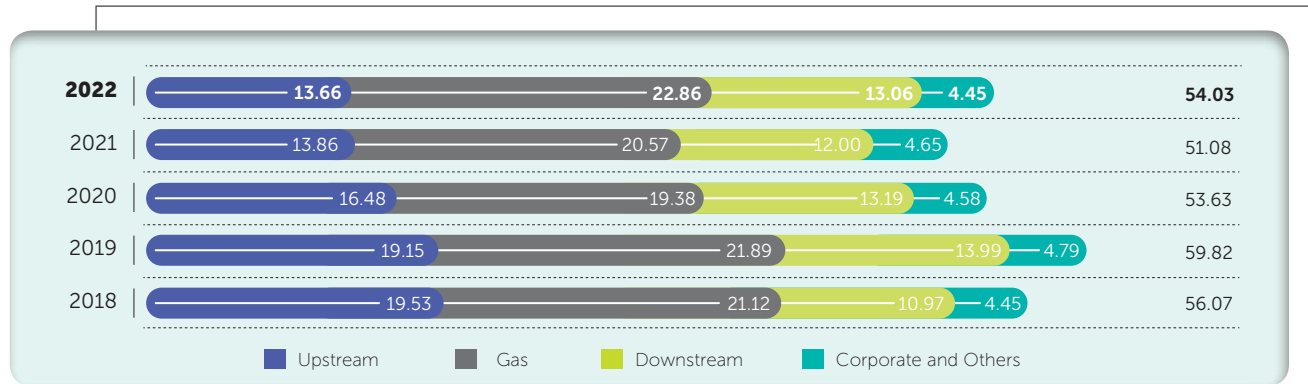
The competition aims to promote environmental protection, stronger communities and social responsibility by inspiring young contestants with educational videos on green mobility, solar energy and hydrogen. Our goal is to empower these students to become the voice for change.

In 2022, the competition saw the participation of 500 contestants from 26 schools in both online and onsite events. Since 2020, we have impacted over 200,000 beneficiaries, primarily teenagers and their families, in Shanghai and surrounding cities.

# Five-Year Sustainability Key Performance Data

## GHG Emissions – Operational Control

### Total Greenhouse Gas (GHG) Emissions Breakdown by Business (Million tCO<sub>2</sub>e)



**Note:**  
CO<sub>2</sub>e = carbon dioxide equivalent. This unit converts all other GHGs into the common denominator of CO<sub>2</sub>e using Global Warming Potential (GWP) factors following the Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment Report (AR4).

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.

Our emissions in 2022 were higher compared to 2021 due to increased operational activities along the value chain following recovery from the COVID-19 pandemic.

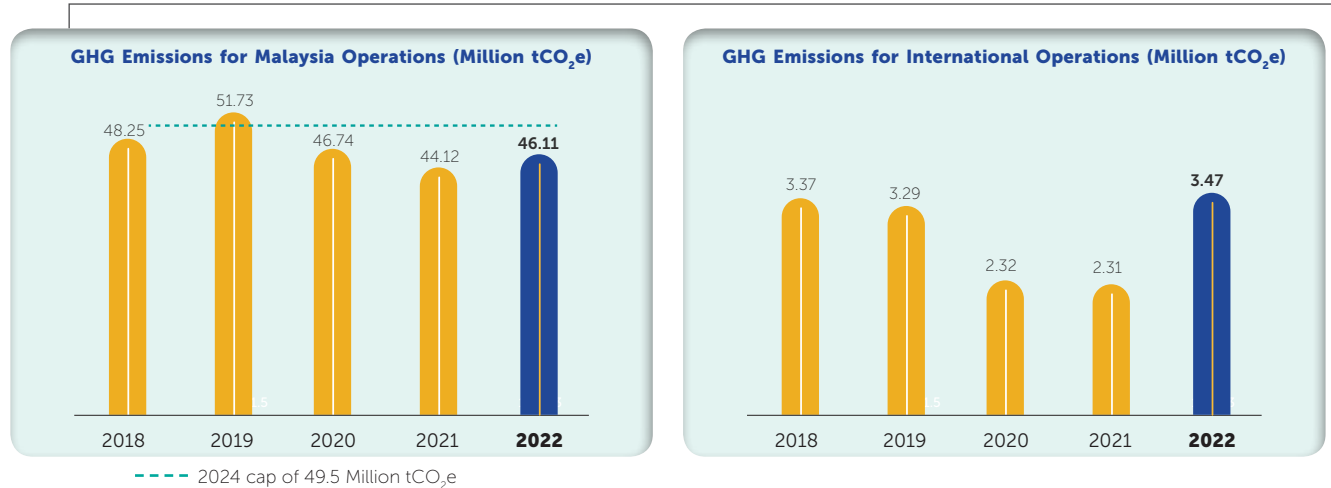
The short-term target of capping GHG emissions at 49.5 Million tCO<sub>2</sub>e by 2024, includes the oil and gas value chain where more than 90 per cent of GHG emissions are contributed by activities in Upstream, Gas and Downstream Malaysia operations excluding Corporate and Others\*\* activities. Furthermore, GHG emissions accounting for Corporate and Others require further refinements due to different organisational boundary used previously. Hence, subsequent analysis depicted below exclude Corporate and Others.

\* VESTIGO is a wholly owned subsidiary of PETRONAS Carigali Sdn Bhd, focusing on development and production activities.

\*\* Corporate and Others include MISC Group and KLCC Property Holdings.

### GHG Emissions Breakdown by Region (Million tCO<sub>2</sub>e)

(Excludes Corporate and Others)



In FY2022, total GHG emissions from Scope 1 and Scope 2 for Malaysia and International assets under operational control boundary is 49.58 Million tCO<sub>2</sub>e.

In the oil and gas value chain, GHG emissions from Gas business contributed 46 per cent, followed by 28 per cent from Upstream and 26 per cent from Downstream. 96 per cent of emissions were from Scope 1 where the sources were mainly from stationary combustion, flaring and venting. Meanwhile Scope 2 only contributed to 4 per cent of Scope 1 and 2 emissions.

GHG emissions from Malaysia operations have been showing positive improvements, as it remained below the cap of 49.5 Million tCO<sub>2</sub>e. This was contributed by ongoing investment in GHG emissions reduction efforts from FY2019 to FY2022 despite economic downturn. For international operations, total GHG emissions from Scope 1 and Scope 2 increased in FY2022 due to the increase in production from Iraq and Canada operations.

### GHG Emissions Breakdown by Scope, Gases and Sources for Operational Control

(Excludes Corporate and Others)

Key Performance Indicators	2018	2019	2020	2021	2022
GHG Emissions (Million tCO <sub>2</sub> e)	51.62	55.02	49.06	46.43	<b>49.58</b>
<b>Breakdown by Scope</b>					
Scope 1 (Million tCO <sub>2</sub> e)	49.66	53.09	47.14	44.67	<b>47.62</b>
Scope 2 (Million tCO <sub>2</sub> e)	1.96	1.93	1.92	1.76	<b>1.96</b>
<b>Breakdown by Gas (only Scope 1)</b>					
Carbon dioxide (CO <sub>2</sub> ) (million tonnes)	39.65	42.57	38.40	38.71	<b>42.15</b>
Methane (CH <sub>4</sub> ) (thousand tonnes)	394.33	413.51	343.49	232.23	<b>215.40</b>
Nitrous Oxide (N <sub>2</sub> O) (thousand tonnes)	0.53	0.62	0.54	0.59	<b>0.69</b>
<b>Breakdown by Sources (only Scope 1)</b>					
Combustion (Million tCO <sub>2</sub> e)	31.65	34.93	31.62	31.85	<b>33.53</b>
Flaring (Million tCO <sub>2</sub> e)	8.98	8.37	7.16	7.33	<b>8.33</b>
Venting (Million tCO <sub>2</sub> e)	8.28	9.20	7.53	4.81	<b>3.74</b>
Others (Million tCO <sub>2</sub> e)	0.76	0.58	0.82	0.68	<b>2.01</b>

PETRONAS uses the Global Warming Potential values from the Intergovernmental Panel on Climate Change (IPCC) 4<sup>th</sup> Assessment Report.

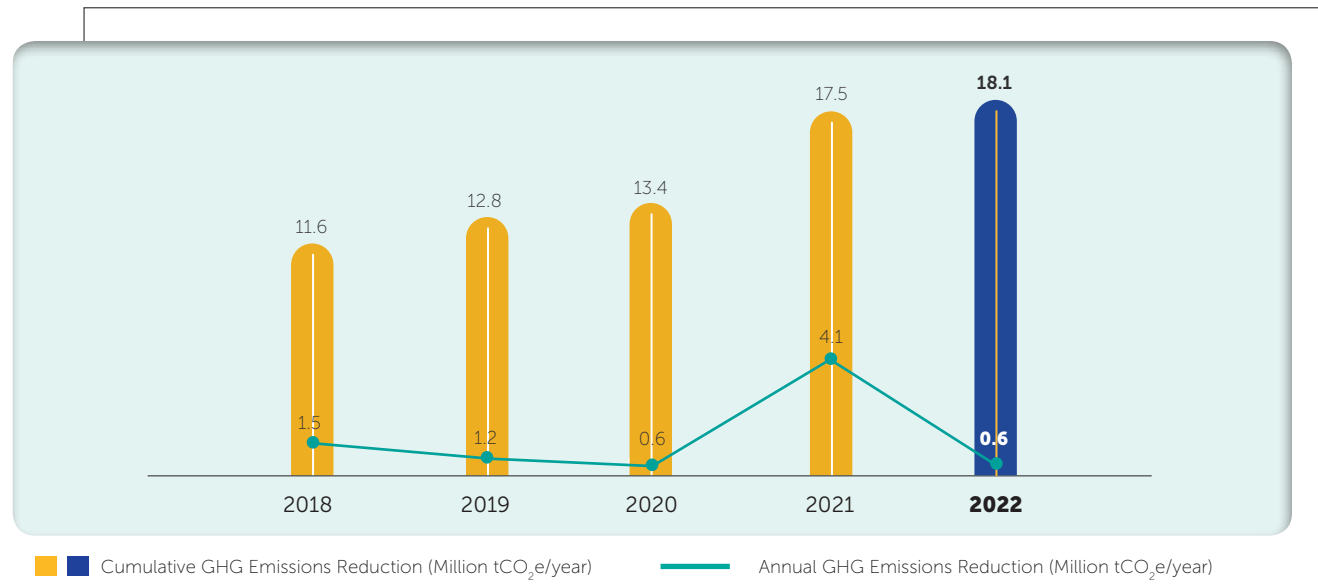
### GHG Intensity by Business Segments

	2018	2019	2020	2021	2022
<b>Upstream</b>					
Total (tCO <sub>2</sub> e/kboe)	56.75	51.39	50.30	38.93	<b>34.57</b>
Malaysia Assets (tCO <sub>2</sub> e/kboe)	75.55	65.83	65.27	47.69	<b>40.15</b>
International Assets (tCO <sub>2</sub> e/kboe)	21.07	19.28	14.99	19.47	<b>23.92</b>
<b>Downstream</b>					
Refineries (tCO <sub>2</sub> e/bbl)	0.018	0.018	0.019	0.018	<b>0.020</b>
Petrochemicals (tCO <sub>2</sub> e/tonnes)	0.68	0.68	0.66	0.67	<b>0.68</b>



## Five-Year Sustainability Key Performance Data

### GHG Emissions Reduction from Projects (Million tCO<sub>2</sub>e/year)

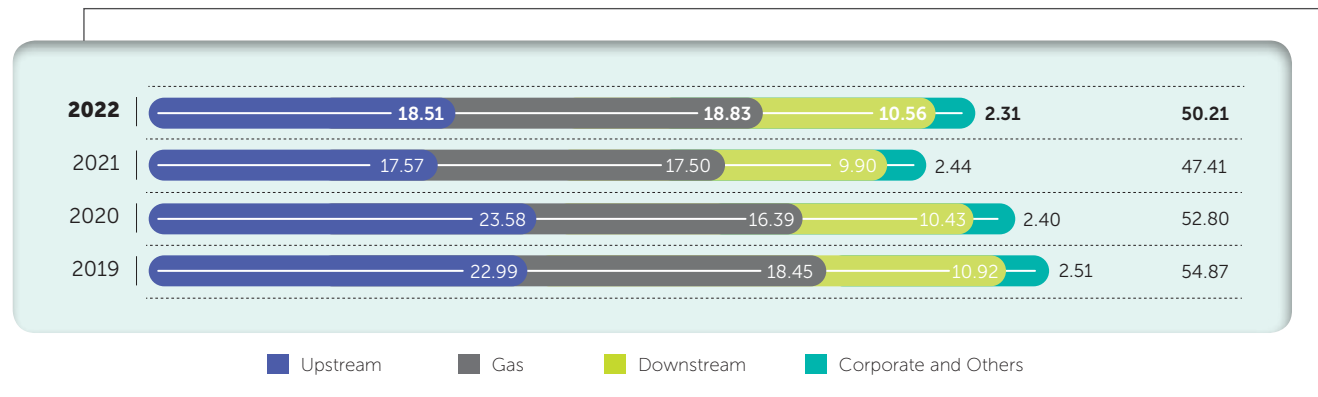


GHG emissions reduction are calculated as per ISO 14064-2: 2019 and do not reflect the year-on-year GHG emissions differences. According to ISO 14064-2, GHG projects are activities that alter the conditions of a GHG baseline and which cause GHG emissions reduction or GHG removal enhancements.

Cumulatively since 2013, we have reduced 18.1 Million tCO<sub>2</sub>e of GHG emissions from our operations. Over the years, GHG emissions reduction was achieved through flaring and venting reduction initiatives in Upstream as well as energy efficiency improvements in Gas and Downstream businesses. Moving forward, electrification and CCS efforts will contribute more to meet our short-term and mid-term targets.

### GHG Emissions – Equity Share

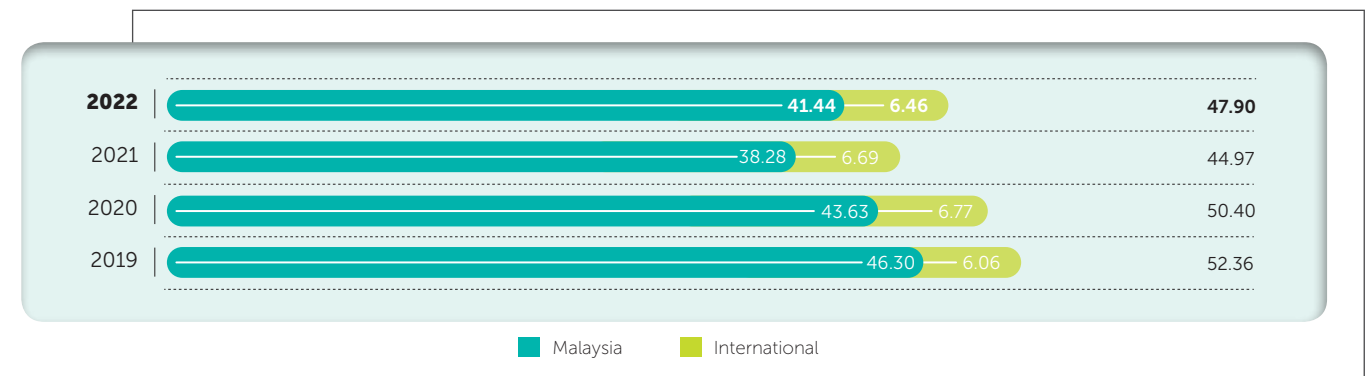
#### Total GHG Emissions Breakdown by Business (Million tCO<sub>2</sub>e)



Equity share reflects economic interest, which is the extent of rights a company has to the risks and rewards flowing from an operation. Hence, PETRONAS has set mid-term and long-term targets by referring to FY2019 as the base year on equity share approach. The GHG emissions for FY2019 is adjusted to be 54.87 Million tCO<sub>2</sub>e taking into consideration divestments and changes of equity ownership in Upstream business, as well as new information obtained from equity partners in Gas and Downstream businesses. In 2022, Gas business contributed the highest GHG emissions (37.50 per cent), followed by Upstream business (36.87 per cent), Downstream business (21.03 per cent), and Corporate and Others (4.60 per cent).

### GHG Emissions Breakdown by Region (Million tCO<sub>2</sub>e)

(Excludes Corporate and Others)



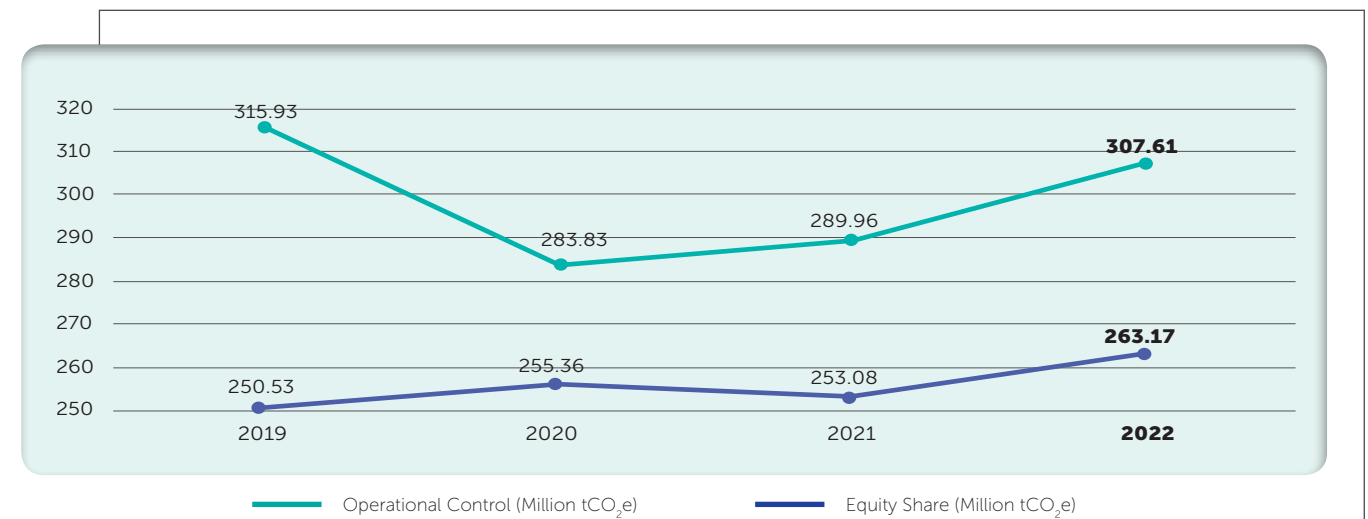
### Key Performance Indicators

(Excludes Corporate and Others)

	2019	2020	2021	2022
Total GHG Emissions (Million tCO <sub>2</sub> e)	52.36	50.40	44.97	<b>47.90</b>
- Scope 1 (Million tCO <sub>2</sub> e)	50.87	48.87	43.48	<b>46.48</b>
- Scope 2 (Million tCO <sub>2</sub> e)	1.49	1.53	1.49	<b>1.42</b>

In 2022, total GHG emissions under the Equity Share approach is 47.90 Million tCO<sub>2</sub>e, excluding Corporate and Others. A reduction of 10.50 per cent from 2019 levels was recorded for Malaysia operations, while there was an increase of 6.60 per cent for international operations from 2019 levels. This was due to the increase in upstream production as well as new investments.

### Scope 3 Category 11 (Million tCO<sub>2</sub>e) by Operational Control and Equity Share approaches



PETRONAS has 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. Under operational control and equity share approaches, Scope 3 GHG emissions show a 6.09 per cent and 3.99 per cent increase respectively compared to 2021. This is due to the increase in energy demand post-COVID 19 recovery.

## Five-Year Sustainability Key Performance Data

### Cumulative Renewable Energy Installed Capacity

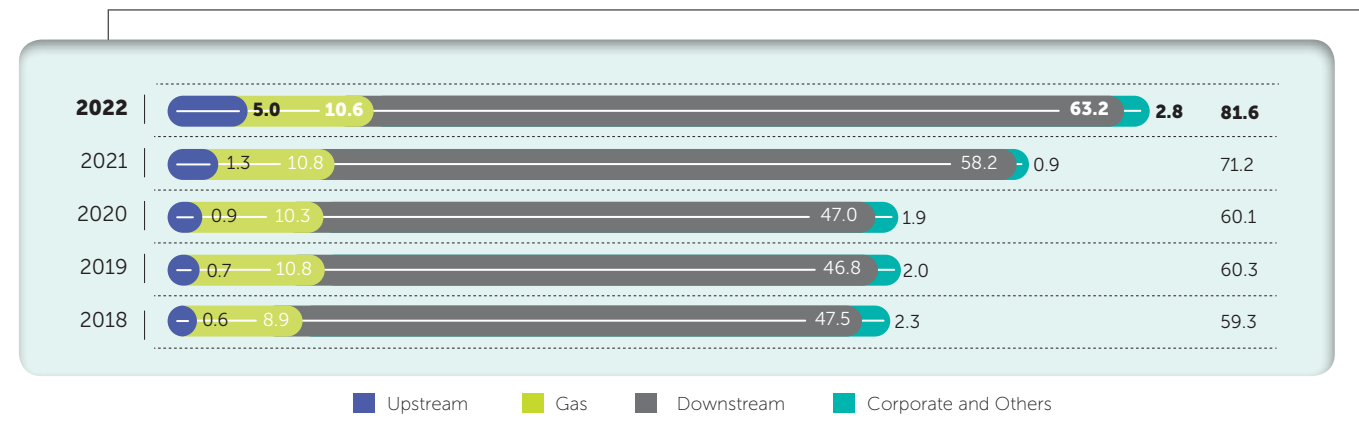
Key Performance Indicators	2018	2019	2020	2021	2022
Total Cumulative Renewable Energy Installed Capacity (megawatt)	10	10	644	851	<b>1,086*</b>
Malaysia (megawatt)	10	10	19	29	<b>81</b>
International (megawatt)	n/a	n/a	625	822	<b>1,005</b>

**Note:**  
\* Cumulative renewable energy capacity is 1.6GW, including installed and those under development.

### Environment

#### Total Freshwater Withdrawal

(million cubic metres per year)



Water	2018	2019	2020	2021	2022
Total Freshwater Withdrawal (million cubic metres per year)	59.3	60.3	60.1	71.2	<b>81.6</b>
Malaysia (million cubic metres per year)	56.4	57.0	56.8	70.2	<b>76.8</b>
International (million cubic metres per year)	2.9	3.3	3.3	1.0	<b>4.8</b>
Discharges to Water (tonnes of hydrocarbon)	715	648	532	452	<b>487</b>

Air Emissions	2018	2019	2020	2021	2022
Total Sulphur Oxides Emissions (tonnes)	113,256	110,214	84,225	47,954	<b>60,116</b>
Total Nitrogen Oxides Emissions <sup>1</sup> (tonnes)	151,519	148,446	138,035	133,962	<b>62,790</b>

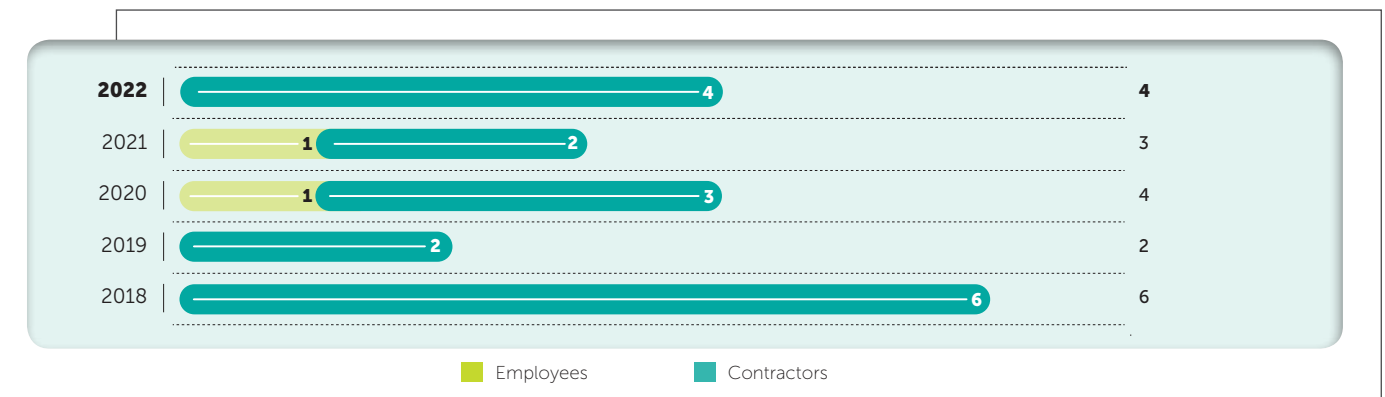
Waste	2018	2019	2020	2021	2022
Number of Hydrocarbons Spills into the Environment over One Barrel <sup>2</sup> (Number of cases)	7	7	5	2	<b>2</b>
Total Hazardous Waste Disposed (tonnes)	34,688	42,121	33,349	59,228	<b>76,485</b>

**Note:**  
<sup>1</sup> Total nitrogen oxides emissions for 2022 stood at 62,790 tonnes from 133,962 tonnes in 2021, mainly due to omission of emission load data from ships due to ongoing review of reporting method, and revision in calculation methodology for floating Liquefied Natural Gas (LNG) and power plant.  
<sup>2</sup> One barrel is equivalent to 159 litres.

### Safety

#### Number of Fatalities

(Number of cases)



Key Performance Indicators	2018	2019	2020	2021	2022
Total man-hours worked (million hours)	466	355	273	268	<b>292</b>
Employees (million hours)	130	133	120	120	<b>126</b>
Contractors (million hours)	336	222	153	148	<b>166</b>
Fatal Accident Rate (FAR) (Number per 100 million man-hours)	1.29	0.56	1.47	1.12	<b>1.37</b>
Employees (Number per 100 million man-hours)	0.00	0.00	0.00	0.00	<b>0.00</b>
Contractors (Number per 100 million man-hours)	1.79	0.90	1.96	1.35	<b>2.41</b>
Lost Time Injury Frequency (LTIF) (Number of cases per one million man-hours)	0.09	0.11	0.10	0.14	<b>0.13</b>
Employees (Number of cases per one million man-hours)	0.12	0.08	0.09	0.10	<b>0.11</b>
Contractors (Number of cases per one million man-hours)	0.08	0.12	0.11	0.17	<b>0.14</b>
Total Reportable Case Frequency (TRCF) (Number of cases per one million man-hours)	0.38	0.34	0.29	0.41	<b>0.34</b>
Employees (Number of cases per one million man-hours)	0.32	0.28	0.27	0.28	<b>0.26</b>
Contractors (Number of cases per one million man-hours)	0.41	0.37	0.31	0.52	<b>0.40</b>
Total Recordable Occupational Illness Frequency (TROIF) (Number of cases per one million man-hours – employees)	0.22	0.23	0.39	0.24	<b>0.32</b>

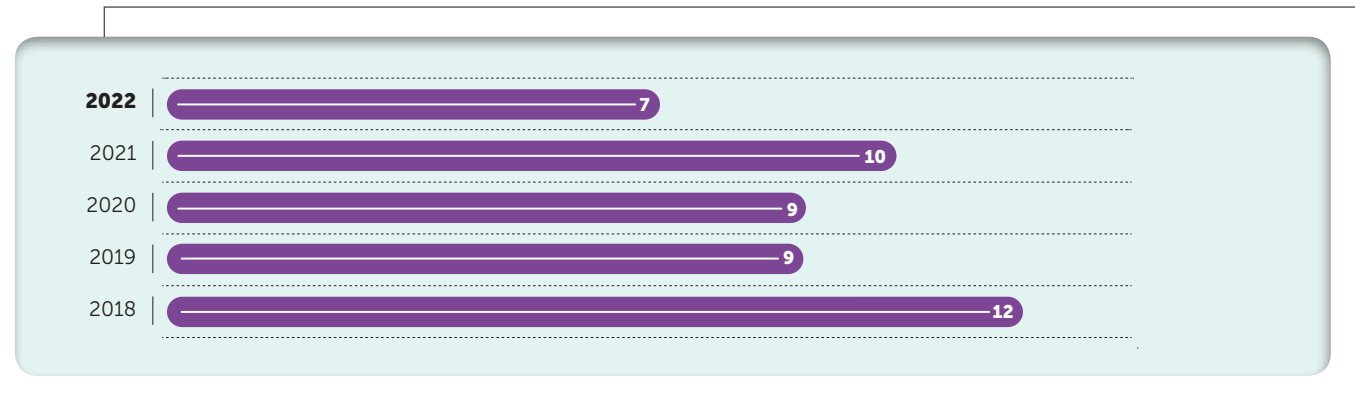
**Note:**  
The Fatal Accident Rate (FAR) and Total Reportable Case Frequency (TRCF) for 2021 was updated due to the revision in total man-hours worked.



## Five-Year Sustainability Key Performance Data

### Number of Tier 1 Process Safety Events<sup>1</sup>

(Number of cases)

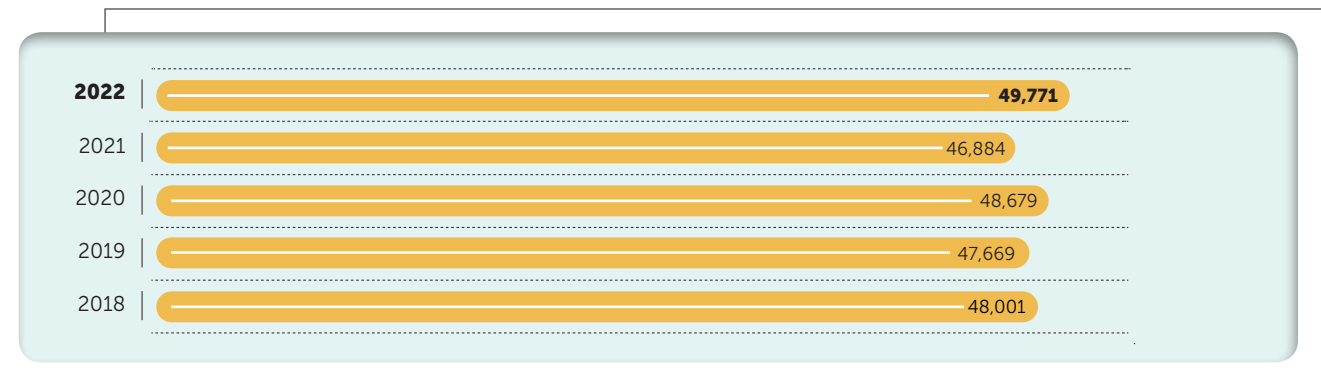


**Note:**

<sup>1</sup> A Tier 1 Process Safety Event is a Loss of Primary Containment (LOPC) with the greatest consequence as defined by API 754, Process Safety Performance Indicators for the Refining and Petrochemical Industries. It is an unplanned or uncontrolled release of any material, including nontoxic and non-flammable materials, from a process that results in one or more of the consequences as listed in the API 754.

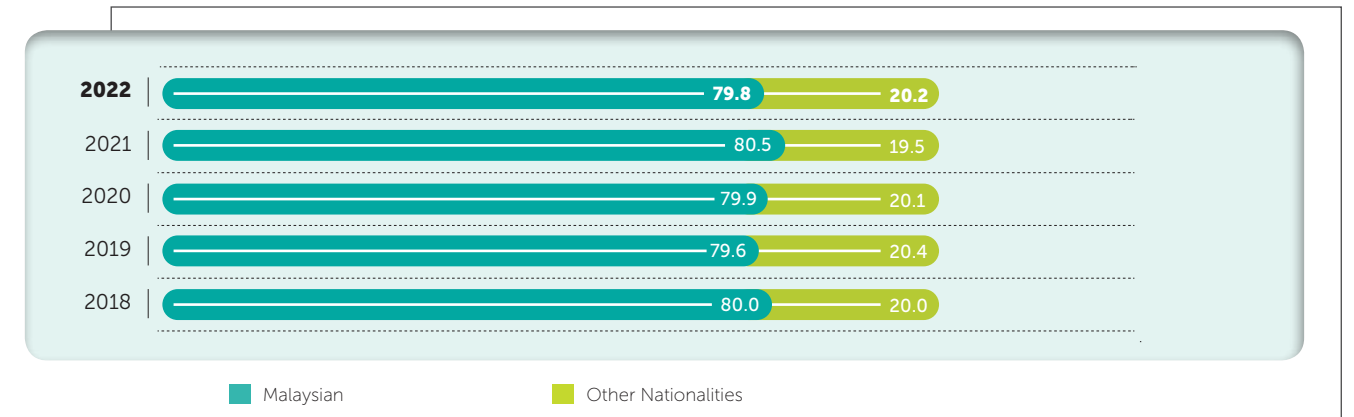
### Employees

#### Total Number of Employees

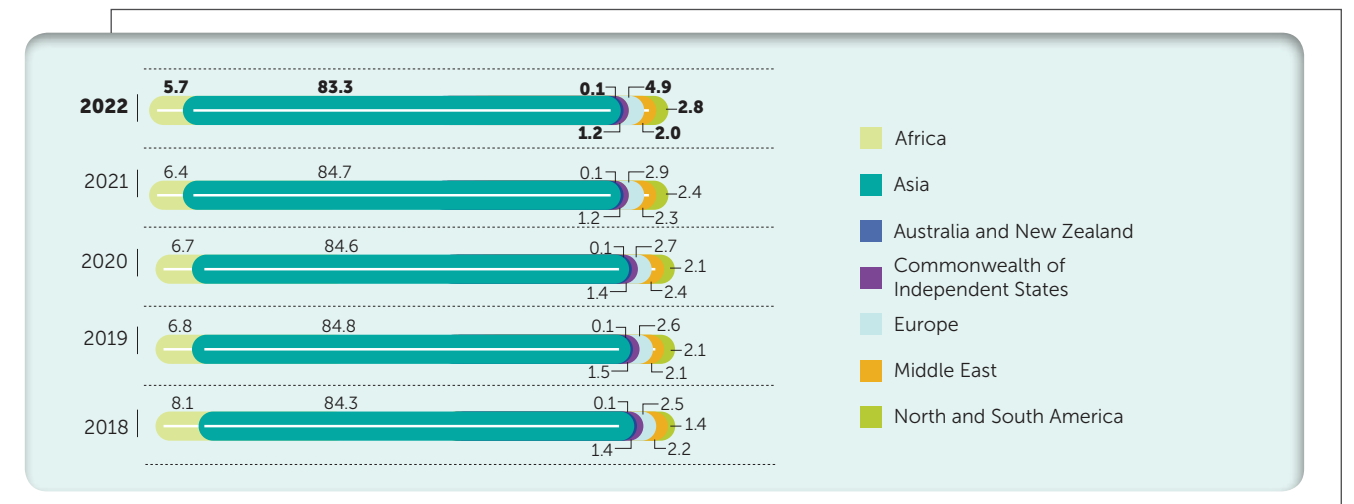


Manning for 2022 increased by 6.2 per cent as business operations started to pick up post-COVID-19 and new growth areas were pursued.

### Breakdown of Employees by Nationality (%)



### Breakdown of Employees by Region (%)



## Five-Year Sustainability Key Performance Data

### Employees

Key Performance Indicators	2018	2019	2020	2021	2022
Employment Type (%)					
Permanent	87	88	86	87	<b>88</b>
Contract	13	12	14	13	<b>12</b>
Age Group (%)					
Above 35	49	52	53	59	<b>60</b>
Below 35	51	48	47	41	<b>40</b>
Total Number of Union Members	9,949	8,420	8,476	8,353	<b>8,929</b>

**Note:**

Contract employees are given partial entitlement to benefits covering salary, leave, allowances, medical, financing and talent development.

### Gender Diversity

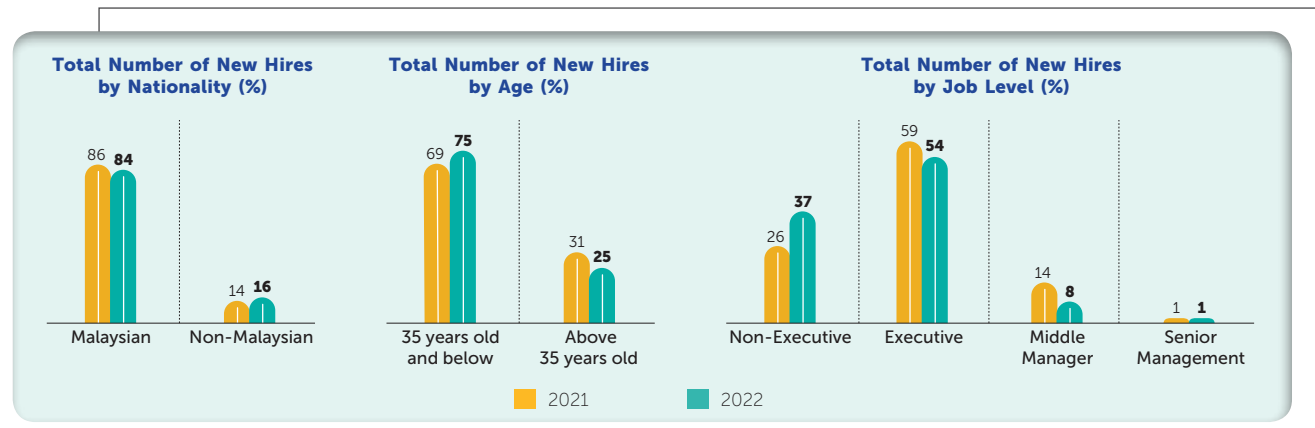
Key Performance Indicators	2018	2019	2020	2021	2022
Employees by Gender (%)					
Women	27	27	28	28	<b>29</b>
Men	73	73	72	72	<b>71</b>
Senior Management (%)					
Women	11	15	19	26	<b>22</b>
Men	89	85	81	74	<b>78</b>
Management Committee (%)					
Women	12	11	22	22	<b>22</b>
Men	88	89	78	78	<b>78</b>
Board of Directors (%)					
Women	20	14	25	30	<b>18</b>
Men	80	86	75	70	<b>82</b>
Women in Technical Positions (%)	13	14	14	14	<b>14</b>

**Notes:**

- The company continues its D&I efforts to ensure fair opportunities for management roles.
- Parental leave covers maternity and paternity leave only.
- 99% of those who took parental leave, both male and female, had returned to work.

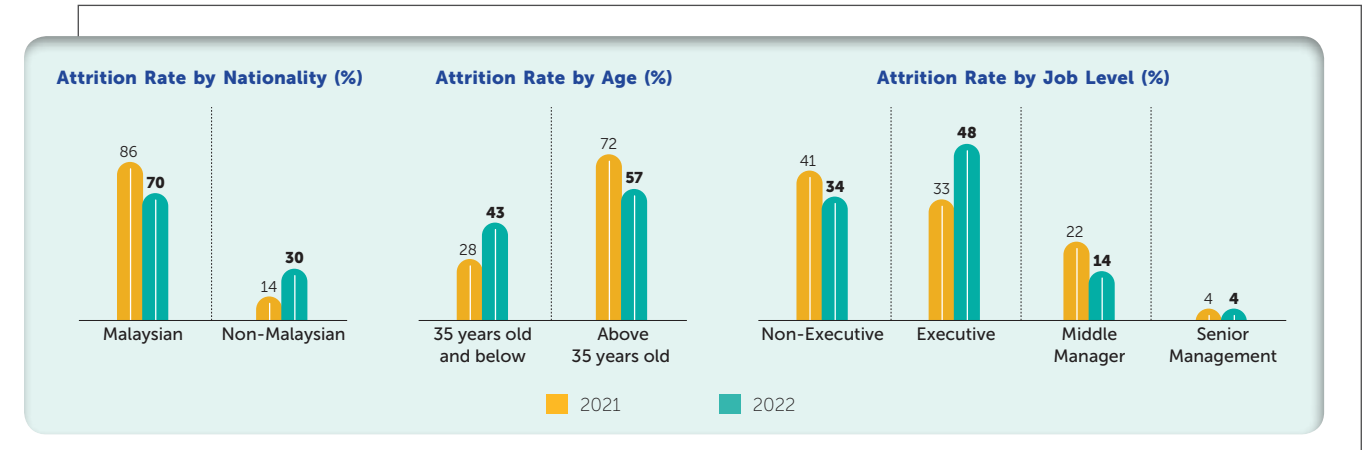
### New Hires

Key Performance Indicators	2018	2019	2020	2021	2022
Total Number of New Hires (Core businesses in Malaysia)	2,512	3,498	2,160	2,172	<b>5,210</b>
Malaysian	2,098	2,989	2,003	1,982	<b>4,358</b>
Non-Malaysian	414	509	157	190	<b>852</b>



### Employee Attrition

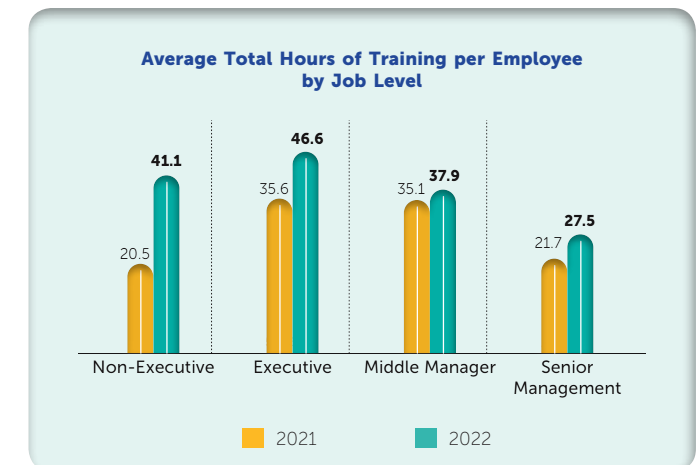
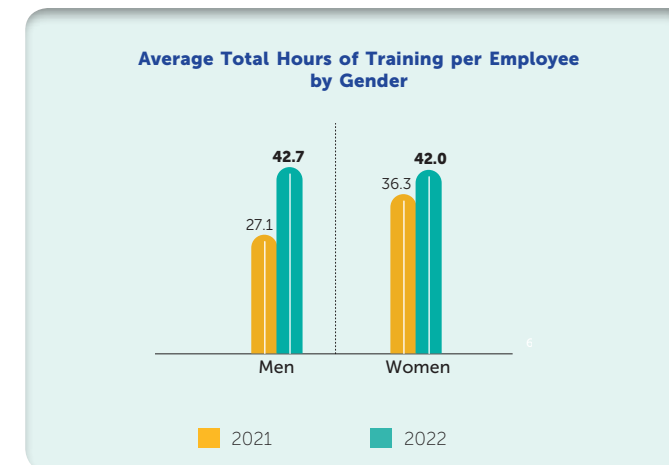
Key Performance Indicators	2018	2019	2020	2021	2022
Employee Attrition Rate (%)	6.5	5.5	4.9	8.4	<b>6.6</b>
Women	7.3	1.8	1.3	2.8	<b>1.9</b>
Men	6.2	3.7	3.6	5.7	<b>4.7</b>



## Talent and Future Pipeline

### Training and Development

Key Performance Indicators	2018	2019	2020	2021	2022
Training days per employee	7	7	5	4	<b>4.9</b>
Training investment per employee (RM)	6,649	6,543	3,588	2,386	<b>5,433</b>
Average total hours of training per employee (person hours)	52.8	53.6	36	30	<b>39.1</b>





## Five-Year Sustainability Key Performance Data

### Groupwide Technical Expertise

Key Performance Indicators	2018	2019	2020	2021	2022
Technical Authorities (TA)	577	340	501	601	<b>618</b>
Technical Professionals (TP)	941	1,028	1,173	1,281	<b>1,384</b>
Technical Trade Specialists (TTS)	225	240	259	262	<b>266</b>

### Sponsorship

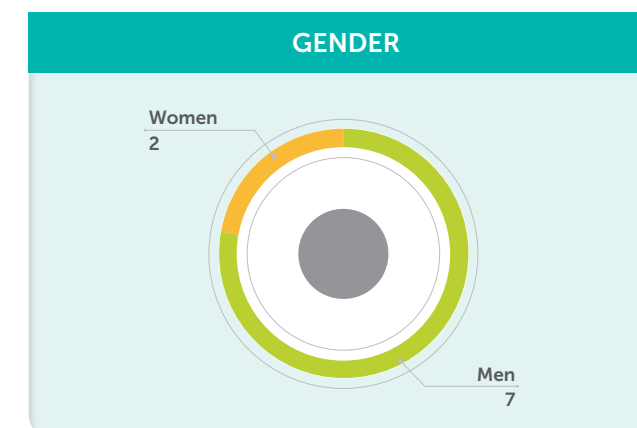
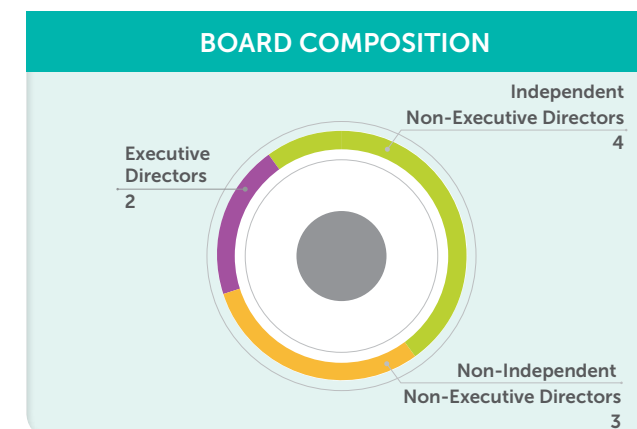
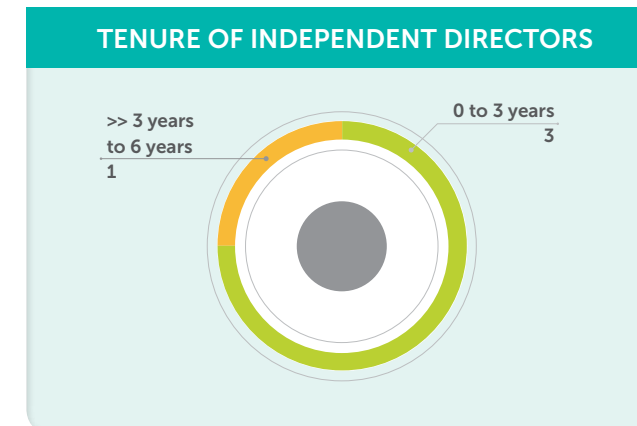
Key Performance Indicators	2018	2019	2020	2021	2022
Number of PETRONAS Scholars Recruited	262	206	219	220	<b>293</b>
Recruited by PETRONAS (%)	63	67	61	66	<b>64</b>
Recruited by Others (%)	37	33	39	34	<b>7</b>
Number of Scholarships Awarded to Malaysians	329	399	370	302	<b>587</b>
International Universities (%)	49	46	25	34	<b>34</b>
Malaysian Universities (%)	51	54	75	66	<b>66</b>
Number of Scholarships Awarded to Non-Malaysians at Universiti Teknologi PETRONAS	88	78	42	41	<b>41</b>

**Note:**  
29 per cent of PETRONAS' scholars are currently pending placement.

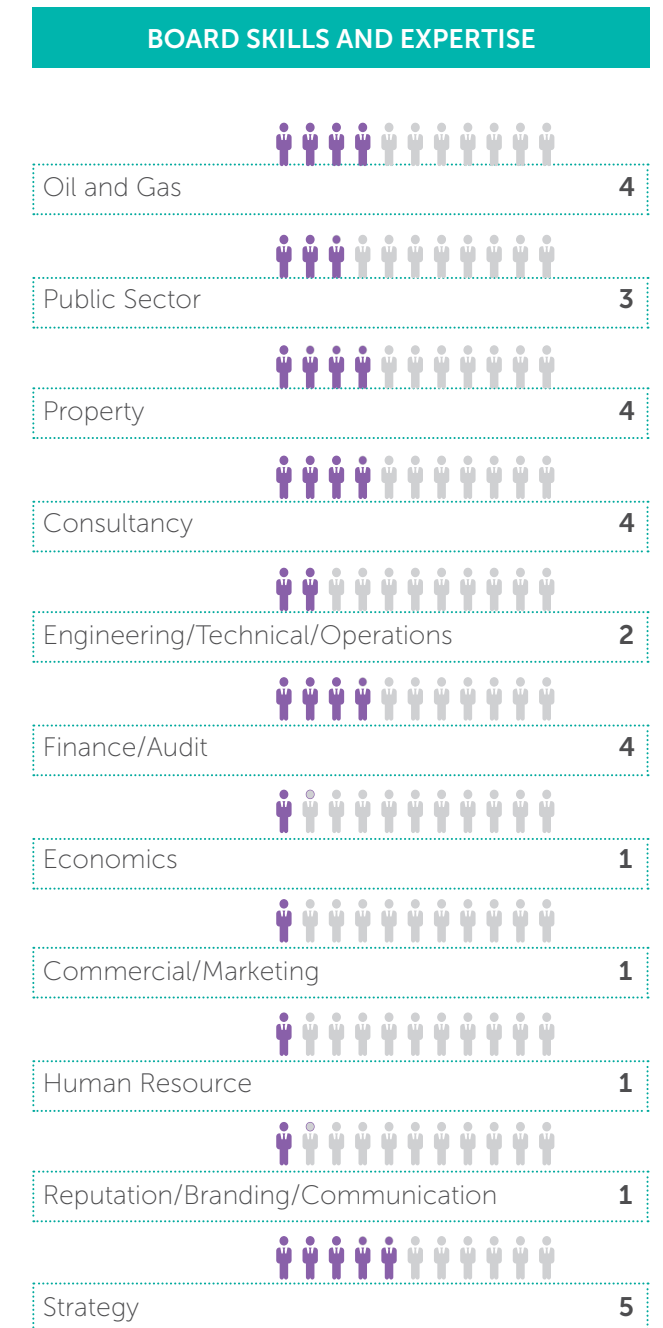
### Human Rights

Key Performance Indicators	2018	2019	2020	2021	2022
Number of security personnel trained in human rights policies or procedures	210	161	913	1,415	<b>617</b>

## Board Composition



Range (Age) In Year 2022	No. of Directors
40 - 49	1
50 - 59	1
60 - 69	5
70 - 79	2
<b>Total</b>	<b>9</b>



A Director may have more than one experience and skill. All information is as at 28 February 2023.

# Profile of Board of Directors

As of 28 February 2023

## Tan Sri Dato' Seri Mohd Bakke Salleh

Non-Independent Non-Executive Director/  
Chairman



<b>Age:</b> 68 years	<b>Gender:</b> Male	<b>Nationality:</b> Malaysian	<b>Date of appointment:</b> 18 June 2019
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### Academic/Professional Qualifications:

- Fellow of the Institute of Chartered Accountants in England and Wales
- Member of the Malaysian Institute of Accountants
- Bachelor of Science (Economics), London School of Economics, United Kingdom

### Past Appointments/Experiences:

- Held key positions in a number of Government-linked companies and local corporations:
- Chairman, Telekom Malaysia Berhad
  - Chairman, Federal Land Development Authority (FELDA)
  - Group President and Chief Executive Officer, FELDA Global Ventures Holdings Berhad
  - Group Managing Director, FELDA Holdings Berhad
  - Chairman, Yayasan FELDA
  - Executive Deputy Chairman and Managing Director, Sime Darby Plantation Berhad
  - President and Group Chief Executive, Sime Darby Berhad
  - Council Member of Yayasan Sime Darby
  - Chairman, Malaysian Palm Oil Board (MPOB)
  - Chairman, Bank Islam Malaysia Berhad
  - Non-Executive Director, Eastern & Oriental Berhad
  - Group Managing Director and Chief Executive Officer, Lembaga Tabung Haji
  - Director, Property Division of Pengurusan Danaharta Nasional Berhad
  - Managing Director, Syarikat Perumahan Pegawai Kerajaan Sdn Berhad (SPPK)
  - Group General Manager, Island & Peninsular Berhad
  - Pro Chancellor of Universiti Putra Malaysia

### Other Current Appointments:

- Chairman, Yayasan PETRONAS
- Honorary Council Member, Malaysian Palm Oil Association (MPOA)

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC** Member of Audit Committee
- RC** Member of Risk Committee
- NRC** Member of Nomination and Remuneration Committee

## Datuk Tengku Muhammad Taufik

Executive Director, President and  
Group Chief Executive Officer



<b>Age:</b> 49 years	<b>Gender:</b> Male	<b>Nationality:</b> Malaysian	<b>Date of appointment:</b> 15 October 2018
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### Academic/Professional Qualifications:

- Fellow of the Institute of Chartered Accountants in England and Wales (ICAEW)
- Member of the Malaysian Institute of Accountants (MIA)
- Bachelor of Arts (Honours) (Finance and Accounting), University of Strathclyde, United Kingdom

### Past Appointments/Experiences:

- Joined PETRONAS in 2000
- Possesses more than 23 years of experience in the oil and gas industry
- Areas of expertise include developing and steering key business strategies, organisational transformation, and financial and risk management
- Experienced in strategic planning, finance and business strategy development with a focus on the oil and gas and energy industry
- Advocate of a just and responsible energy transition by promoting regional partnership in shaping policy, innovation and technology
- Other key positions previously held within the Group:
  - Executive Vice President and Group Chief Financial Officer, PETRONAS
  - Partner at PricewaterhouseCoopers (PwC) Malaysia
  - Chief Financial Officer for two public listed companies

### Other Current Appointments:

- Chairman, Audit Committee for East Coast Economic Region Development Council (ECERDC) and Northern Corridor Implementation Authority (NCIA)
- Chairman, Gentari Board of Directors
- Chairman, National Trust Fund
- Exco Member of the World Business Council for Sustainability Development (WBCSD) appointed in January 2023
- Member of the World Economic Forum (WEF) Industry Action Group and WEF Oil and Gas Governors Forum
- Co-Chairperson of the WEF ASEAN Leaders for Just Energy Transition Community
- Council Member of ECERDC and NCIA
- Member of Board of Trustees of the Merdeka Award Trust
- Member of the Board of various PETRONAS companies
- Pro-Chancellor of Universiti Teknologi PETRONAS (UTP)

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC** Member of Audit Committee
- RC** Member of Risk Committee
- NRC** Member of Nomination and Remuneration Committee



## Profile of Board of Directors

As of 28 February 2023

### Ainul Azhar Ainul Jamal

Independent Non-Executive Director

AC NRC



**Age:** 63 years  
**Gender:** Male  
**Nationality:** Malaysian  
**Date of appointment:** 15 May 2018

#### Academic/Professional Qualifications:

- Advanced Finance, IMD Lausanne, Switzerland
- Emerging Leaders Program, Daniel Business School, University of Denver, Colorado, United States of America
- Bachelor of Electrical Engineering, University of Sussex, United Kingdom

#### Past Appointments/Experiences:

- Joined Schlumberger Limited in 1984. Spent over 32 years with Schlumberger with vast experience in oilfield services and technologies. Held various key positions around the world including:
  - Managing Director for Malaysia, Brunei, Philippines and Singapore
  - Reservoir Group HR Director
  - Treasurer of Schlumberger Foundation
  - Vice President Global Accounts
  - Chairman for Asia Pacific
- Held directorships at several private companies and was an Independent Non-Executive Director as well as Chairman of the Risk Committee at a public listed company in Malaysia.

#### Other Current Appointments:

- Chairman of Audit Committee, PETRONAS
- Member of Nomination and Remuneration Committee, PETRONAS

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC Member of Audit Committee
- RC Member of Risk Committee
- NRC Member of Nomination and Remuneration Committee

### Dato' Razali Mohd Yusof

Independent Non-Executive Director

NRC RC



**Age:** 63 years  
**Gender:** Male  
**Nationality:** Malaysian  
**Date of appointment:** 17 August 2020

#### Academic/Professional Qualifications:

- Master of Science (Engineering Management), University of Missouri, United States of America
- Bachelor of Science (Mining Engineering), University of Missouri, United States of America
- Diploma in Petroleum and Natural Gas Engineering, University of Technology, Malaysia

#### Past Appointments/Experiences:

- Held several key roles in private and multinational companies in Malaysia:
  - Managing Director, Datasonic Group Berhad
  - Managing Director, Sarku Engineering Services Sdn Bhd
  - Chairman, OMNI Petromaritime Sdn Bhd
  - Director, Marine & General Berhad
  - Project Engineer/Project Manager, Pahang Investment & Industrial Co. Ltd
  - Operations Contract Engineer and Underwater Operations Engineer, Sarawak Shell Berhad

#### Other Current Appointments:

- Chairman of Nomination and Remuneration Committee, PETRONAS
- Member of Risk Committee, PETRONAS
- Director, Intralink Properties Sdn Bhd
- Director, Urban Terrace Sdn Bhd

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC Member of Audit Committee
- RC Member of Risk Committee
- NRC Member of Nomination and Remuneration Committee

## Profile of Board of Directors

As of 28 February 2023

### Thayaparan S Sangarapillai

Independent Non-Executive Director

RC AC



**Age:** 68 years  
**Gender:** Male  
**Nationality:** Malaysian  
**Date of appointment:** 24 September 2021

#### Academic/Professional Qualifications:

- Fellow of the Institute of Chartered Accountants in England & Wales
- Member of the Malaysian Institute of Certified Public Accountants
- Chartered Accountant, Malaysian Institute of Accountants

#### Past Appointments/Experiences:

- Possess strong audit and business advisory background
- His extensive experience and wide-ranging expertise spans over 35 years in areas that include financial reporting, internal controls and Initial Public Offerings including cross border transactions
- Began his career with PricewaterhouseCoopers (PwC) in Kuala Lumpur in 1983 and retired as a Senior Partner in 2015

#### Other Current Appointments:

- Chairman of Risk Committee, PETRONAS
- Member of Audit Committee, PETRONAS
- Board Member and Chairman, Audit Committee, Axiata Group Berhad
- Chairman, Board of Robi Axiata, a subsidiary of Axiata Group Berhad
- Board Member and Chairman, Audit Committee and Member of Risk Committee, Sime Darby Berhad

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC Member of Audit Committee
- RC Member of Risk Committee
- NRC Member of Nomination and Remuneration Committee

### Datuk KY Mustafa

Non-Independent Non-Executive Director



**Age:** 72 years  
**Gender:** Male  
**Nationality:** Malaysian  
**Date of appointment:** 19 January 2022

#### Academic/Professional Qualifications:

- Bachelor of Arts in Anthropology and Sociology from the University of Malaya

#### Past Appointments/Experiences:

- Served the Sabah State Government for 33 years from 1974 to the year 2007
- Permanent Secretary to the Ministry of Infrastructure in 1996
- State Secretary to the State Government of Sabah in 2000 and held the position until his retirement in 2007
- Head of the State Public Service and Secretary to the State Cabinet
- Member of the Royal Commission of Inquiry on Immigrants in Sabah from 2012 to May 2014

#### Other Current Appointments:

- Director, Suria Capital Holdings Berhad
- Director, Sabah Ports Sdn Bhd

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC Member of Audit Committee
- RC Member of Risk Committee
- NRC Member of Nomination and Remuneration Committee



## Profile of Board of Directors

As of 28 February 2023

### YB Dato Haji Ibrahim Haji Baki

Non-Independent Non-Executive Director

RC



<b>Age:</b> 64 years	<b>Gender:</b> Male	<b>Nationality:</b> Malaysian	<b>Date of appointment:</b> 17 August 2020
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#### Academic/Professional Qualifications:

- A Barrister-at-Law and a member of Lincoln's Inn
- Honours Degree in Law

#### Past Appointments/Experiences:

- Served as City Councillor and active in social welfare and charitable organisations
- Former Executive Chairman/Shareholder, Hubline Berhad
- Director/Shareholder, Gagasan Abadi Properties Sdn Bhd
- Chairman/Shareholder, Warisan Kenyalang Sdn Bhd
- Chairman/Shareholder, IBZ Corporation Sdn Bhd
- Chairman, Layang-Layang Aerospace Sdn Bhd
- Managing Director, Gagasan Sdn Bhd
- Commission members, Registrar of Companies Malaysia (SSM)

#### Other Current Appointments:

- Member of Risk Committee, PETRONAS
- Chairman, Daya Builders Sdn Bhd Government Linked Company
- Chairman/Shareholder, Supreme Consolidated Resources Berhad
- Chairman, Redpyne Sdn Bhd
- Chairman/Shareholder, IBA Holdings Sdn Bhd
- Chairman, Lestari Asiabina Sdn Bhd
- Chairman/Shareholder of two newspapers, the New Sarawak Tribune and Suara Sarawak

#### Board Committee:

- Chairman of Committee
- Member of Committee
- Member of Audit Committee
- Member of Risk Committee
- Member of Nomination and Remuneration Committee

### Tan Sri Zaharah Ibrahim

Independent Non-Executive Director

AC NRC



<b>Age:</b> 70 years	<b>Gender:</b> Female	<b>Nationality:</b> Malaysian	<b>Date of appointment:</b> 17 August 2020
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#### Academic/Professional Qualifications:

- Bachelor of Laws (Honours) (LL.B), University Malaya

#### Past Appointments/Experiences:

- Held key positions in the Judicial and Legal Services and the Judiciary in Malaysia:
  - Magistrate in Melaka
  - Chief Judge of Malaya
  - Federal Court Judge, Federal Court, Putrajaya
  - Court of Appeal Judge, Court of Appeal, Putrajaya
  - High Court Judge, High Court of Malaya (Shah Alam and Kuala Lumpur)
  - Judicial Commissioner, High Court of Malaya (Kuala Lumpur and Shah Alam)
  - State Legal Advisor, Selangor
  - Parliamentary Draftsman, Attorney General's Chambers of Malaysia
  - Director, Intellectual Property Division, Ministry of Domestic Trade and Consumer Affairs
- Chairman, Prasarana Malaysia Berhad

#### Other Current Appointments:

- Member of Audit Committee, PETRONAS
- Member of Nomination and Remuneration Committee, PETRONAS

#### Board Committee:

- Chairman of Committee
- Member of Committee
- Member of Audit Committee
- Member of Risk Committee
- Member of Nomination and Remuneration Committee

## Profile of Board of Directors

As of 28 February 2023

### Liza Mustapha

Executive Director, Executive Vice President & Group Chief Financial Officer

<b>Age:</b> 52 years	<b>Gender:</b> Female	<b>Nationality:</b> Malaysian	<b>Date of appointment:</b> 1 June 2021
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#### Academic/Professional Qualifications:

- Fellow of the Association of Chartered Certified Accountants (FCCA)
- Advance Management Program at Harvard Business School, USA
- Member of the Malaysian Institute of Accountants
- Bachelor of Science Degree in Economics, majoring in Accounting and Finance from The London School of Economics and Political Science, University of London

#### Past Appointments/Experiences:

- Vice President, Group Procurement, Project Delivery and Technology, PETRONAS
- Chief Financial Controller, PETRONAS
- Chief Financial Officer, Upstream Business, PETRONAS
- Senior General Manager, Group Treasury, PETRONAS
- Chief Financial Officer, PETRONAS Gas Berhad

#### Other Current Appointments:

- Chairman, Energas Insurance (L) Ltd
- Director, MISC Berhad
- Director, KLCC Property Holdings Berhad
- Director, KLCC REIT Management Sdn Bhd
- Director, KLCC (Holdings) Sdn Bhd
- Director, PETRONAS Carigali Sdn Bhd
- Director, PETRONAS International Corporation Ltd
- Treasurer, Malaysian Petroleum Club

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC** Member of Audit Committee
- RC** Member of Risk Committee
- NRC** Member of Nomination and Remuneration Committee

## Profile of Company Secretaries

As of 28 February 2023

### Intan Shafinas (Tuty) Hussain

Company Secretary

<b>Age:</b> 50 years	<b>Gender:</b> Female	<b>Nationality:</b> Malaysian	<b>Date of appointment:</b> 1 June 2018
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#### Academic/Professional Qualifications:

- Certificate in Legal Practice, Legal Profession Qualifying Board, Malaysia
- Bachelor of Laws (Honours), University of Leicester, United Kingdom
- Graduate Diploma in Law, University of Western Australia, Australia
- Licensed Company Secretary

#### Past Appointments/Experiences:

- Joined PETRONAS in 2001 and has over 22 years of extensive experience in legal, corporate governance and company secretarial matters
- Previously served as the Joint Company Secretary of PETRONAS Gas Berhad and Head of Legal of PETRONAS Gas Berhad
- Other portfolios held include Legal Counsel of Legal Corporate Services, PETRONAS Chemicals Group Berhad, Corporate Services and Technology as well as Petrochemical Business of PETRONAS

#### Other Current Appointments:

- Head, Group Secretarial and Board Governance, PETRONAS
- Director, Malaysia Jet Services Sdn Bhd

#### Board Committee:

- Chairman of Committee
- Member of Committee
- AC** Member of Audit Committee
- RC** Member of Risk Committee
- NRC** Member of Nomination and Remuneration Committee



## Profile of Company Secretaries

As of 28 February 2023

### Nur Ashikin Khalid

Company Secretary

<b>Age:</b> 50 years	<b>Gender:</b> Female	<b>Nationality:</b> Malaysian	<b>Date of appointment:</b> 28 October 2021
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#### Academic/Professional Qualifications:

- Master of Laws in Legal Aspects of Marine Affairs, University of Wales, Cardiff, United Kingdom
- Bachelor of Laws (Honours), University of Wales, Cardiff, United Kingdom
- Licensed Company Secretary

#### Past Appointments/Experiences:

- Joined PETRONAS in 1996
- Has more than 25 years of experience in the fields of legal, company secretarial and corporate governance
- Previously served as Head of Legal and Company Secretary of PETRONAS Dagangan Berhad
- Other portfolios held include Head of Legal for the MLNG Group of Companies, Legal Counsel for PETRONAS Gas Berhad and Head of Gas Management in Legal Upstream, Group Legal

#### Other Current Appointments:

- Head, Secretarial & Governance, Group Secretarial and Board Governance, PETRONAS
- Secretary, PETRONAS Executive Leadership Team



#### Board Committee:

- |                       |                           |                          |   |
|-----------------------|---------------------------|--------------------------|---|
| Chairman of Committee | Member of Audit Committee | Member of Risk Committee | Member of Nomination and Remuneration Committee |
| Member of Committee   |                           |                          |   |

## Profile of Executive Leadership Team

As of 28 February 2023



**Datuk Tengku Muhammad Taufik**  
President and Group Chief Executive Officer

Age: 49  
Gender: Male

Nationality: Malaysian  
Date of Appointment: 15 October 2018

#### Academic/Professional Qualifications:

- Fellow of the Institute of Chartered Accountants in England and Wales (ICAEW)
- Member of the Malaysian Institute of Accountants (MIA)
- Bachelor of Arts (Honours) (Finance and Accounting), University of Strathclyde, United Kingdom

#### Past Appointments/Experiences:

- Joined PETRONAS in 2000
- Possesses more than 23 years of experience in the oil and gas industry
- Areas of expertise include developing and steering key business strategies, organisational transformation, and financial and risk management
- Experienced in strategic planning, finance, and business strategy development with a focus on the oil and gas and energy industry
- Advocate of a just and responsible energy transition by promoting regional partnership in shaping policy, innovation and technology
- Other key positions previously held within the Group:
  - Executive Vice President and Group Chief Financial Officer, PETRONAS
  - Partner at PricewaterhouseCoopers (PwC) Malaysia
  - Chief Financial Officer for two public listed companies

#### Other Current Appointments:

- Chairman of Audit Committee for East Coast Economic Region Development Council (ECERDC) and Northern Corridor Implementation Authority (NCIA)
- Chairman of Gentari Board of Directors
- Chairman of National Trust Fund
- Exco Member of the World Business Council for Sustainability Development (WBCSD) appointed in January 2023
- Member of the World Economic Forum (WEF) Industry Action Group and WEF Oil and Gas Governors Forum
- Co-Chairperson of the WEF ASEAN Leaders for Just Energy Transition Community
- Council Member of ECERDC and NCIA
- Member of Board of Trustees of the Merdeka Award Trust
- Member of the Board of various PETRONAS companies
- Pro-Chancellor of Universiti Teknologi PETRONAS (UTP)

## Profile of Executive Leadership Team

As of 28 February 2023



**Adnan Zainol Abidin**  
Chief Operating Officer and  
Executive Vice President and  
Chief Executive Officer, Gas

Age: 61  
Gender: Male  
Nationality: Malaysian  
Date of appointment as Chief Operating Officer: 1 February 2022  
Date of appointment as EVP & CEO, Gas: 1 April 2019

### Academic/Professional Qualifications:

- Bachelor of Science in Chemical Engineering, University of Leeds, United Kingdom

### Past Appointments/Experiences:

- Joined PETRONAS in 1984
- Possesses more than 38 years of experience in the oil and gas industry
- Other key positions previously held within the Group:
  - Executive Vice President & Chief Executive Officer Gas & New Energy
  - Senior Vice President, Project Delivery and Technology
  - Vice President, LNG Assets
  - Vice President, Global LNG Projects

### Other Current Appointments:

- Chairman, PETRONAS Gas Berhad
- Chairman, Malaysia LNG Sdn Bhd
- Chairman, Malaysia LNG Dua Sdn Bhd
- Chairman, Malaysia LNG Tiga Sdn Bhd
- Chairman, Malaysia LNG 9 Sdn Bhd
- Chairman, PETRONAS LNG Sdn Bhd
- Chairman, PETRONAS Canada LNG Limited
- Chairman, PETRONAS Refinery and Petrochemical Sdn Bhd
- Director, PETRONAS Carigali Sdn Bhd
- Director, PETRONAS International Corporation Ltd
- Director, LNG Canada Development Inc
- Co-Chairman, Self Regulation Policy Directive Council with DOSH, Malaysia



**Liza Mustapha**  
Executive Vice President  
and Group Chief Financial  
Officer

Age: 52  
Gender: Female  
Nationality: Malaysian  
Date of Appointment: 1 June 2021

### Academic/Professional Qualifications:

- Fellow of the Association of Chartered Certified Accountants (FCCA)
- Advance Management Program at Harvard Business School, USA
- Member of the Malaysian Institute of Accountants
- Bachelor of Science Degree in Economics, majoring in Accounting and Finance from The London School of Economics and Political Science, University of London

### Past Appointments/Experiences:

- Joined PETRONAS in 1995
- Possesses more than 28 years of experience in the oil and gas industry
- Other key positions previously held within the Group:
  - Vice President, Group Procurement, Project Delivery and Technology, PETRONAS
  - Chief Financial Controller, PETRONAS
  - Chief Financial Officer, Upstream Business, PETRONAS
  - Senior General Manager, Group Treasury, PETRONAS
  - Chief Financial Officer, PETRONAS Gas Berhad

### Other Current Appointments:

- Chairman, Energas Insurance (L) Ltd
- Director, MISC Berhad
- Director, KLCC Property Holdings Berhad
- Director, KLCC REIT Management Sdn Bhd
- Director, KLCC (Holdings) Sdn Bhd
- Director, PETRONAS Carigali Sdn Bhd
- Director, PETRONAS International Corporation Ltd
- Treasurer, Malaysian Petroleum Club



**Datuk Adif Zulkifli**  
Executive Vice President and  
Chief Executive Officer,  
Upstream

Age: 52  
Gender: Male  
Nationality: Malaysian  
Date of Appointment: 1 April 2019

### Academic/Professional Qualifications:

- Bachelor of Science (Honours) in Petroleum Engineering, Colorado School of Mines
- Master of Business Administration, Kellogg School of Management, Northwestern University

### Past Appointments/Experiences:

- Joined PETRONAS in 1993
- Has almost 31 years of experience in the oil and gas industry in the fields of petroleum engineering, operations, strategic planning, corporate transformation, petroleum economics mergers and acquisitions, and business development
- Other key positions previously held within the Group:
  - Chairman, PETRONAS Gas Berhad
  - Chairman, PETRONAS Research Fund
  - Executive Vice President, Gas & New Energy
  - Senior Vice President, Development and Production Upstream Business
  - Senior Vice President, Corporate Strategy
  - Vice President, Malaysia Petroleum Management
  - Head, Strategy and New Ventures Division in Exploration and Production Business

### Other Current Appointments:

- Chairman, PETRONAS Energy Canada Ltd
- Director, PETRONAS Carigali Sdn Bhd
- Director, PETRONAS International Corporation Ltd
- Trustee of the Abandonment Cess Fund
- Chairman of the Society of Petroleum Engineers, Asia Pacific Advisory Council
- Chairman, International Petroleum Technology Conference Board of Directors
- Advisory Committee Member of the Offshore Technology Conference Asia (Kuala Lumpur) 2022



**Datuk Sazali Hamzah**  
Executive Vice President and  
Chief Executive Officer,  
Downstream

Age: 56  
Gender: Male  
Nationality: Malaysian  
Date of appointment: 1 January 2022

### Academic/Professional Qualifications:

- Chartered Fellow of the Institution of Chemical Engineers (ICChemE)
- Bachelor of Chemicals Engineering, Lamar University, United States of America
- Advanced Management Programme, The Wharton School, University of Pennsylvania, United States of America
- Senior Management Programme, London Business School, London, United Kingdom

### Past Appointments/Experiences:

- Joined PETRONAS in 1990
- Has 33 years of experience in the oil and gas industry in the fields of petroleum refining, petrochemicals, technical and engineering services and project delivery
- Other key positions previously held within the Group:
  - Senior Vice President and Managing Director/Chief Executive Officer of PETRONAS Chemicals Group Berhad
  - Managing Director/Chief Executive Officer of Malaysia Refining Company Sdn Bhd
  - Managing Director/Chief Executive Officer of PETRONAS Technical Sdn Bhd
  - Head of Group Project Management and Delivery, PETRONAS
  - Head of PETRONAS Group Technical Services
  - Various senior management positions in the refinery and petrochemical business within PETRONAS

### Other Current Appointments:

- Chairman, Pengerang Refining Company Sdn Bhd
- Chairman, Pengerang Petrochemical Company Sdn Bhd
- Chairman, PETRONAS Marketing International Sdn Bhd
- Director, PETRONAS Dagangan Berhad
- Director, PETRONAS Chemicals Group Berhad
- Director, PETRONAS Refinery and Petrochemicals Corporation Sdn Bhd
- Director, PETRONAS Carigali Sdn Bhd
- Director, PETRONAS International Corporation Ltd
- Member of the International Advisory Panel for C-THRU Research Project



## Profile of Executive Leadership Team

As of 28 February 2023



**Mazuin Ismail**  
Senior Vice President,  
Corporate Strategy

Age: 55  
Gender: Male  
Nationality: Malaysian  
Date of appointment: 16 April 2016

### Academic/Professional Qualifications:

- Master of Business Administration (Advance), University of Adelaide, Australia
- Bachelor of Science (Civil and Structural Engineering), University of Bradford, United Kingdom

### Past Appointments/Experiences:

- Joined PETRONAS in 1991
- Has more than 30 years of experience in PETRONAS covering project execution and engineering, internal audit, governance, and business development. He had also held leadership roles in petroleum management, strategic planning and change management
- Other key positions previously held within the Group:
  - Senior Vice President, Project Delivery and Technology
  - Vice President of Technical Global (PETRONAS)

### Other Current Appointments:

- Chairman, PETRONAS Digital Sdn Bhd
- Chairman, Petroleum Research Fund
- Chairman, International Conference and Exhibition Professionals (iCEP)
- Director, Malaysian Industry – Government Group for High Technology (MIGHT)
- Director, Institute of Technology PETRONAS Sdn Bhd
- Director, PETRONAS Carigali Sdn Bhd
- Director, PETRONAS International Corporation Ltd
- Director, PTV International Ventures Ltd



**Datuk Bacho Pilong @ Pelu**  
Senior Vice President,  
Project Delivery and  
Technology

Age: 58  
Gender: Male  
Nationality: Malaysian  
Date of appointment: 1 August 2021

### Academic/Professional Qualifications:

- Bachelor of Chemical Engineering from Cockrell School of Engineering, University of Texas, Austin, USA
- Senior Management Development Program, INSEAD, Singapore
- Advanced Management Program, AMP 65, The Wharton School, University of Pennsylvania

### Past Appointments/Experiences:

- Joined PETRONAS in 1992
- Possesses more than 32 years of experience in the oil and gas industry
- Other key positions previously held within the Group:
  - VP Malaysia Assets, Upstream
  - VP International Assets, Upstream
  - SGM, Petroleum Operations Management, Malaysia Petroleum Management, Upstream
  - Head, Special Projects, Corporate Strategic Planning
  - President, Sudd Petroleum Operating Company (SPOC)
  - President, White Nile Petroleum Operating Company (WNPOC)
  - General Manager, Exploration & Production, Greater Nile Petroleum Operating Company (GNPOC)
  - General Manager, PETRONAS Carigali Sdn Bhd – Sarawak Operations

### Other Current Appointments:

- Chairman, PETRONAS Research Sdn Bhd
- Chairman, PETRONAS Technical Services Sdn Bhd
- Chairman, Institute of Technology PETRONAS Sdn Bhd
- Director, PETRONAS LNG 9 Sdn Bhd
- Director, UTP Future Tech Sdn Bhd
- Board of Trustees, Dana Asy-Syakirin
- Board of Trustees, Petroleum Research Fund



**Razman Hashim**  
Senior Vice President,  
Group Legal and  
Group General Counsel

Age: 49  
Gender: Male  
Nationality: Malaysian  
Date of Appointment: 1 July 2021

### Academic/Professional Qualifications:

- Bachelor of Laws and Shariah from International Islamic University Malaysia
- Licensed Company Secretary

### Past Appointments/Experiences:

- Joined PETRONAS in 1998
- Has more than 25 years of experience in the legal and secretarial fields
- Other key positions previously held within the Group:
  - Head of Legal Upstream
  - General Counsel, Legal Upstream International, Legal Upstream
  - Company secretary to PETRONAS Carigali Sdn Bhd and PETRONAS International Corporation Ltd
  - Directors of various entities within Upstream business
  - Member of Joint Management Committee of Garraf Operations, Iraq

### Other Current Appointments:

- CEO@Kulliyah, Ahmad Ibrahim Kulliyah of Laws, International Islamic University Malaysia
- Director, KLCC (Holdings) Sdn Bhd



**Farehana Hanapiah**  
Senior Vice President,  
Group Human Resource  
Management

Age: 55  
Gender: Female  
Nationality: Malaysian  
Date of appointment: 1 January 2020

### Academic/Professional Qualifications:

- Bachelor of Commerce and Administration (Accountancy), Victoria University of Wellington, New Zealand
- Advanced Management Programme, Harvard Business School

### Past Appointments/Experiences:

- Joined PETRONAS in 1990
- Has more than 32 years of experience in various leadership roles such as internal audit, corporate strategy, planning & risk, commercial & joint venture management, and human resource management
- Other key positions previously held within the Group:
  - General Manager, Strategic Planning
  - Head, Commercial Development & JV Formation of Refinery & Petrochemical Integrated Development (RAPID)
  - Head, Human Capital Expertise, Group HRM
  - Chief Executive Officer, PETRONAS Management Training Sdn Bhd

### Other Current Appointments:

- Chairman, PETRONAS Management Training Sdn Bhd
- Chairman, PETRONAS Technical Training Sdn Bhd
- Chairman, Dana Asy-Syakirin
- Chairman, PETRONAS Sponsorship Loan Fund
- Director, Institute of Technology PETRONAS Sdn Bhd
- Director, PETRONAS Digital Sdn Bhd
- Director, PETRONAS Lubricants International Sdn Bhd (Chairman of Nomination & Remuneration Committee)
- Director, PETRONAS Chemicals Group Berhad
- Executive Steering Committee of the International Association of Oil & Gas Producers (IOGP) Energy Workforce of Future Taskforce Group
- Global HR Council of the Conference Board
- Commissioner of the Business Commission to Tackle Inequality (BCTI) under World Business Council for Sustainable Development's (WBCSD)

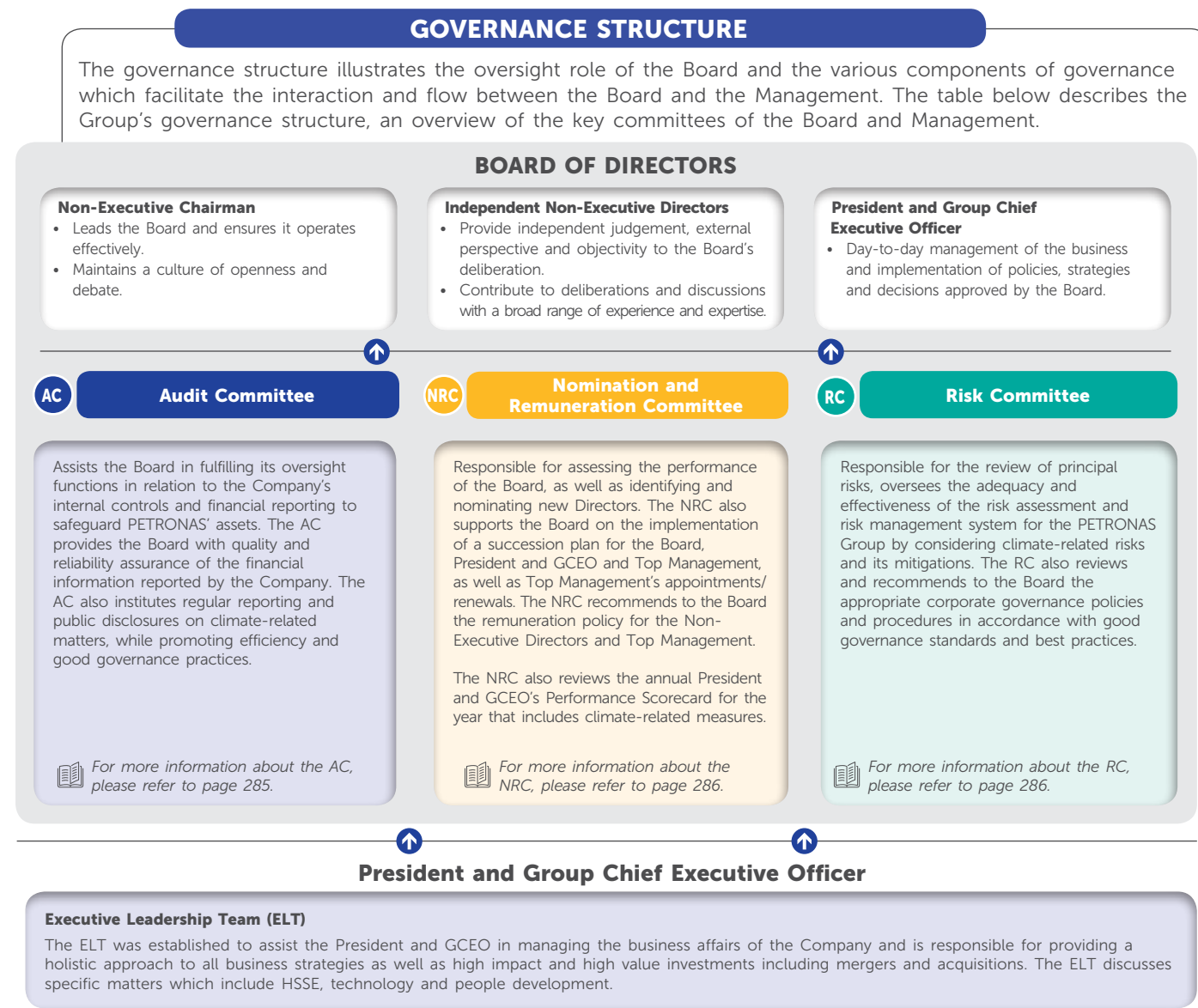
# Corporate Governance at PETRONAS

## Board Governance and Structure

PETRONAS has resolutely demonstrated a progressive and resilient performance despite the challenging global business environment. The COVID-19 pandemic has caused a significant economic contraction, putting corporate governance practices of organisations worldwide to the test. PETRONAS, has remained resilient in its commitment to apply the best corporate governance principles across the Group.

Corporate governance plays a crucial role in promoting sustainability by providing the necessary framework for accountability, transparency and structure within the Group. In building a sustainable business, the Board is fully aware of its responsibility towards its shareholders and stakeholders. The Board firmly upholds effective leadership and unwavering ethical standards by providing the framework which serves as a basis for sustainable decision-making.

PETRONAS is led by a Board whose Directors are collectively responsible for creating and delivering long-term sustainable value for the business. A key responsibility of the Board is to balance the interests of the Group and our stakeholders including employees and the wider communities we serve. Our governance structure ensures role clarity by clearly delineating roles and areas of accountability and recognises the independent roles and duties required to effectively govern the Company. The governance structure aims to promote strategic alignment across the Group whilst facilitating efficient decision-making at all levels.



### Board Leadership

The Board provides effective stewardship and is responsible for the Group's strategic direction and control of the Company. The Board exercises this control by way of a governance framework, effective delegation, risk management and a system of assurances regarding financial reporting and internal controls. The Board is accountable to its shareholders and towards a wider range of stakeholders such as employees, suppliers, community and the authorities.

Each Director has the duty to act in good faith and in the best interest of the Company. In discharging its roles and duties effectively, the Board is guided by the Board Charter, a document which sets out the authority, responsibilities and operations of the Board.

The differing roles of the Chairman and the President and GCEO are acknowledged and provided for in the Board Charter. The Chairman of the Board is not a member of any of the Board Committees.

The Board exercises collective oversight at all times. In delegating its authority to the Board Committees, the Board does not abdicate its responsibilities. The Board further ensures that such delegation does not hinder or reduce the Board's ability to discharge its functions. In this regard, the Board clearly sets out the division of responsibilities in the respective Terms of Reference (TOR) of the Board Committees.

Together with Management, the Board upholds good corporate governance culture within the Company by ensuring ethical leadership, prudence and professional behaviour in the conduct of its business and in all aspects of its operations.

### How the Board Functions

The Board meets regularly, and additional meetings are arranged as and when circumstances dictate. Each meeting is conducted in accordance with a formal and structured agenda and Board papers are circulated on time to ensure that Directors are well-informed and that debates and decisions are constructive and robust.

Access to Board papers by the Board members is carried out online through a collaborative software, with the aim of enhancing the efficiency of the Board process. Going digital allows the Directors to access, read and review the Board papers, as well as enables the Board members to confer with each other and with the Company Secretaries, electronically. Board Papers and presentations by the Management to the Board are prepared and delivered in a manner that ensures clarity and provide sufficient understanding of the subject matter.

In 2022, the Board met on 23 occasions of which almost all meetings were conducted physically. Although the quorum for the Board meeting is two, majority of the Board meetings were attended by all Directors.

Each Director has full access to the services of the Company Secretaries, who play an advisory role to the Board by providing guidance on corporate governance, ethical business practices, compliance to the Company's Constitution, policies and procedures and the relevant regulatory requirements, guidelines and legislation.

The Board may from time to time and if deemed appropriate, consider and approve urgent matters via Directors' circular resolution. All circular resolutions passed by the Board are tabled at the next Board meeting for notation.

The Board practises active and open discussions at its meetings so as to ensure that opportunities are given to all Directors to participate and contribute to the decision-making process. Robust discussions and vigorous deliberations at the Board meetings ensure that the process of effective and healthy dialogue is achieved.

The respective Chairmen of the Audit Committee, Nomination and Remuneration Committee and Risk Committee provide regular updates to the Board subsequent to the proceedings of their respective Committee meetings.

All proceedings of Board meetings are duly minuted, confirmed and signed. Minutes of each Board meeting accurately reflect the deliberations and decisions of the Board, including any dissenting views and if any Director had abstained from voting or deliberating on a particular matter. Minutes of the Board meetings are properly kept by the Company Secretary.

### Matters Reserved for the Board

The Board has an approved and documented schedule of matters reserved for its decision as follows:

- Strategy and Management** – Strategy, policies, annual budgets and major investment decisions which include capital projects, mergers and acquisitions and funding requirements.
- Financial, Governance and Risk** – Financial reporting and control, and risk management.
- Corporate Matters** – Reputation and stakeholder management, Health, Safety, Security and Environment (HSSE), Board and Board Committees' memberships, Directors' remuneration and succession planning.



## Corporate Governance at PETRONAS

### The Board's 2022 Key Focus Areas and Priorities

Key Focus Areas	Description
<b>Strategy</b>	
Group's Strategic Initiatives and Plans	The Board deliberated on long-term strategic options and provided relevant feedback and steer.
Group's Business Plan and Budget	The Board deliberated and approved the Company's business plan. The Company's strategic targets, operational plan and financial forecasts were presented to the Board for their deliberation. The Board deliberated the risks as well as potential challenges, both external and internal, towards achieving the business plan. The Board considered and approved the budget necessary to carry out the business plan.
<b>Financial</b>	
Group's Performance on Quarterly Basis	The Board was updated on the performance against the business performance targets on quarterly basis. Performance was measured and tracked against approved KPIs.
Dividends	The Board considered and approved the proposal on declaration of dividends.
<b>Risk and Internal Controls</b>	
Enterprise Risks	<p>The Board deliberated and approved, on quarterly basis, the PETRONAS and its Group's critical risks that may significantly impact the business goals and targets. The Board constantly monitors the agreed mitigations to manage or reduce the likelihood and impact of these critical risks. Key risk indicators which provide early warnings of risk manifestation were also reported to the Board.</p> <p>To ensure risks undertaken in pursuit of business objectives are within Board acceptable level, the Board approved the Company's risk appetite which sets its key operational boundaries. Any breach of risk appetite may jeopardise the Company's business sustainability, hence, will be escalated to the Board for deliberation.</p> <p>In achieving comprehensive risk-based decision making, the Board also deliberated on the risks related to high impact business matters such as Final Investment Decisions of projects in order to assess the feasibility and commerciality of these projects and investments.</p>
<b>Corporate Governance and Compliance</b>	
Implementation and Monitoring of Succession Planning	As part of the role of the Board of the Company, the Board ensures that there is an appropriate succession plan for members of the Board. The Board deliberated and approved the Fit and Proper Policy, an enhancement from the Board Selection Criteria for the appointment and re-appointment of directors which includes character, integrity, experience, competence and commitment to contribute.

## Board Roles and Attendance

### Chairman

- Responsible for the effective running of the Board and ensures that the Board plays a full and constructive role in the development and determination of the Company and the Group's strategy and overall commercial objectives.
- Leads the Board in setting the values and ethical standards of the Company.
- Promotes the highest standards of integrity and corporate governance at the Company level.

### President and Group Chief Executive Officer

- Responsible for all executive management matters affecting the Company and/or the Group and leads the Executive Leadership Team.
- Responsible for developing and recommending the long-term strategy and vision for the Company and/or the Group.
- Fosters a corporate culture that promotes ethical practices, encourages individual integrity and the fulfilment of the Company's corporate social responsibilities.
- Champions the Company's values and behaviours across the whole Group.

### Executive Directors

- Provide in-depth operational knowledge and business insights from PETRONAS' perspective.

### Non-Executive Directors

- Provide alternative insights and constructively challenge proposals to ensure all relevant matters are objectively considered by the Board.
- Oversight on the performance of the Management and monitors the delivery of Group strategy within the risk and control environment set by the Board.
- Bring independent judgment and scrutiny to the decisions taken by the Board.

### Company Secretaries

- Facilitate the effective operations of the Board and ensure that the Directors receive accurate, timely and clear information to enable them to discharge their responsibilities.
- Provide support and advice to the Board in respect of governance matters and ethical business practices.

## Corporate Governance at PETRONAS

### Attendance at Meetings

The Directors' commitment to carry out their duties and responsibilities is affirmed by their attendance at the Board meetings held as set out below. A total of 23 Board meetings were held during the year under review.

The number of meetings of the Board and Board Committees during the year ended 31 December 2022, together with a record of the attendance is detailed in the table below:

Directors as at 28 February 2023	Board	Audit Committee	Nomination and Remuneration Committee	Risk Committee
<b>Tan Sri Dato' Seri Mohd Bakke Salleh</b> Chairman/Non-Independent Non-Executive Director	23/23	–	–	–
<b>Datuk Tengku Muhammad Taufik</b> Executive Director/ President and Group Chief Executive Officer	23/23	–	–	–
<b>Dato Haji Ibrahim Haji Baki</b> Non-Independent Non-Executive Director	21/23	–	–	6/8
<b>Tan Sri Zaharah Ibrahim</b> Independent Non-Executive Director	23/23	6/6	7/7	–
<b>Dato' Razali Mohd Yusof</b> Independent Non-Executive Director	23/23	–	7/7	7/7
<b>Ainul Azhar Ainul Jamal</b> Independent Non-Executive Director	22/23	6/6	7/7	–
<b>Liza Mustapha</b> Executive Director/Group Chief Financial Officer	23/23	–	–	–
<b>Thayaparan S Sangarapillai</b> Independent Non-Executive Director	23/23	6/6	–	8/8
<b>Datuk KY Mustafa</b> Non-Independent Non-Executive Director (Appointed w.e.f 19.1.2022)	20/23	–	–	–
<b>Datuk Seri Asri Hamidin @ Hamidon</b> Non-Independent Non-Executive Director (Appointed w.e.f 28.4.2022) (Resigned w.e.f 5.1.2023)	7/17	–	–	–
<b>Datuk Johan Mahmood Merican</b> Alternate Director to Datuk Seri Asri Hamidin @ Hamidon (Appointed w.e.f 28.4.2022) (Resigned w.e.f 5.1.2023)	8/17	–	–	–

Director who has retired in 2022	Board	Audit Committee	Nomination and Remuneration Committee	Risk Committee
<b>Zakiah Jaafar</b> Non-Independent Non-Executive Director (Resigned w.e.f 22.4.2022)	3/6	1/1	–	1/1

### Board Strategic Conversation Series

In addition to the above meetings, the PETRONAS Board Strategic Conversation (BSC) Series are held periodically as part of the initiative to achieve a high performing Board. The BSC Series, which include Sustainability Series are conducted in-house or by external subject matter experts.

It aims to provide updates and discussions on sustainability and market outlook. It also includes the deliberations on the Group's strategic and growth plans for the purposes of enriching the Directors' knowledge and for the Directors to keep abreast with the latest trends and development.

## Board Balance and Effectiveness

### Board Balance and Composition

As at the date of this report, the Board of Directors of PETRONAS comprises nine members; the Non-Executive Chairman, two Executive Directors and six Non-Executive Directors (NEDs), out of which four are Independent Non-Executive Directors (INEDs). The biographical details of the Directors are set out on page 259.

The size and composition of the Board is fundamental to its success in providing strong and effective leadership. The presence of Non-Executive Directors ensures that no individual or small group of Directors are able to dominate the decision-making process and that the interests of shareholders and stakeholders are protected.

During the year under review, the Board saw some changes and new appointments to its composition.

In view of the retirement of Puan Zakiah Jaafar effective 22 April 2022, Datuk Seri Asri Hamidin @ Hamidon and his alternate, Datuk Johan Mahmood Merican, were appointed to the Board of PETRONAS on 28 April 2022. Datuk Seri Asri Hamidin @ Hamidon and Datuk Johan Mahmood Merican had, however, resigned on 5 January 2023.

The Board wishes to record its appreciation and gratitude to Puan Zakiah Jaafar, Datuk Seri Asri Hamidin @ Hamidon and Datuk Johan Mahmood Merican for their contribution and commitment during their tenure on the Board.

The Board also welcomed Datuk KY Mustafa as a NINED on the PETRONAS Board effective 19 January 2022.

The current composition of the Board has a blend of skills, experience and knowledge which enables them to provide effective oversight, strategic guidance and constructive challenge, review and deliberation on the Management's proposals. The NRC is responsible for reviewing the composition of the Board and assessing whether the balance of skills, experience, knowledge and independence is appropriate to enable the Board to perform effectively as a high performing Board.

### Fit and Proper Policy

In September 2022, the Board had approved the establishment of the Directors' Fit and Proper Policy (the Policy) as an enhancement of the existing PETRONAS Board Selection Criteria. The Policy aims to ensure that any person to be appointed or elected/re-elected as a Director of the PETRONAS Group shall possess the character, integrity, experience, competence, commitment to contribute in discharging his or her responsibilities required of the appointment in the most effective manner.

### Diversity

The Board recognises the importance of diversity and the value it brings to the PETRONAS Group. Diversity promotes the inclusion of different perspectives, raising the standards of good practice in Board leadership and enhancement of valuable insights in business judgment. Diversity is also important to ensure the Company remains relevant, resilient and sustainable in the rapidly transforming and evolving business environment.

Whilst it is important to promote diversity, the normal selection criteria of a Director based on an effective blend of competencies, skills, experience and knowledge in areas identified by the Board remains a priority so as not to compromise the effectiveness in carrying out the Board's functions and duties. The Board is committed to ensure that its composition not only reflects diversity but will also have the right mix of skills and balance to contribute to the achievement of the Company's goals and objectives.



## Corporate Governance at PETRONAS

### Board Independence

The Board assesses the independence of its NEDs annually. The independence assessment takes into account whether the NEDs have demonstrated an independent state of mind and objective judgment in their deliberations and decision-making process. The assessment on the independence of the NEDs may be undertaken in the following circumstances:

1 Prior to the Appointment of Non-Executive Directors	2 Annual Review	3 Notice of Change of Circumstances
Prior to the appointment of NEDs, the independence of each individual candidate will be reviewed and determined by the Board based on the recommendations from the NRC upon reviewing his/her criteria per the PETRONAS Independent Directors Guidelines.	The Board determines the independence of each NED annually, based on the recommendations from the NRC per the PETRONAS Independent Directors Guidelines.	Each NED has an affirmative obligation to notify the NRC of any change in circumstances that may affect his/her independence status. Once notified, the NRC shall re-evaluate the independence status and make the necessary recommendations to the Board.

The INEDs have been appointed for their specific experience and expertise and are independent of management and free from any business or other relationship which could materially interfere with the exercise of their independent judgement. NEDs may serve on the boards of other companies provided this does not involve a conflict of interest and that the appointment does not restrict their ability to discharge their duties to PETRONAS in any way.

In line with the exemplary practices of corporate governance, the Board has adopted a tenure policy whereby an INED's total tenure on the Board is capped at nine years. As at the date of this Statement, none of the INEDs has served the Board for more than nine years.

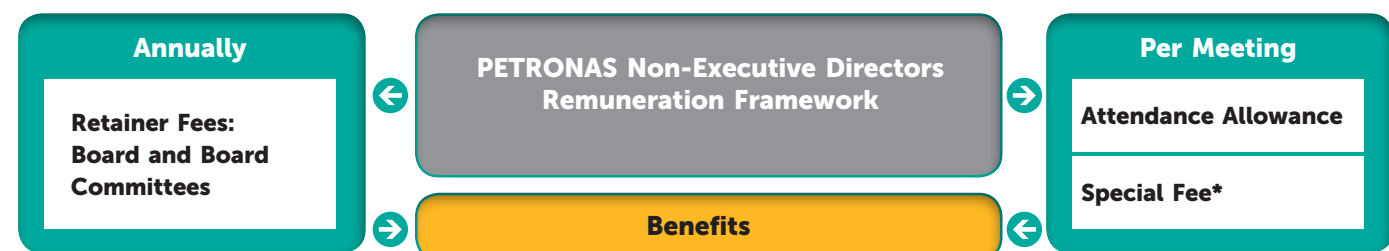
### Conflict of Interest

In ensuring transparency and integrity of the decision-making process as well as to prevent any conflict of interest, a declaration of interest by Directors is a fixed agenda item at the start of every Board meeting. A Director who has direct or indirect interest in a transaction shall recuse himself/herself when required and abstain from deliberations and voting to allow unbiased and free discussions and decision-making. Disclosure of the nature and extent of the Directors' interest and abstention from decision making proceedings are recorded in the minutes of the Board meetings. The Principles of Directorship for the PETRONAS Group was established to govern the way Directors conduct themselves in a conflict-of-interest situation, which corresponds with the Companies Act 2016 and the Code of Conduct and Business Ethics (CoBE) of the Company.

The Directors are also required to declare their interests annually, in line with the requirements on the disclosure of Director's interests in the Company's Audited Financial Statements.

### Board Remuneration Policy

Given the highly competitive market, PETRONAS designed a robust fee structure to attract, retain and appropriately compensate the diverse and internationally experienced NEDs. The fee framework is illustrated below:



\* Only for eligible Non-Executive Directors

### Board Onboarding and Professional Development Programme

The Board recognises the importance of ensuring that new Directors have a complete introduction to the business so that they are able to make a full and meaningful contribution to the Board. To that end, the Board has adopted a comprehensive and extensive onboarding programme for new Directors, including meetings with key senior leadership as teams, bespoke training on relevant regulatory and legal obligations and onboard procedures and processes.

Directors have full access to roundtable discussions, seminars and other events, covering topics relevant to the Group and their roles. The Company provides Directors with the necessary resources to update their knowledge and capabilities throughout the year.

A suite of development programmes, known as the PETRONAS Board Excellence, tailor-made to the requirements of Directors across the Group, has been in place since 2016 to chart the Directors' development plans in a structured manner.

Suite	PETRONAS Board Excellence (PBE)								
	Onboarding	Foundational*		Advanced			Continuous Education	Conference	
Solution	Onboarding Programme for New Directors	Essentials for Directorship	Rising Above 2	Best Practices for Board Excellence (Advanced 1)	Effective Strategy for Stakeholder Management (Advanced 2)	Round Table	Updates on trends	Directors Conference	Audit Committee Forum
Programme	E-Learning (5 Critical Legal Areas, Code of Conduct, Anti Corruption, Data Privacy)								
Continuous Programme	Board Assessment (Observation, Interview and Digital)								

\* The Foundational programmes only apply to the directors who are employees of the PETRONAS Group, thus, the PETRONAS Directors, upon their onboarding, will attend the Advanced programmes of the PBE.

The PETRONAS PBE programme is developed upon the occurrence of new concern for the Directors' awareness and knowledge that may involve the Directors' roles and responsibilities. Moving forward, sustainability has been identified for inclusion in the PBE programme, which will be carried out in 2023. In this instance the programme is intended to create awareness among the directors on the importance of sustainability and the accountabilities of Directors as part of the Environmental, Social and Governance requirements.

### Qualified and Competent Company Secretaries

The Company Secretaries of PETRONAS are qualified to act as company secretary by virtue of Section 235 of the CA 2016. Both of the Company Secretaries are legally qualified. They act as advisors to the Board, particularly with regard to the PETRONAS' Constitution, policies and procedures and its compliance with regulatory requirements, codes, guidelines and legislations.

The Company Secretaries act as an important link between the Board and the Management. Through effective communication, they provide the Management with the understanding on the expectations of, and value brought by the Board.

The Company Secretaries ensure that discussions and deliberations at the Board and Board Committee meetings are well documented, and subsequently communicated to the Management for appropriate actions. The Company Secretaries update the Board on the follow-up of its decisions and recommendations. The Board is satisfied with the performance and support rendered by the Company Secretaries to the Board in discharging their functions in the financial year under review.

The Company Secretaries also constantly keep themselves abreast of the evolving regulatory changes and developments in corporate governance through continuous training.

### Board Evaluation

The Board, through the NRC, endeavours to conduct annual performance evaluation of the Board and its Committees, facilitated by the Company Secretary. Evaluation results are reported to the NRC. Individual Director's evaluation results are made available to the NRC Chairman and reported directly to the Chairman of the Board. The Chairman of the Board will then conduct feedback sessions through peer-to-peer meetings.

## Corporate Governance at PETRONAS

During the year under review, the NRC had engaged an independent third-party consultant to conduct the Board Effectiveness Evaluation (BEE). The process of the BEE involved a set of questionnaires consisting of evaluations by the Board, Board Committee and Self-Assessment which were developed to maximise the effectiveness and performance of the Board in the best interests of PETRONAS. The indicators for the performance of the Board include, among others, the Board composition, planning process, conduct, communication with the Management and stakeholders, as well as strategy and planning for the Company. The consultant thereafter performed an independent assessment on the findings and areas of improvement and presented to the NRC for its consideration.

The NRC reviewed the outcome of the 2022 BEE whereby the findings of the BEE indicated that the Board is committed to the highest standards of good governance and affirmed the effectiveness of the Board.

### Directors' Indemnity

PETRONAS continues to provide and maintain indemnification for its Directors throughout the financial year as allowed under the CA 2016 to the extent it is insurable under the Directors' and Officers' Liability Insurance (D&O) procured by the Company. Directors and Officers are indemnified against any liability incurred by them in discharging their duties while holding office as Directors and Officers of the Company. All Directors may opt to obtain D&O insurance to provide insurance protection (to the extent it is insurable) against unindemnified liabilities by the Company or uninsured circumstances. The premium to be paid by all Directors is determined by the insurance company.

### Succession Planning

The Board Succession Planning Framework had been adopted by the Board to assist the Company in ensuring a structured and timely identification and selection of new Non-Executive Directors in the event of an opening on the Board, whether such opening exists by reason of an anticipated retirement, the expansion of the size of the Board, or otherwise. Such structured succession plan addresses the composition and effectiveness of the Board. The Board, through the NRC, has the responsibility in ensuring appropriate succession planning of Directors and reviewing the Board's required mix of skills and experience, as well as reviewing the tenure of INEDs on the Board.

In addition to succession planning for the Directors, the NRC also reviewed the succession plan of key management positions of the Company. The NRC continued to focus on conducting all relevant reviews and assessments of key management positions.

### Board Commitment to Sustainability

The Board acknowledges that the well-being of the employees, customers, suppliers and other stakeholders as well as the environment and the society at large is central to sustaining our long-term performance and continued relevance. Careful consideration of the needs of a broader universe of stakeholders ultimately drives value for the shareholders.

The heightened materiality of sustainability to the business requires the Board to factor in these sustainability components, risks and opportunities into its deliberations at all times. The Board, being the highest authority in sustainability governance, has taken the initiative in the establishment of the Company's approach to sustainability and road map. During the year under review, the Board's engagement and oversight of sustainability related matters were broadened.

### Board's Oversight of Climate-Related Risks and Opportunities

The Board recognises that climate is a critical business issue, contributing to a set of risks and opportunities. The Board is taking more deliberate actions in elevating sustainability, especially climate-related discussions to shape the long-term strategic direction of the company.

Key oversight by the Board on climate-related risks and opportunities in 2022 are as follows:

- Endorsement by the RC on the PETRONAS Corporate Risk Profile considering climate-related risk and its mitigation on quarterly basis for Board's approval.
- Approval of Net Zero Carbon Emissions by 2050 Pathway and alignment to the annual business plan and budget cycle.
- Approval of Nature and Biodiversity Position in support of the Net Zero Carbon Emissions by 2050 Pathway.
- Approval of Nature-based Climate Solutions strategy.
- Approval of climate-related matrix as part of the long-term incentive plan for senior leadership. In 2022, 20 per cent of the long-term incentive plan consists of ESG elements and this includes measurement of net carbon intensity as well as diversity and inclusion.
- Approved the formation of Gentari Sdn Bhd, an independent entity focused on providing clean energy solutions.
- Quarterly conversation series with global sustainability experts, with a dedicated session on climate change that includes Task Force on Climate-related Financial Disclosure (TCFD), human rights and just transition.

*[The full report on Sustainability Governance is found on page 155 of this Report]*

## Board Committees

### Audit Committee

- Ainul Azhar Ainul Jamal - Chairman
- Tan Sri Zaharah Ibrahim
- Thayaparan S. Sangarapillai
- Zakiah Jaafar (Resigned w.e.f. 22.4.2022)

The AC continued to play a key role in assisting the Board in fulfilling its oversight responsibilities to ensure the effectiveness of financial reporting, systems of internal control and the internal and external audit functions.

The AC discharges its responsibilities through its scheduled meetings during the year in accordance with its fixed agenda which covers the matters under the purview of the AC. The AC met six times in 2022.

*[For more information about the AC's attendance, please refer to page 280]*

### Key Matters in 2022

#### Financial

During the year under review, the AC reviewed the quarterly financial results and the financial performance of business segments and of the PETRONAS Group, and its report for the financial year ended 31 December 2022 to ensure that they were prepared in compliance with the relevant regulatory requirements and guidelines.

The AC also reviewed the effects of the application of accounting judgments and estimates on impairment assessment and provision for decommissioning, dismantling, removal and restoration (DDRR).

As part of our aspiration towards achieving best in class, the AC also reviewed the results of the benchmarking exercise on financial statement disclosures undertaken against major industry players. As a result, several disclosures were enhanced and newly introduced which include, among others, price information for impairment assumptions and commodity hedging instruments as well as sustainability pathway.

### Internal Control and Audit Activities

The AC reviewed and deliberated internal audit reports which included opinions on the adequacy and effectiveness of governance, risk management and internal controls, audit finding's root causes implications as well as the agreed recommendations to be undertaken by the Management.

The internal audit exercises provide assurance on the state of PETRONAS Governance and Control as well as compliance to applicable policies, procedures, laws and regulations over the following key areas (but not limited to):

- Project Management Activities of selected ongoing/ completed projects involving project planning, project execution/delivery and project monitoring.
- Asset Integrity Management which includes turnaround and maintenance activities, Operation Management and Safety Management on selected domestic and international assets.
- Overall governance and management for the following areas:
  - Digital/IT related projects and operational activities at enterprise and selected businesses/entities.
  - Internal technologies at enterprise level.
  - Selected other entities, for example PETROSAINS.
- Operational and Commercial activities at:
  - Selected domestic and international businesses/entities (including business development).
  - Selected joint venture companies.
- Marketing and trading activities.

The AC also reviewed and endorsed the following matters:

- Comprehensiveness of the Annual Audit Plan developed based on the enterprise/business strategies, enterprise/business risks, audit/assurance history results and stakeholder feedback.
- Continuous risk sensing and insights to ensure the proposed audit activities are carried out as per emerging and relevant risks as well as latest enterprise/business strategies.
- Quarterly status on agreed recommendations arising from internal audit assignments.
- Overall performance of Group Internal Audit which includes audit operations and key initiatives.



## Corporate Governance at PETRONAS

The AC together with the external auditors reviewed the results of the statutory audit and the audit report. The AC also reviewed the proposed fees for the statutory audits and limited review fees for PETRONAS and selected subsidiaries.

### Nomination and Remuneration Committee

- Dato' Razali Mohd Yusof – Chairman
- Ainul Azhar Ainul Jamal
- Tan Sri Zaharah Ibrahim

The NRC carries duties and responsibilities in relation to nomination and remuneration matters with strict adherence to the principles of good corporate governance.

The NRC is responsible in assisting the Board in ensuring that the Board and Board Committees retain an appropriate structure, size, balance of skills and experience, as well as independence and diversity required to meet PETRONAS' strategic objectives. The NRC is also responsible to review, prior to the Board's approval, the appointments and succession planning of PETRONAS' Top Management.

The NRC discharges its responsibilities through its scheduled meetings during the year in accordance with its fixed agenda which covers the matters under the purview of the NRC. The NRC met seven times in 2022.

*[For more information about the NRC's attendance, please refer to page 280]*

### Key Matters in 2022

- The NRC reviewed and made recommendations to the Board on the status of independence of the NEDs of PETRONAS in line with the requirements of the PETRONAS Independent Directors Guidelines on the annual review of independence of the NEDs.
- The NRC reviewed PETRONAS' Top Management appointments, contract renewals and contract cessations, as well as succession planning and development opportunities.

- The NRC also reviewed and endorsed the establishment of the 2022 President and Group CEO's Performance Measurement to balance between Perform and Transform objectives with emphasis on enterprise outcomes to promote desired behaviours.
- The NRC reviewed and endorsed the policy to retain the tenure of independent director at nine years for PETRONAS and its Group of Companies.
- The NRC reviewed and endorsed the Fit and Proper policy for PETRONAS and its Listed Companies as guided by Paragraph 15.01A of the Main Market Listing Requirements of Bursa Malaysia Securities Berhad and aligned with Bursa Malaysia Berhad's Corporate Governance Guide (4<sup>th</sup> Edition).
- The NRC reviewed and endorsed the Principles of Directors' Remuneration for the PETRONAS Group to ensure PETRONAS is able to attract the talent with the standards adopted by other International Oil Companies, Multinational Companies and National Oil Companies.
- The NRC reviewed and endorsed the roles of Chief Operating Officer for the PETRONAS high-level organisation structure.

### Risk Committee

- Thayaparan S. Sangarapillai - Chairman
- Dato Hj. Ibrahim Hj. Baki
- Dato' Razali Mohd Yusof
- Zakiah Jaafar (Resigned w.e.f. 22.4.2022)

The RC supports the Board in reviewing principal risks and oversees the adequacy and effectiveness of the risk assessment and risk management system for the PETRONAS Group. The Committee also deliberates on risk mitigation strategies and measures, reviews investment proposals that are significant from the risk perspective as well as monitors the activities on integrity-related initiatives for the PETRONAS Group.

The RC discharges its responsibilities through its scheduled meetings during the year in accordance with its fixed agenda which covers the matters under the purview of the RC. The RC met eight times in 2022.

*[For more information about the RC's attendance, please refer to page 280]*

### Key Matters in 2022

- The RC assisted the Board in deliberating the PETRONAS Group's Corporate Risk Profile and Risk Appetite on a quarterly basis. Additionally, revisions to the Corporate Risk Profile and Risk Appetite were recommended by the Committee and approved by the Board to align with the Group's business objectives and strategies as well as reflect the current exposures being managed.

- The RC played its oversight role in reviewing risks related to strategic and high impact business matters such as investment decisions for key projects during the year.
- The RC appraised the performances and activities of Group Integrity on a quarterly basis and was also updated on the progress of the Group's integrity and governance programmes.
- The RC reviewed the report and activities on the Company's Portfolio Commodity Hedging programmes on a quarterly basis.
- The RC reviewed and endorsed the revision to PETRONAS CoBE to strengthen PETRONAS' internal controls including having a comprehensive code of conduct which will act as one of the defences to corporate liability and to cater for the latest development in law and regulations as well as to keep up with global business and regulatory development.

## Compliance

### Tone from the Top

The compliance culture in PETRONAS is championed by the "tone from the top", driven by the principles of PETRONAS Cultural Beliefs and Shared Values. The continuous messaging from the PETRONAS Board of Directors and PETRONAS Executive Leadership Team sets the values for the expected conduct and ethics. It shapes the behaviour and attitude of PETRONAS employees at all levels of businesses and activities across the PETRONAS Group.

### Operationalising Compliance from the Ground

As PETRONAS operates in multiple jurisdictions worldwide, the Compliance Management Operations (CMO) team is structured to ensure compliance with domestic and global requirements by establishing offices at the PETRONAS headquarters in Kuala Lumpur City Centre (KLCC), as well as regional offices in Asia Pacific, Europe, the Middle East and the Americas. The regional compliance management offices support PETRONAS' compliance position by implementing adequate and effective controls, conducting compliance programmes and activities, and developing localised content in line with local laws and requirements. They achieve this through a risk-based approach and constant engagement with the headquarters while also ensuring alignment with PETRONAS' compliance practices.

In ensuring compliance management operations are comprehensive and up-to-date, the Subject Matter Expert (SME) team would keep abreast with updated regulations, laws and enforcements guidance from all over the globe, as well as develop compliance policies, processes and procedures for PETRONAS businesses and activities. Additionally, the SME team would provide specialist legal advice, steer the strategic direction of PETRONAS business, and set up PETRONAS group positions.

## Corporate Governance at PETRONAS

Similarly, for effective and efficient management of the compliance programmes and activities, the Compliance Strategy and Planning (CSP) team would develop and plan the PETRONAS' corporate compliance strategy and programmes, as well as develop and maintain the overall compliance systems and tools. These will ensure seamless planning, consistent management and monitoring of corporate compliance status, programmes and activities across PETRONAS.

Together, the three teams form the Legal Compliance department of Group Legal, which delivers comprehensive and integrated legal compliance programmes and activities for PETRONAS, with the ultimate aim of protecting and safeguarding PETRONAS Group of Companies against any breaches of laws.

### Digitalising Compliance

A digital solution called myCompliance, has been developed and deployed across PETRONAS Group of Companies for efficient and effective monitoring of legal and regulatory compliance. This digital compliance platform simplifies compliance management operations and has been linked with other relevant systems including myLearningX (on eLearning Modules), myASSURANCE (on Assurance programme) and myGOVERNANCE (on policies repository) to ensure the data is reliable, up-to-date and accurate.

The following are the five modules that have been deployed as part of myCompliance digital solutions:

- a) Compliance Tracker – Tracking and analysis of compliance assurance programme.
- b) Third Party Risk Management (TPRM) – Digitalisation of TPRM programme.
- c) Training Tracker – Tracking the completion of mandatory compliance trainings.
- d) Policy Management – Centralised policy development process and repository.
- e) Regulation Tracker – Centralised repository of laws.

The myCompliance digital solution reduces PETRONAS' risk to potential threats such as incurring financial and non-financial penalties, loss of business opportunities, and severe reputational impact on the enterprise. This is achieved through improved oversight and ease of operations, both directly and indirectly.

### Focus Areas

PETRONAS focuses on Critical Legal Areas (CLAs) and Operational Legal Areas (OLAs) through a robust compliance programme as encapsulated in its Legal Compliance Framework (LCF), the overarching framework on ensuring compliance with laws and regulations that PETRONAS has identified.

The CLAs are laws with extra-territorial effect. Any breach of the law could result in significant civil and criminal penalties, legal suits and severe reputational impact, which may pose enterprise risks to PETRONAS. The OLAs are operational laws that relate to business activities and operations, where any breach poses threats to the continuous operations of the business, including the loss of the license to operate.

Below is the list of areas of laws for CLAs and OLAs:

Critical Legal Areas	Operational Legal Areas
1. Competition and Trade	1. Health, Safety and Environment Laws
2. Ethics and Integrity	2. Petroleum Laws
3. Data Privacy	3. Energy and Utilities Laws
4. Sanctions	4. Healthcare Laws
5. Export Control	5. Land and Real Property Laws
	6. Employment Laws
	7. Intellectual Property Laws
	8. Education Laws
	9. Building and Construction Laws
	10. Financial and Tax Laws
	11. Company Laws
	12. Maritime Laws
	13. State Laws

The compliance programme and controls for CLAs have stabilised and matured since its establishment in 2018. Throughout this long journey, the focus is now on gap improvement and full compliance by PETRONAS Group of Companies with the requirements of laws under the CLAs. On the other hand, the compliance programme and controls for the OLAs are still in the development stage, as it was only established recently in May 2022.

The controls embedded by LCF are grouped into 5 Key Compliance Areas (5 KCAs) – an essential tool in strengthening and monitoring the compliance culture in PETRONAS. The status of controls under each of the 5 KCAs are reported on a quarterly basis to the top management of Group Legal and Group Risk Management via the Corporate Risk Profile/ Risk Appetite report, as well as escalated (where necessary) to PETRONAS Risk Committee (RC) and PETRONAS Board of Directors (Board). This ensures the top management is made aware of the progress of the implementation of Legal Compliance Control (LCC) across the PETRONAS Group of Companies.

### 5 Key Compliance Areas





## Corporate Governance at PETRONAS

### 1 Governance and Risk Assessment

PETRONAS establishes various governance documents, including policies, standards, guidelines, frameworks and manuals, as the foundation for internal controls to ensure compliance with laws and regulations. In FY2022, new governance documents were developed, and existing governance documents were enhanced for relevancy to current requirements. These governance documents are required to be adopted and implemented by PETRONAS Group of Companies.

#### Governance Documents for Legal and Regulatory Compliance

CLAs	OLAs	Ethics and Integrity
<ul style="list-style-type: none"> <li>PETRONAS Legal Compliance Standard for Critical Legal Areas</li> <li>PETRONAS Breach Reporting Manual for Critical Legal Areas</li> <li>PETRONAS Third Party Risk Management Manual</li> </ul>	<ul style="list-style-type: none"> <li>PETRONAS Legal Compliance Standard for Operational Legal Areas</li> </ul>	<ul style="list-style-type: none"> <li>PETRONAS Code of Conduct and Business Ethics</li> <li>PETRONAS Anti-Bribery and Corruption Manual</li> <li>PETRONAS Whistleblowing Policy</li> <li>PETRONAS Raid Protocol</li> </ul>
Data Privacy	Sanctions and Export Control	Competition Law
<ul style="list-style-type: none"> <li>PETRONAS Corporate Privacy Policy</li> <li>PETRONAS Master Guidelines to the PETRONAS Corporate Privacy Policy</li> <li>PETRONAS Data Protection Impact Assessment Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>PETRONAS Sanctions and Export Control Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>PETRONAS Competition Law Guidelines</li> <li>PETRONAS Competition Law Compliance Protocols:                             <ul style="list-style-type: none"> <li>– Meetings and Information Sharing</li> <li>– Merger and Acquisition Transactions</li> </ul> </li> </ul>

PETRONAS Group of Companies is also exposed to potential hazards and risks that may substantially impact its operations and activities. The Company establishes several risk assessments that could identify these potential threats to manage and mitigate potential legal and regulatory non-compliance.

#### Risk Assessments for Legal and Regulatory Compliance

Ethics and Integrity	Health, Safety, Security and Environment	Risk Management
<ul style="list-style-type: none"> <li>Corruption Risk Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Social Risk Assessment</li> </ul>	<ul style="list-style-type: none"> <li>Risk Assessment in Decision Making</li> </ul>

### Training and Awareness

PETRONAS continues to deliver enterprise-wide training and awareness programmes via digital platforms (i.e. eLearning Modules) and customised engagements through its compliance management officers to instil awareness among PETRONAS staff and directors towards compliance with legal and regulatory requirements.

In 2022, more than 36,000 employees across PETRONAS Group of Companies have completed the mandatory compliance eLearning Modules. On top of the eLearning Modules, 256 additional focused training and engagement sessions were conducted in FY2022 for PETRONAS Group of Companies, with more than 17,000 participants benefitting from these customised sessions.

### 2 Training and Awareness (cont'd.)

Given the prolonged COVID-19 pandemic, online courses, webinars and virtual training dominated the first half of FY2022. Physical engagements started to increase in the second half of FY2022 as Malaysia entered the endemic stage in quarter two of FY2022. In total, 89 per cent of training and engagement sessions were conducted virtually, and 11 per cent were completed physically (six per cent) or in hybrid mode (five per cent).

### 3 Due Diligence and Contractual Obligations

As PETRONAS Group of Companies deals with various third parties, including partners, contractors, vendors, suppliers, distributors and agents, the Company manages its third-party risks through its Third Party Risk Management (TPRM) framework. TPRM is a robust due diligence process to safeguard PETRONAS from any exposure to the breaches of the CLAs especially from any corporate liability due to any misconduct from third parties.

The TPRM enables PETRONAS to detect possible threats before any formal engagement or during the business relationship with third parties. It would also allow for mitigation or contractual safeguard against legal, financial or reputational damage risks. The TPRM applies to all businesses and needs to be embedded by PETRONAS Group of Companies.

TPRM documents and tools have been developed to guide the implementation of the TPRM process and for PETRONAS Group of Companies to embed and apply across all businesses and needs.

TPRM Documents	TPRM Tools		
	KYC Declaration Questionnaire (via myCompliance system)	KYC6 – Online Screening System (via myCompliance system)	Compliance Clauses
<ol style="list-style-type: none"> <li>TPRM Manual</li> <li>TPRM Frequently Asked Questions</li> <li>KYC Business Guide</li> <li>KYC Questionnaire Guide for Exclusion to Tender and Finance Exception List</li> <li>KYC Guidebook</li> </ol>	<ul style="list-style-type: none"> <li>In-house due diligence questionnaire for completion by our third-parties or counterparties covering Corporate and Business Information, Ethics and Integrity, Data Privacy, Sanctions, Export Control and Competition.</li> </ul>	<ul style="list-style-type: none"> <li>An externally managed screening system covering key screening themes in relation to the five CLAs with a capacity for enhanced due diligence.</li> </ul>	<ul style="list-style-type: none"> <li>Embedment of compliance clauses relating to the five CLAs in all contracts. Base clauses provided could be negotiated and customised in accordance to business needs.</li> </ul>

## Corporate Governance at PETRONAS

4

### Business Practice

PETRONAS reviews its business practices and activities regularly and ensures these practices are updated and aligned with legal and regulatory compliance. It has also put pre-emptive measures that PETRONAS Entities must embed and implement to ensure that PETRONAS Group of Companies adopt the best business practices and activities.

Below are some examples of the pre-emptive measures:

1. Export Control Licensing;
2. Sanctions Licensing;
3. General Retention of Consent;
4. Retention of Personal Data;
5. Accuracy of Personal Data;
6. Employees' Conflict of Interest Declaration;
7. Gift Declaration Form; and
8. Display of Privacy Notice.

5

### Monitoring and Assurance

PETRONAS verifies the adequacy and effectiveness of controls through rigorous monitoring and assurance activities. The control, oversight and monitoring of PETRONAS Group of Companies' compliance towards CLAs are achieved through a structured annual compliance self-assessment under PETRONAS Integrated Assurance Programme. This has also been introduced to cover OLAs.

Group Legal (as one of PETRONAS' Second Line Assurance Providers), along with Group Internal Audit (as one of PETRONAS' Third Line Assurance Providers), effectively identify, evaluate and recommend an intervention to address potential non-compliances and unsound practices using PETRONAS' Three Lines of Defence model. The results of the review or audit may lead to identification of new controls to be developed or existing controls to be enhanced to continuously improve the legal compliance posture of PETRONAS Group.

In 2022, PETRONAS completed three assurance programmes to ensure compliance with the requirements stipulated under Critical and Operational Laws.

1. First Line Assurance for Critical Legal Areas;
2. Second Line Assurance for Critical Legal Areas; and
3. First Line Assurance for Operational Legal Areas.

On an annual basis, the compliance status of PETRONAS Entities towards the establishment of Legal Compliance Controls will be reported to the management of the Entities, as well as the management of Group Legal. This ensures the top management is aware of any gaps in its control implementation and will strive to close the gap in the most practical and feasible way possible.

## PETRONAS Commitment to Integrity

**PETRONAS adopts zero tolerance for any form of bribery or corruption. The PETRONAS CoBE, PETRONAS Anti Bribery and Corruption Manual, and PETRONAS Whistleblowing Policy are in place to guide PETRONAS employees and third parties when dealing with potential or actual bribery and corruption situations or improper conduct in their day-to-day business activities.**

PETRONAS has established an Integrity Governance Unit (IGU) or Group Integrity as per *Arahan Perdana Menteri (PM) 2018* (Prime Minister's Directive of 2018) to perform the four (4) core functions, which are Complaint Management, Detection Verification, Integrity Strengthening and Governance. In support of Group Integrity, Integrity Focal Person (IFP)'s have been established to implement and report on Integrity Strengthening and Governance related matters.

In August 2022, PETRONAS' Executive Leadership Team signed the "*Ikrar Bebas Rasuah*," or Corruption-Free-Pledge to demonstrate Top-level commitment to the 'TRUST' principle of adequate procedure as one of the defences against Corporate Liability. The 'TRUST' principles are Top Level Commitment (T), Risk Assessment (R), Undertake control measures (U), Systematic review, monitoring and enforcement (S), Training and communication (T).

The PETRONAS Organisational Anti-Corruption Plan (OACP) 2022-2023 has been published with the aspiration of "Zero tolerance for corruption in the pursuit of a corruption-free organisation". The OACP strategies focus on:

- Strengthening corporate governance on people and processes
- Increased confidence on the internal controls and improved business processes efficiency
- Holistic approach and pervasive communication on ethics and integrity

PETRONAS Holding Company Unit has been ISO 37001:2016 Anti Bribery Management System (ABMS) certified since November 2017. This demonstrates our commitment to managing any corruption-related (integrity-related) activities while adhering to all applicable laws and regulations.

Pursuant to the Corruption Risk Assessment, sensitive positions have been identified as one of the mitigations to manage the corruption risk.

A significant increase in whistleblowing complaints indicates increased awareness of the channel and trust for people to report their concerns, serving as a preventive measure in managing integrity.

In collaboration with the Malaysian Anti-Corruption Academy (MACA), PETRONAS continues to upskill our staff on integrity and governance through the Certified Integrity Officer (CeIO) programme.

Various integrity strengthening programmes are implemented on a regular basis across the group to raise awareness of integrity-related topics such as whistleblowing and corporate liability.



# Group Financial Results and Position

## Analysis of Financial Results

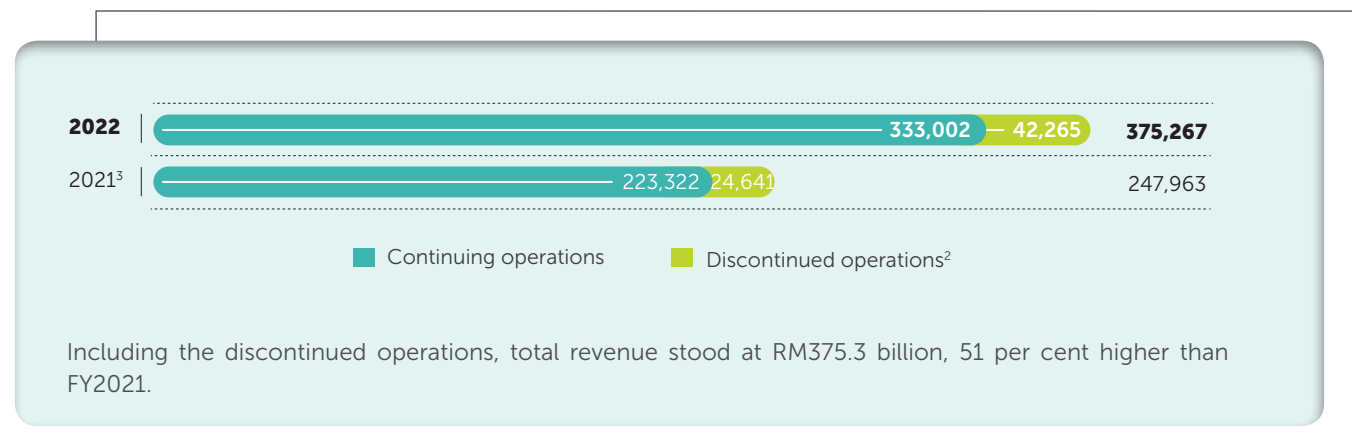
### Consolidated Statement of Profit or Loss and Other Comprehensive Income or Loss

In RM million	Financial Year ended 31 December	
	2022	2021 <sup>3</sup>
<b>Continuing operations</b>		
Revenue	333,002	223,322
Cost of revenue	(178,502)	(137,831)
<b>Gross profit</b>	<b>154,500</b>	85,491
Selling and distribution expenses	(7,324)	(8,334)
Administration expenses	(13,888)	(10,558)
Net impairment (losses)/reversals <sup>1</sup>	(1,749)	4,711
Other expenses	(3,312)	(2,759)
Other income	7,723	4,338
<b>Operating profit</b>	<b>135,950</b>	72,889
Financing costs	(4,929)	(4,841)
Share of profit after tax and non-controlling interests of equity accounted associates and joint ventures	957	1,818
<b>Profit before taxation</b>	<b>131,978</b>	69,866
Tax expense	(34,173)	(20,211)
<b>PROFIT FOR THE YEAR</b>	<b>97,805</b>	49,655
<b>Discontinued operations<sup>2</sup></b>		
Profit for the year from discontinued operations, net of tax	3,813	1,214
<b>PROFIT FOR THE YEAR</b>	<b>101,618</b>	50,869
<b>Profit attributable to:</b>		
Shareholders of the Company	92,313	44,061
Non-controlling interests	9,305	6,808
<b>PROFIT FOR THE YEAR</b>	<b>101,618</b>	50,869

In RM million	Financial Year ended 31 December	
	2022	2021 <sup>3</sup>
<b>Other comprehensive income</b>		
<i>Items that will not be reclassified subsequently to profit or loss</i>		
Net changes in fair value of equity investments at fair value through other comprehensive income (OCI)	(429)	639
<i>Items that may be reclassified subsequently to profit or loss</i>		
Net movements from exchange differences	8,430	3,533
Cash flow hedge	2,999	(174)
Others	185	170
<b>Total other comprehensive income for the year, net of tax</b>	<b>11,185</b>	4,168
<b>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</b>	<b>112,803</b>	55,037
<b>Total comprehensive income attributable to:</b>		
Shareholders of the Company	100,926	47,279
Non-controlling interests	11,877	7,758
<b>TOTAL COMPREHENSIVE INCOME FOR THE YEAR</b>	<b>112,803</b>	55,037

## Revenue

(RM million)



Note 1: Excludes well costs and includes certain amount relating to write-back and write-off of other assets and loss on derecognition of financial assets measured at amortised cost.

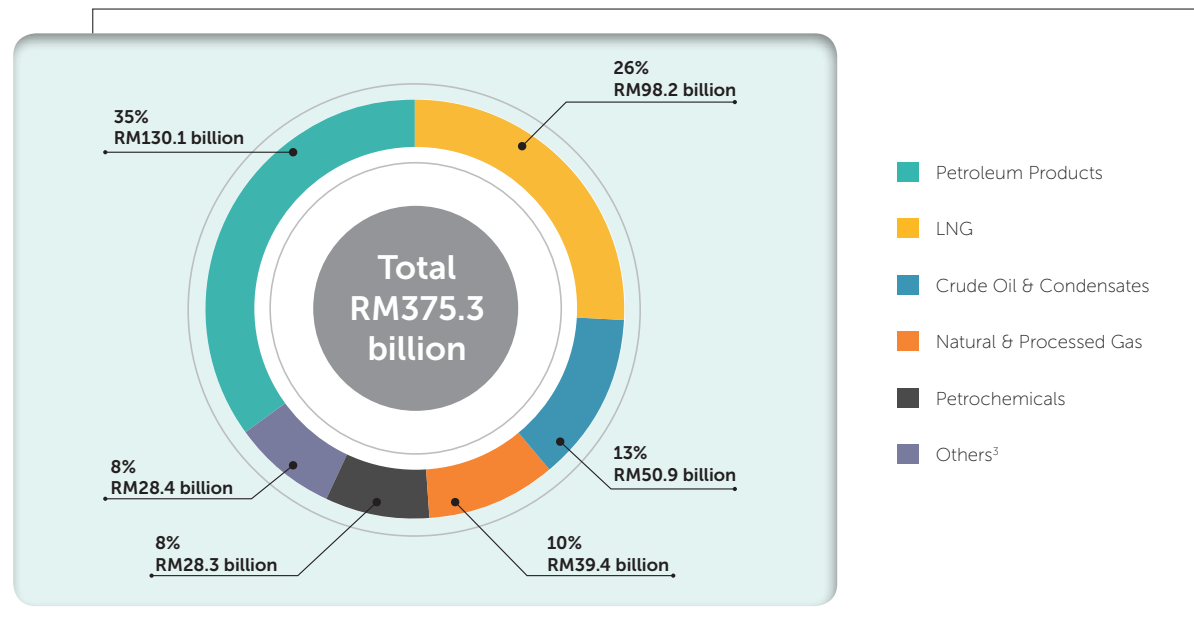
Note 2: Discontinued operations relate to intended disposal of Engen Group.

Note 3: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment- Proceeds before Intended Use).

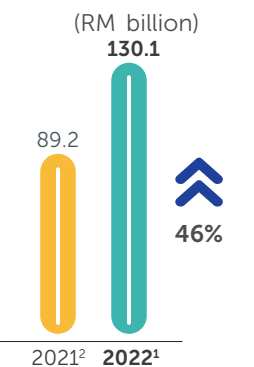
## Group Financial Results and Position

### Revenue by Products

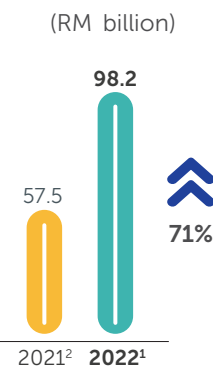
The Group's total revenue was RM375.3 billion, primarily contributed by petroleum products and LNG which accounted for 35 per cent and 26 per cent of revenue, respectively.



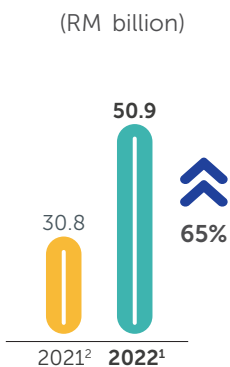
#### Petroleum Products (RM billion)



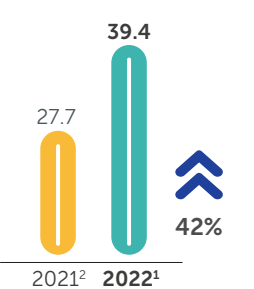
#### LNG (RM billion)



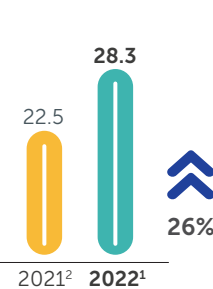
#### Crude Oil & Condensates (RM billion)



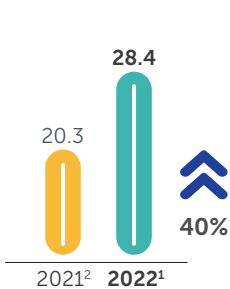
#### Natural & Processed Gas (RM billion)



#### Petrochemicals (RM billion)



#### Others<sup>3</sup> (RM billion)



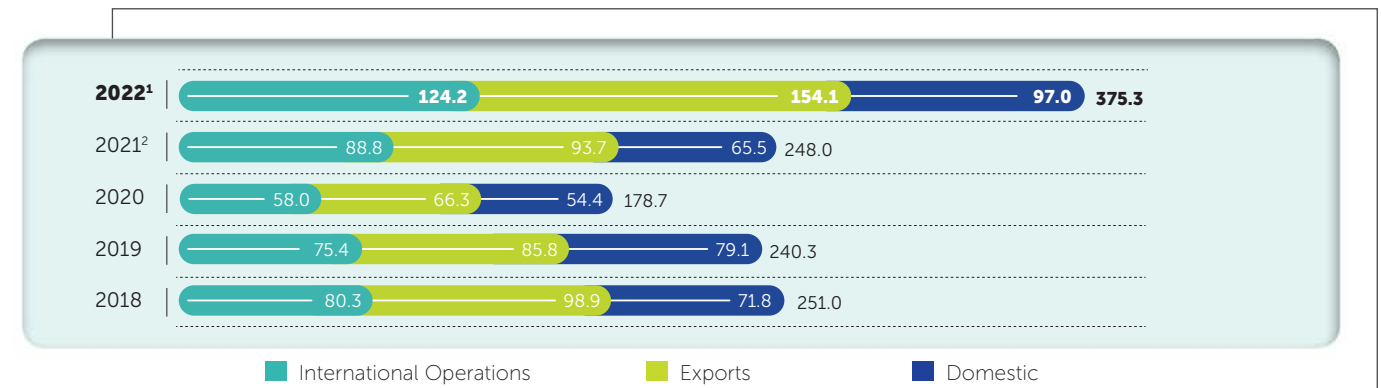
Note 1: All financial and operational results comprise continuing and discontinued operations. Discontinued operations relate to intended disposal of Engen Group.

Note 2: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment- Proceeds before Intended Use).

Note 3: Others comprise Property and Others; and Maritime and Logistics.

### Revenue by Geographical Trade

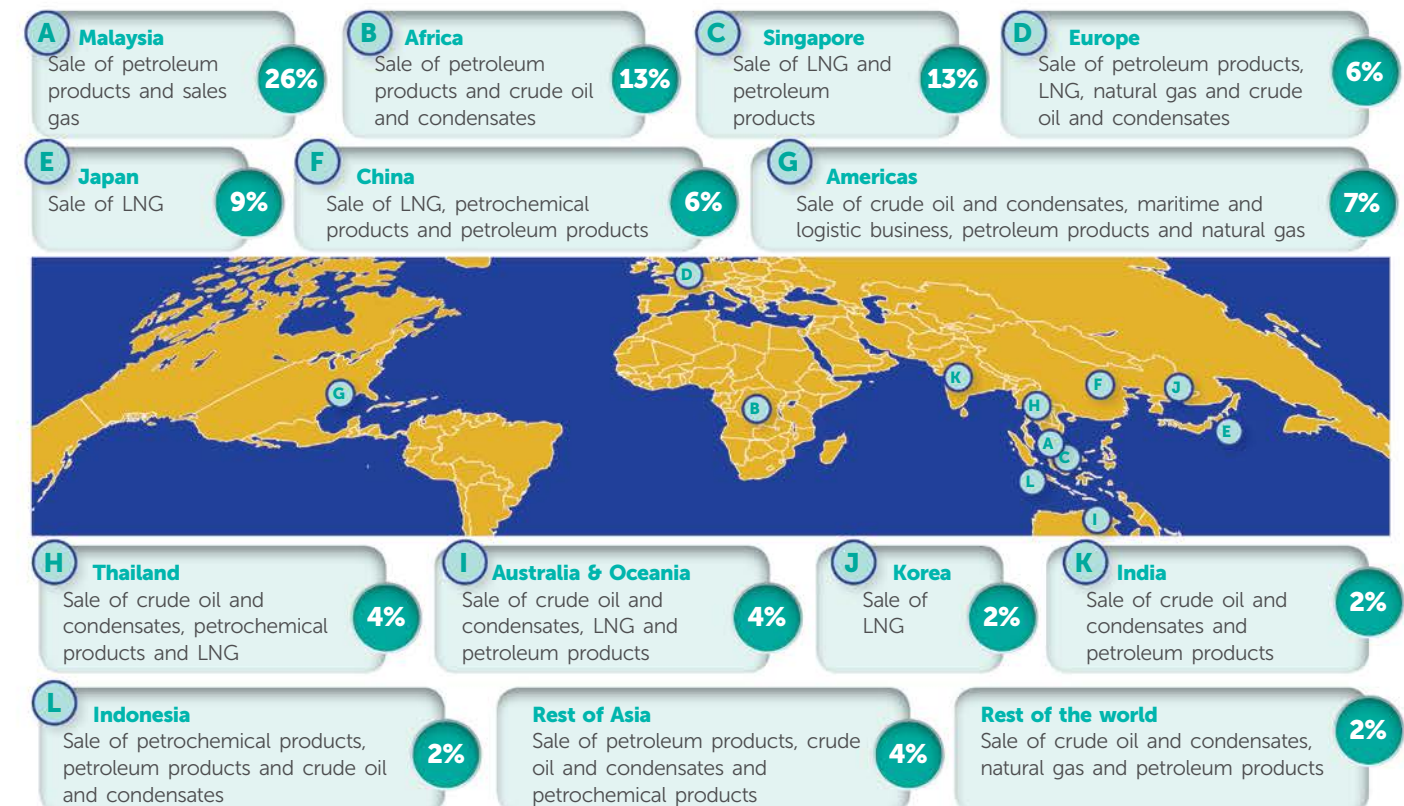
(RM billion)



- Export sales continued to be the highest contributor to the PETRONAS Group revenue which accounted for 41 per cent of the Group's total revenue in FY2022.
- The higher export sales were contributed by higher sales volumes and upward trending of key benchmark prices for major products mainly LNG.
- Meanwhile, international operations revenue which contributed 33 per cent of the Group's total revenue recorded an increase of 40 per cent as compared to the previous year, resulted from higher sales volume as well as upward trending of key benchmark prices mainly petroleum products.
- The higher domestic sales are mainly contributed by the higher key benchmark prices for major products namely petroleum products in line with the recovery in demand.

### Revenue by Geographical Segments<sup>3</sup>

Revenue from outside Malaysia, which included export and international sales, accounted for 74 per cent of the Group's revenue, demonstrating PETRONAS' strong global presence.



Note 1: All financial and operational results comprise continuing and discontinued operations. Discontinued operations relate to the intended disposal of Engen Group.

Note 2: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment- Proceeds before Intended Use).

Note 3: The revenue by Geographical segments are populated according to the customer's location.



## Group Financial Results and Position

### Group Cost

(RM billion)



Group cost stood at RM280.7 billion, an increase against last year by RM78.7 billion, mainly due to higher product cost, cash payments and states sales tax in line with higher prices. Despite the increase in the Group's total costs, PETRONAS recorded a lower Group Cost to Revenue ratio of 75 per cent in FY2022 compared to 81 per cent in the previous year, demonstrating our effective cost management efforts. Some of the examples of the cost control measures that we undertook during the year include fuel consumption management and vessel optimisation.

In RM billion	Financial Year ended 31 December		
	2022	2021 <sup>2</sup>	Variance 2022 vs 2021
<b>Strategically Actionable Costs</b>	<b>226.9</b>	158.5	68.4
Product costs	123.0	81.9	41.1
Tax Expenses, Sales Tax & Duties and Cash Payments	56.2	33.6	22.6
Price-Sensitive Expense Items	47.7	43.0	4.7
Depreciation, Amortisation, Write-Off & Write-Down	34.2	34.6	(0.4)
Net Impairment on Assets	2.6	(2.2)	4.8
Others (Forex, Finance Cost, etc)	10.9	10.6	0.3
<b>Operationally Actionable Costs</b>	<b>53.8</b>	43.5	10.3
Production and transportation expense, purchase services, materials & supplies	24.9	20.5	4.4
Others (HR cost, rental, leases, utilities, G&A etc)	28.9	23.0	5.9
<b>TOTAL GROUP COSTS</b>	<b>280.7</b>	202.0	78.7
<b>Group Cost to Revenue Ratio (%)</b>	<b>75</b>	81	

Note 1: Group cost above relates to costs charged to Income Statement only.

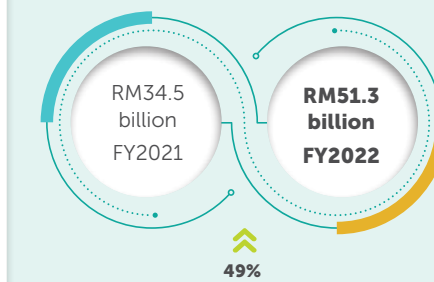
Note 2: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment-Proceeds before Intended Use).

### Segment Earnings

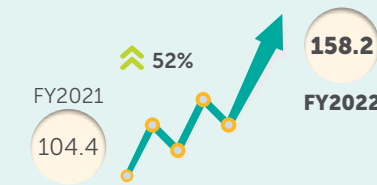
Businesses across the value chain took bold choices and displayed operational resilience to capture market uptrend, which resulted in a solid financial performance for the year 2022.

- The Group operated three core businesses in FY2022, namely Upstream, Gas and Downstream.
- Corporate and Others which complements our core businesses, comprising primarily the maritime and logistics segment; property segment and central treasury; project delivery and technology division as well as the renewables, hydrogen and green mobility businesses.

#### PAT Upstream



#### Revenue (RM billion)

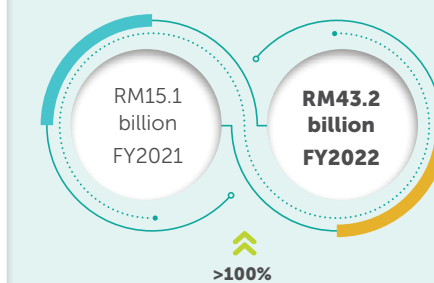


#### Upstream

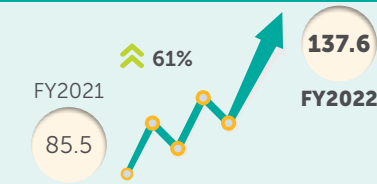
- During the year, Upstream business recorded a PAT of RM51.3 billion as compared to RM34.5 billion in FY2021 primarily driven by higher revenue partially offset by higher taxation as well as product costs in line with higher prices.
- The increase in Upstream revenue was mainly attributable to higher average realised prices for crude oil and condensates and natural gas as well as higher natural gas sales volume.
- Total daily production average of 2,434 thousand barrels of oil equivalent (boe) per day in FY2022, increase from 2,275 thousand boe per day in FY2021 was mainly driven by overall improved demand for gas in Peninsular Malaysia coupled with realised opportunities and better performance from international operations.

[Further details on Upstream's operational performance can be found on page 106]

#### PAT Gas



#### Revenue (RM billion)



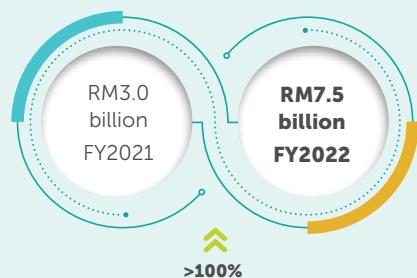
#### Gas

- Gas business recorded a PAT of RM43.2 billion as compared to PAT of RM15.1 billion in FY2021 mainly contributed by higher revenue partially offset by higher product costs and taxation.
- The revenue in FY2022 recorded an increase of 61 per cent against the previous year, contributed by higher demand from the power sector. PETRONAS has concluded 136 MMscfd of natural gas supply deals with new and existing customers from the non-power sector.

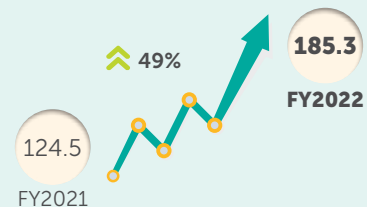
[More information on Gas' operational performance is available on page 118]

## Group Financial Results and Position

### PAT Downstream



### Revenue (RM billion)

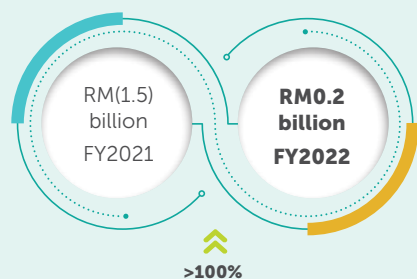


### Downstream

- Downstream business also recorded a PAT of RM7.5 billion against PAT of RM3.0 billion in FY2021 following the improved refining and petrochemical margins.
- During the year, Downstream business recorded stable operations with OEE sustained at 85.9 per cent, on the back of strong asset reliability.
- Petroleum products sales volume was 260.7 million barrels, higher by 1.7 million barrels following increased trading activities. Crude oil sales volume was 114.3 million barrels, higher by 4.6 million barrels mainly due to higher marketing volume. Petrochemical products sales volume was 8.3 million tonnes, higher by 0.1 million tonnes.

[More information on Downstream's operational performance is available on page 126]

### PAT/(LAT) Corporate and Others



### Revenue (RM billion)



### Corporate and Others

- Corporate and Other businesses recorded a PAT of RM0.2 billion, as compared to FY2021's Loss After Tax (LAT) of RM1.5 billion.
- Higher PAT recorded mainly due to higher revenue and favourable impact from foreign exchange, partially offset by higher operating expenditure.
- MISC Berhad (MISC) and KLCC Property Holdings Berhad (KLCCP) were the two major contributors to this segment. MISC recorded a PAT of RM1.8 billion during the year, mainly from increased freight rates in the Petroleum and Product Shipping segment as well as the Marine and Heavy Engineering segment turned profitable during the year in tandem with higher revenue coupled with recovery of COVID-19 claims and reversal of cost provisions for both on-going and post sail-away projects. KLCCP's PAT increased to RM0.9 billion as compared to RM0.5 billion in the same period last year mainly due to the higher revenue of 24.6 per cent to RM1.5 billion.

[More information on MISC and KLCCP are available on page 149]

## Analysis of Financial Position

### Consolidated Statement of Financial Positions

In RM million	As at 31.12.2022	As at 31.12.2021 <sup>1</sup>
<b>ASSETS</b>		
Property, plant and equipment	301,218	284,613
Investment properties and land held for development	12,658	13,167
Investments in associates and joint ventures	8,114	7,461
Intangible assets	26,260	19,394
Long-term receivables	41,127	33,751
Fund and other investments	1,425	1,444
Deferred tax assets	20,675	20,983
<b>TOTAL NON-CURRENT ASSETS</b>	<b>411,477</b>	380,813
Trade and other inventories	15,612	14,477
Trade and other receivables	53,998	48,324
Fund and other investments	10,945	11,990
Cash and cash equivalents	201,220	164,556
Assets classified as held for sale	281,775	239,347
	17,318	14,791
<b>TOTAL CURRENT ASSETS</b>	<b>299,093</b>	254,138
<b>TOTAL ASSETS</b>	<b>710,570</b>	634,951
<b>EQUITY</b>		
Share capital	100	100
Reserves	401,509	350,703
Total equity attributable to shareholders of the Company	401,609	350,803
Non-controlling interests	58,822	53,484
<b>TOTAL EQUITY</b>	<b>460,431</b>	404,287
<b>LIABILITIES</b>		
Borrowings	96,345	86,619
Deferred tax liabilities	11,829	9,543
Other long-term liabilities and provisions	50,418	50,620
<b>TOTAL NON-CURRENT LIABILITIES</b>	<b>158,592</b>	146,782
Trade and other payables	63,677	51,825
Borrowings	7,812	21,212
Taxation	8,438	6,913
Liabilities classified as held for sale	79,927	79,950
	11,620	3,932
<b>TOTAL CURRENT LIABILITIES</b>	<b>91,547</b>	83,882
<b>TOTAL LIABILITIES</b>	<b>250,139</b>	230,664
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>710,570</b>	634,951

Note 1: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment-Proceeds before Intended Use).

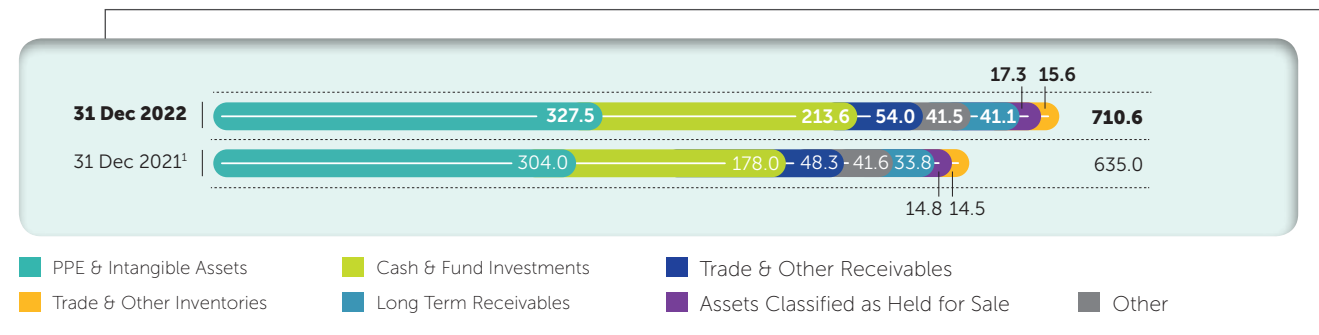


## Group Financial Results and Position

### Total Assets

(RM billion)

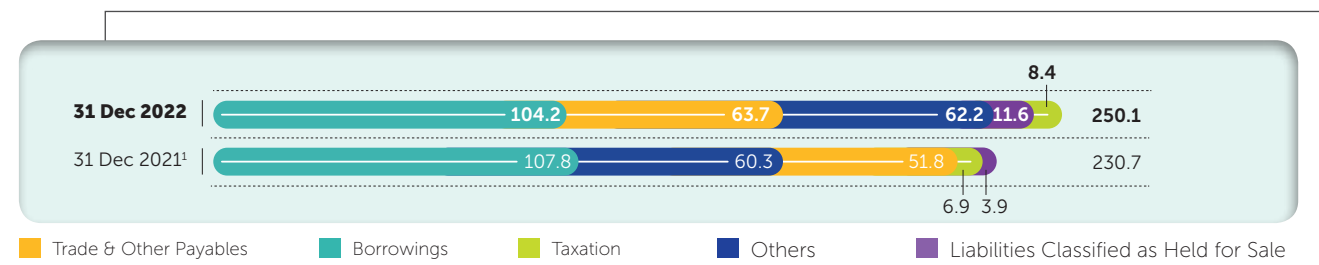
Total assets stood at RM710.6 billion as at 31 December 2022, an increase of 12 per cent against the previous year. This was mainly contributed by the higher cash position as well as higher property, plant and equipment (PPE) and intangible assets following new acquisitions during the year.



### Total Liabilities

(RM billion)

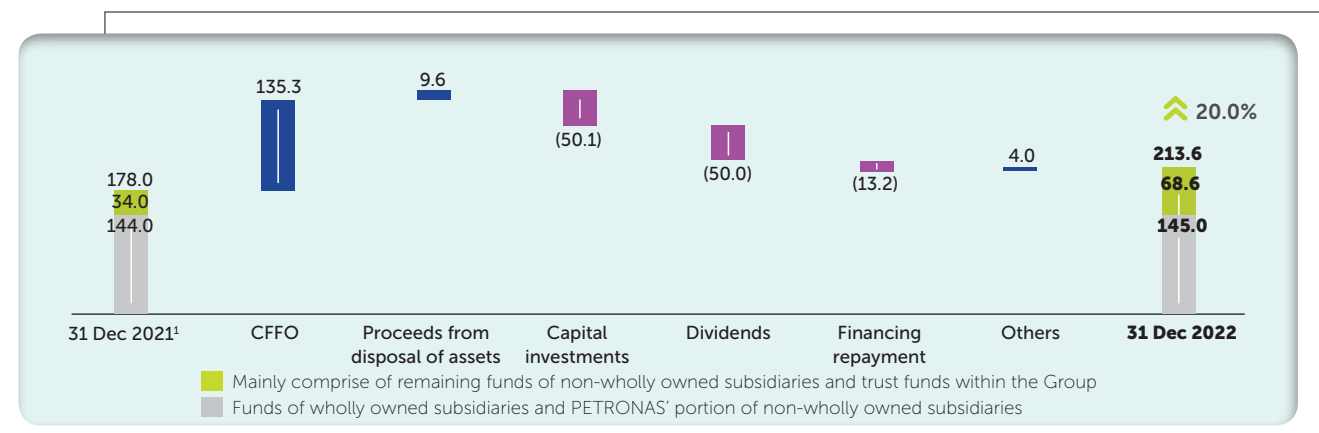
Total liabilities increased to RM250.1 billion as at 31 December 2022, or 8 per cent against the previous year primarily due to higher trade and other payables in line with higher prices offset with repayment of borrowings.



### Movement in Cash and Fund Investments

(RM billion)

The Group's Cash and Fund Investment increased to RM213.6 billion, a 20 per cent increase against the previous year primarily contributed by higher Cash Flows from Operating Activities (CFFO) by RM135.3 billion. The robust CFFO generated supported the investment required for growth, dividend payments, servicing debt obligations and increased contributions to support economic and social development.



Note 1: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment-Proceeds before Intended Use).

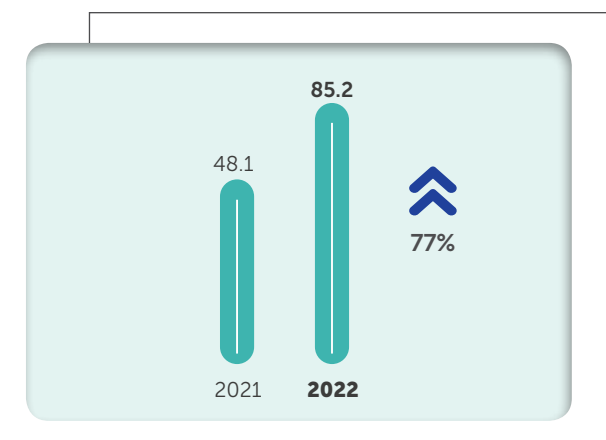
### Analysis of Cash Flow

#### Consolidated Statement of Cash Flows

In RM million	Financial year ended 31 December	
	2022	2021 <sup>a</sup>
<b>Cash flows from operating activities</b>		
Profit before taxation	135,956	71,514
Adjustments for non-cash items	42,142	30,334
Net changes in working capital	(13,994)	(8,813)
<b>Cash generated from operations</b>	<b>164,104</b>	93,035
Interest expenses paid	(3,024)	(3,584)
Interest income received	5,677	2,998
Taxation paid, net of refund	(31,471)	(13,904)
<b>Net cash generated from operating activities</b>	<b>135,286</b>	78,545
<b>Cash flows from investing activities</b>	<b>(39,431)</b>	(29,452)
<b>Cash flows from financing activities</b>	<b>(69,884)</b>	(16,056)
Net decrease in cash and cash equivalents	25,971	33,037
Increase in cash and cash equivalents restricted	341	304
Net foreign exchange differences	10,514	2,076
Cash and cash equivalents at beginning of the year	163,558	128,141
<b>Cash and cash equivalents at end of the year</b>	<b>200,384</b>	163,558
<b>Cash and cash equivalents</b>		
Cash and bank balances and deposits	201,220	164,556
Bank overdrafts	-	(2)
Classified as held for sale	203	384
Less: Cash and cash equivalents restricted	(1,039)	(1,380)
	<b>200,384</b>	163,558

### Free Cash Flow Analysis

(RM billion)



The Group generated free cash flow of RM85.2 billion during the year, increased by RM37.1 billion or 77 per cent as compared to RM48.1 billion in FY2021 mainly due to increased funds from operations in line with increase in profits.

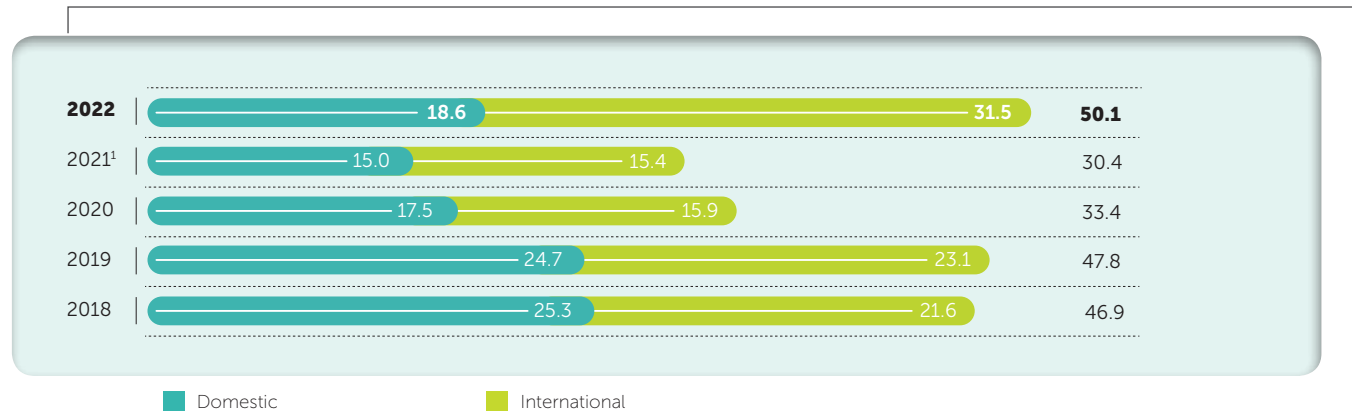
Note 1: Results were restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment-Proceeds before Intended Use).

## Group Financial Results and Position

### Capital Investments

(RM billion)

Total Capital Expenditure (CAPEX) spent during the year of RM50.1 billion is higher by RM19.7 billion compared with RM30.4 billion in FY2021.



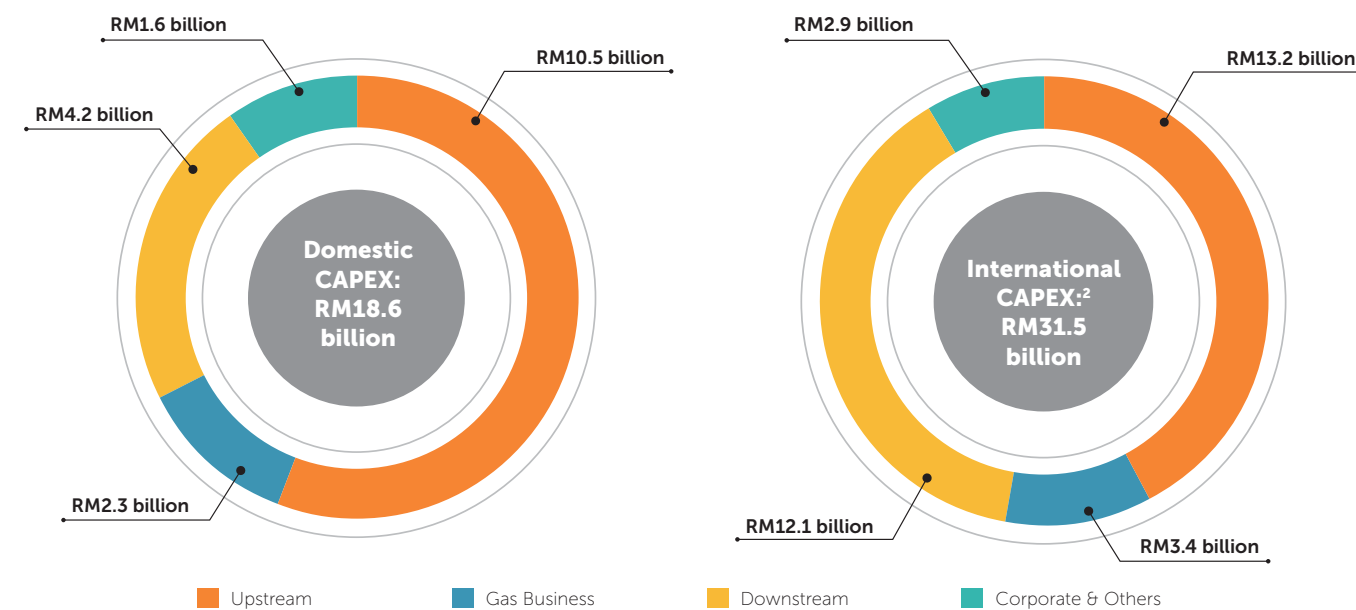
Note 1: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment-Proceeds before Intended Use).

### Capital Investments by Business and Geographical Segment

Domestic CAPEX increased by 24 per cent compared to FY2021, contributing to the growth of the Malaysian oil and gas industry.

Excluding international acquisitions made during the year, the CAPEX spent is divided almost equally between Malaysia and international projects.

Included in the Corporate and Others business segment is CAPEX incurred for Gentari.

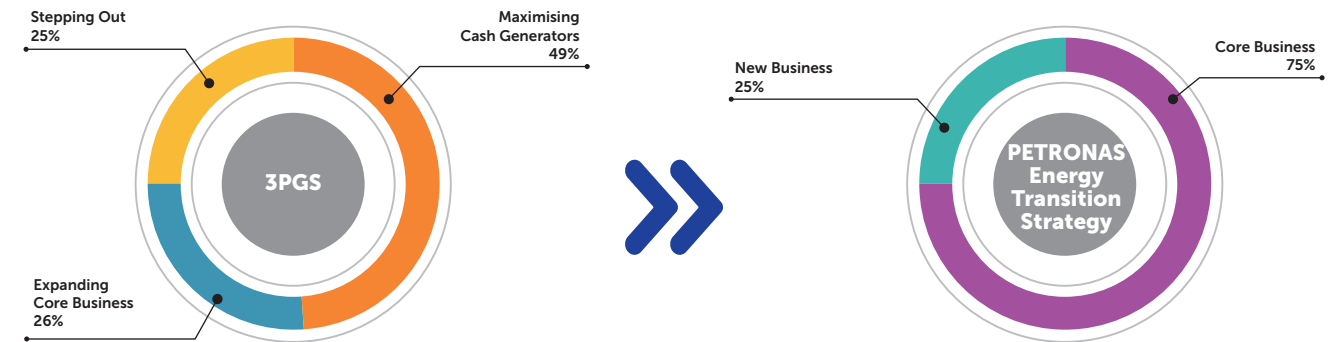


Note 2: Including international acquisition made during the year

### CAPEX by Strategy

(RM billion)

As the momentum for the energy transition accelerates, the Three-Pronged Growth Strategy (3PGS) was further crystallised into the PETRONAS Energy Transition Strategy. PETRONAS remains steadfast in the journey towards Energy Transition, achieving our NZCE 2050 aspiration and step-out opportunities beyond the Group's current core business. 25 per cent of total CAPEX in FY2022 was spent on New Business.



### Segment Capital Investments

- Amidst the continued volatility of the energy market and the call for energy transition, we remain steadfast in strengthening our portfolio through strict capital discipline, ensuring sufficient allocation for our cash generators, investments in growth, and transformation towards a low-carbon future. Overall CAPEX spent during the year was RM50.1 billion, higher compared with RM30.4 billion in FY2021.
- We continue to strengthen our core business and pursue CAPEX in the energy transition. RM12.5 billion or 25 per cent of total CAPEX was spent on New business. This includes the successful acquisition of Perstorp Holding AB, a leading sustainability-driven global specialty chemicals company based in Sweden. Decarbonisation projects such as Kasawari Carbon Capture and Sequestration were undertaken during the year.
- Moving forward, more allocation of CAPEX is projected in scaling up investment in the core business, lowering emissions as well as investing in clean energy to future-proof the Group's portfolio.

### Upstream

- 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.
- About RM10.5 billion or 44 per cent of Upstream total CAPEX was spent domestically to intensify efforts to enhance the recovery rate of existing fields as well as the development of new fields. Among the key projects in Malaysia are Kasawari Gas Field Development, Integrated Bekok Oil, and Bayan Gas Phase 2.

- Meanwhile, a total of RM13.2 billion was allocated towards international portfolio investments, key countries include Brazil, Canada, Iraq and Argentina. The highlights of the investments include the acquisition of 21 per cent participating interests in the Sepia field in Brazil, one of the world's most prolific basins.

### Gas

- Gas business accounted for 11 per cent of the Group's total CAPEX and incurred a total spending of RM5.6 billion in FY2022.
- CAPEX for FY2022 were predominantly spent on international ventures particularly for LNG projects in Canada.
- Domestic spending during the year remains comparable to FY2021. Moving forward, the approved Final Investment Decision (FID) for the Sabah nearshore LNG facility will increase future domestic CAPEX, while monetising gas resources in an optimised and more environmentally conscious manner.

### Downstream

- Downstream business' CAPEX of RM16.3 billion during the year, accounted for 33 per cent of the Group's overall CAPEX allocation.
- The spending made during the year was mainly related to the acquisition of Perstorp as well as other operational and growth projects.

### Corporate and Others

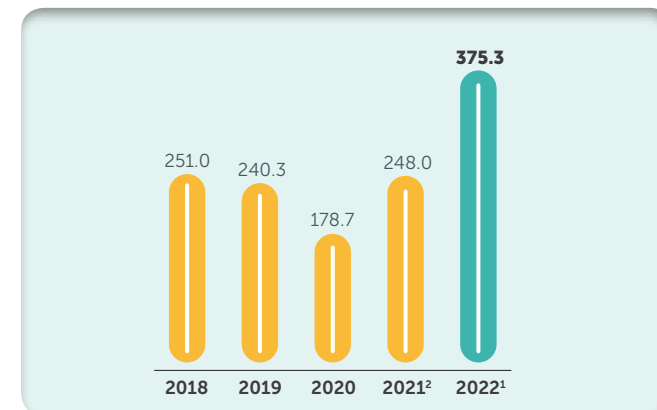
- CAPEX spent by businesses under Corporate and Others during the year of RM4.5 billion, was lower by RM0.3 billion as compared to FY2021 with MISC accounting for 78 per cent of the total spending.
- During the year, MISC's significant investments were mainly from Dynamic Positioning Shuttle Tankers (DPST) and Very Large Crude Carriers (VLCC) amounting to RM1.2 billion.



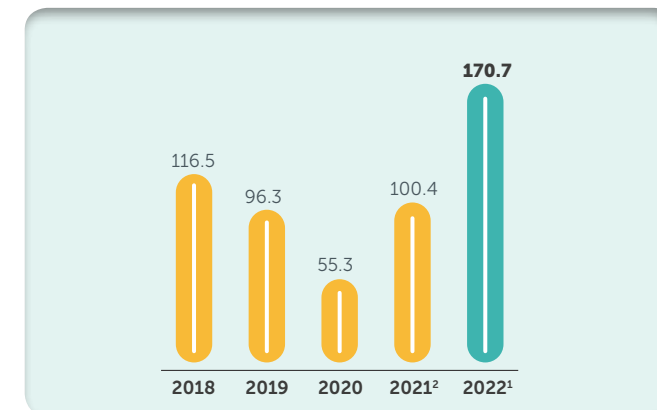
## Group Financial Results and Position

### Five-Year Key Financial Indicators

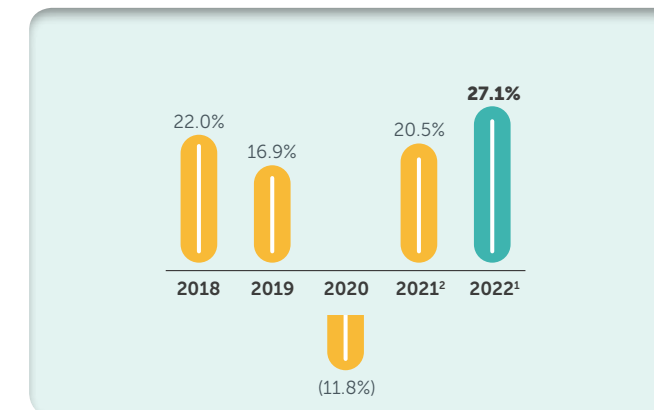
**Revenue**  
(RM billion)



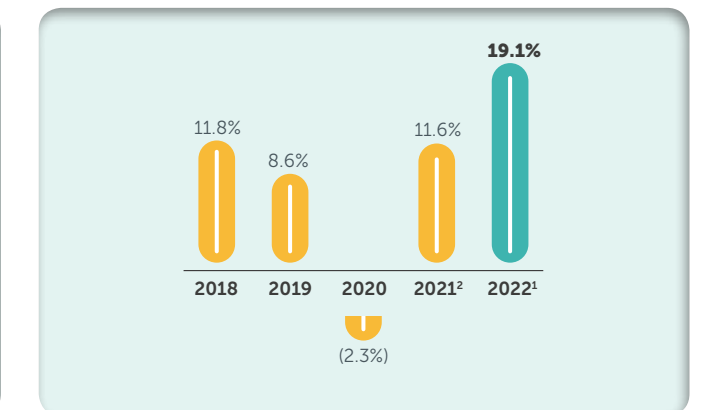
**EBITDA**  
(RM billion)



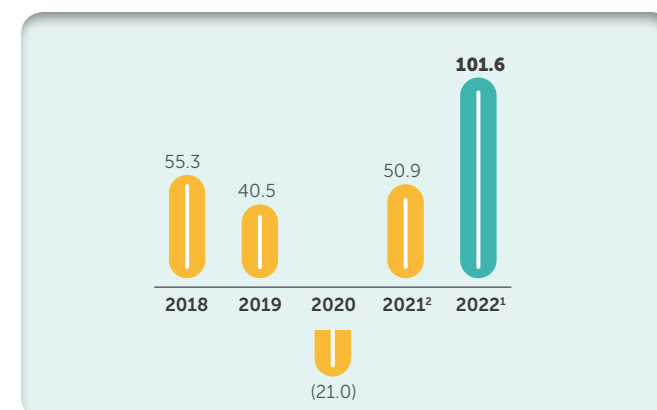
**PAT Margin**  
(%)



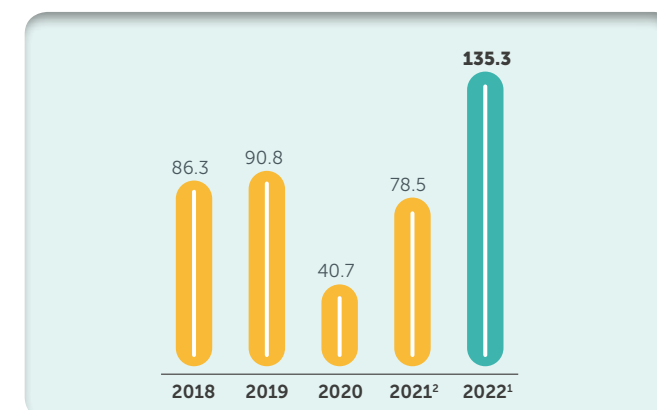
**Return on Total Assets (ROTA)**  
(%)



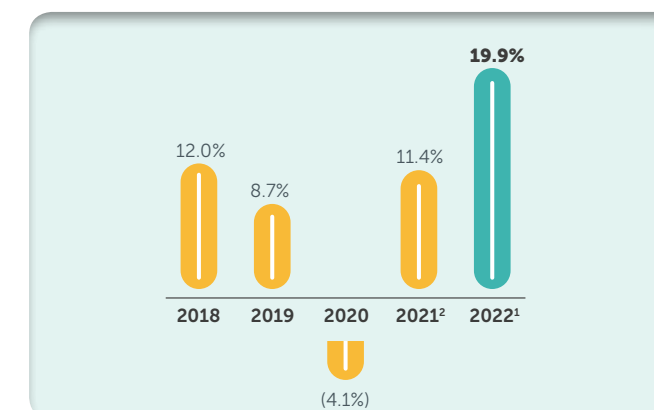
**Profit/(Loss) After Tax**  
(RM billion)



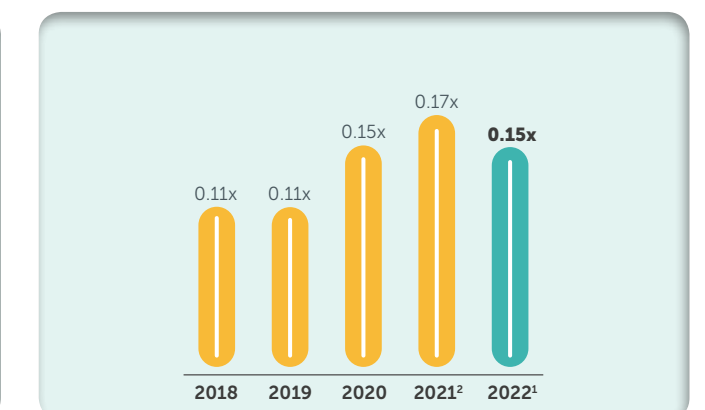
**Cash Flows from Operations (CFFO)**  
(RM billion)



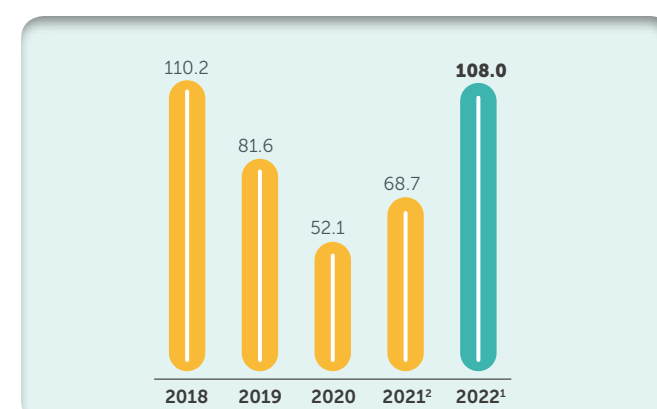
**Return on Average Capital Employed (ROACE)**  
(%)



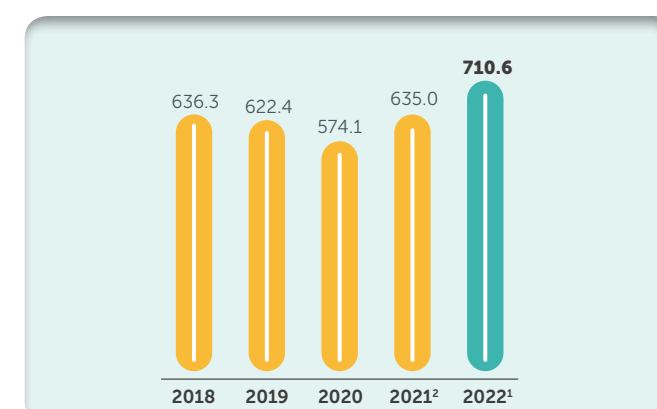
**Debt/Assets Ratio**  
(x)



**Net Cash Position**  
(RM billion)



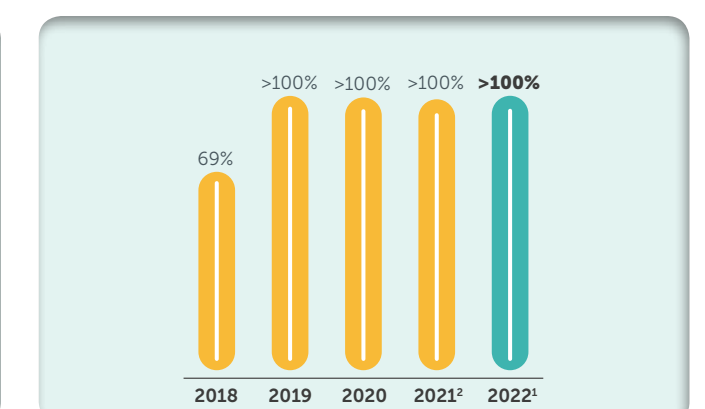
**Total Assets**  
(RM billion)



**Gearing Ratio<sup>3</sup>**  
(%)



**Dividend Payout Ratio**  
(%)



Note 1: All financial and operational results comprise continuing and discontinued operations. Discontinued operations relate to the intended disposal of Engen Group.

Note 2: Restated for impact from adoption of Amendments to MFRS 116 Property, Plant and Equipment (Property, Plant and Equipment-Proceeds before Intended Use).

Note 3: Gearing ratio is calculated as adjusted total debt (total debt including financial guarantees) divided by adjusted total equity (total equity plus deferred tax liabilities and minus capitalised interest) and adjusted total debt. Gearing ratio for corresponding period has been restated to conform with this formula.

# Appendix

## Ipieca Sustainability Reporting Guidance for the Oil and Gas Industry

Ipieca Disclosures		Reference Page
<b>Governance and Business Ethics</b>		
Governance and management systems	GOV-1: Governance approach	Commitment to Governance, pages 259-287
	GOV-2: Management systems	Corporate Governance at PETRONAS, pages 287-292
Business ethics and transparency	GOV-3: Preventing corruption	Risks Linked to Creating Value, page 93 Corporate Governance at PETRONAS, page 290 & 293
	GOV-4: Transparency of payments to host governments	Letter from the Chairman, page 42 Letter from the Executive Vice President and Group Chief Financial Officer, page 56
<b>Climate Change and Energy</b>		
Climate strategy and risk	CCE-1: Climate governance and strategy	Sustainability Statement, pages 155-159 Safeguard the Environment, page 161
	CCE-2: Climate risk and opportunities	Safeguard the Environment, pages 161-165
Technology	CCE-3: Lower-carbon technology	PETRONAS Energy Transition Strategy, pages 104-105 Project Delivery and Technology, page 139 Gentari, pages 145-148
Emissions	CCE-4: Greenhouse gas (GHG) emissions	Safeguard the Environment, pages 167-168 & 171-173
	CCE-5: Methane emissions	Safeguard the Environment, pages 168-170
Energy use	CCE-6: Energy use	Positive Social Impact, page 227 Five-Year Sustainability Key Performance Data, page 252
Flaring	CCE-7: Flared gas	Five-Year Sustainability Key Performance Data, page 249
<b>Environment</b>		
Water	ENV-1: Freshwater	Other Businesses, page 154 Safeguard the Environment, page 181 Five-Year Sustainability Key Performance Data, page 252
	ENV-2: Discharges to water	Safeguard the Environment, page 181 Five-Year Sustainability Key Performance Data, page 252
Biodiversity	ENV-3: biodiversity policy and strategy	Safeguard the Environment, pages 184-186
	ENV-4: Protected and priority areas for biodiversity conservation	Safeguard the Environment, pages 186-187

Ipieca Disclosures		Reference Page
<b>Environment (cont'd.)</b>		
Air emissions	ENV-5: Emissions to air	Safeguard the Environment, page 181, Five-Year Sustainability Key Performance Data, page 249 & 252
Spills	ENV-6: Spills to the environment	Safeguard the Environment, page 181 Five-Year Sustainability Key Performance Data, page 252
Materials management	ENV-7: Materials management	Other Businesses, page 154 Safeguard the Environment, page 181 Positive Social Impact, page 215 Five-Year Sustainability Key Performance Data, page 252
	ENV-8: Decommissioning	Safeguard the Environment, pages 181- 182
Decommissioning	ENV-1: Freshwater	Safeguard the Environment, pages 181- 182
<b>Safety, health and security</b>		
Workforce protection	SHS-1: Safety, health and security engagement	Positive Social Impact, pages 202-203 & 233
	SHS-2: Workforce health	Risks Linked to Creating Value, page 95 Positive Social Impact, pages 192-195 & 198-199
	SHS-3: Occupational injury and illness incidents	Positive Social Impact, page 197 Five-Year Sustainability Key Performance Data, page 253
Product health, safety and environmental risk	SHS-5: Product stewardship	Positive Social Impact, pages 213-215
Process safety	SHS-6: Process safety	Positive Social Impact, page 197
Security	SHS-7: Security risk management	Positive Social Impact, pages 200-203
<b>Social</b>		
Human rights management	SOC-1: Human rights due diligence	Material Topics, page 84 Positive Social Impact, page 190 & 205-209 Five-Year Sustainability Key Performance Data, page 258
	SOC-2: Suppliers and human rights	Letter from the Vice President and Chief Sustainability Officer, page 61 Positive Social Impact, page 204 & 206-208
	SOC-3: Security and human rights	Positive Social Impact, pages 203-204 & 206-209



## Appendix

Ipiece Disclosures		Reference Page
Social (cont'd.)		
Labour practices	SOC-4: Site-based labour practices and worker accommodation	Positive Social Impact, pages 205-209
	SOC-5: Workforce diversity and inclusion	Positive Social Impact, pages 216-217 Five-Year Sustainability Key Performance Data, page 256
	SOC-6: Workforce engagement	Engaging with Stakeholders, page 73 Positive Social Impact, pages 218 & 229
	SOC-7: Workforce training and development	Positive Social Impact, pages 222-247 Five-Year Sustainability Key Performance Data, pages 257-258
	SOC-8: Workforce non-retaliation and grievance mechanisms	Sustainability Highlights, page 14 Other Businesses, page 152 Positive Social Impact, page 190, 204-205 & 209
Community engagement	SOC-9: Local community impacts and engagement	Engaging with Stakeholders, pages 70-72 & 75-76 Positive Social Impact, page 233, 242 & 246
	SOC-10: Indigenous peoples	Upstream, page 109 Positive Social Impact, pages 204-205, 239 & 244
	SOC-11: Land acquisition and involuntary resettlement	Positive Social Impact, pages 204-205
	SOC-12: Community grievance mechanisms	Positive Social Impact, page 209
	SOC-13: Social investment	Other Businesses, page 152 Positive Social Impact, page 234
Local content	SOC-14: Local procurement and supplier development	Engaging with Stakeholders, page 75 Other Businesses, page 152 Positive Social Impact, pages 210-215
	SOC-15: Local hiring practices	Positive Social Impact, pages 216-217 Five-Year Sustainability Key Performance Data, pages 254-256

### Global Reporting Initiative (GRI) Standards

PETRONAS has reported the information cited in this GRI content index for the period covering the full calendar year from 1 January to 31 December 2022 with reference to the GRI Standards.

GRI Disclosure	Reference Page	
GRI 2: General Disclosures	2-1 Organisational details	About This Report, pages 8-9 PETRONAS an Overview, pages 10-11
	2-2 Entities included in the organisation's sustainability reporting	About This Report, page 8
	2-3 Reporting period, frequency and contact point	About This Report, page 8
	2-4 Restatements of information	Five-Year Sustainability Key Performance Data, pages 248-253
	2-5 External assurance	About This Report, page 9
	2-6 Activities, value chain and other business relationships	PETRONAS an Overview, pages 22-25
	2-7 Employees	Five-Year Sustainability Key Performance Data, pages 254-256
	2-8 Workers who are not employees	Five-Year Sustainability Key Performance Data, page 256
	2-9 Governance structure and composition	Sustainability Statement, pages 155-157, Board Composition, page 259 Corporate Governance at PETRONAS, pages 276-277
	2-10 Nomination and selection of the highest governance body	Corporate Governance at PETRONAS, page 286
	2-11 Chair of the highest governance body	Profile of Board of Directors, page 260
	2-12 Role of the highest governance body in overseeing the management of impacts	Sustainability Statement, pages 155-157 Corporate Governance at PETRONAS, page 284
	2-13 Delegation of responsibility for managing impacts	Sustainability Statement, pages 155-157
	2-14 Role of the highest governance body in sustainability reporting	About This Report, page 9
	2-15 Conflicts of interest	Corporate Governance at PETRONAS, page 282
	2-17 Collective knowledge of the highest governance body	Corporate Governance at PETRONAS, pages 283-284
	2-19 Remuneration policies	Corporate Governance at PETRONAS, page 284
	2-20 Process to determine remuneration	Corporate Governance at PETRONAS, page 276 & 286
	2-22 Statement on sustainable development strategy	Letter from the Chairman & Letter from the President and Group Chief Executive Officer, pages 40-53

## Appendix

GRI Disclosure		Reference Page
GRI 2: General Disclosures (cont'd.)	2-23 Policy commitments	Positive Social Impact, pages 204-207 & 210, Corporate Governance at PETRONAS, page 287 & 293
	2-24 Embedding policy commitments	Positive Social Impact, pages 204-207 & 210,
	2-25 Processes to remediate negative impacts	Positive Social Impact, page 209
	2-26 Mechanisms for seeking advice and raising concerns	Corporate Governance at PETRONAS, page 293
	2-28 Membership associations	Sustainability Statement, page 159
	2-29 Approach to stakeholder engagement	Engaging with Stakeholders, pages 70-77
	2-30 Collective bargaining agreements	Positive Social Impact, page 205 & 207
GRI 3: Material Topics 2021	3-1 Process to determine material topics	Material Topics, page 80
	3-2 List of material topics	Material Topics, pages 81-85
	3-3 Management of material topics	Material Topics, pages 81-85
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	Letter from the Executive Vice President and Group Chief Financial Officer, page 56 Positive Social Impact, pages 234-247 Group Financial Results and Position, pages 294-299 Financial Report, page 109 & 111
	201-2 Financial implications and other risks and opportunities due to climate change	Safeguard the Environment, pages 163-165
	201-3 Defined benefit plan obligations and other retirement plans	Financial Report, page 42 & 109
	201-4 Financial assistance received from government	Financial Report, page 113
GRI 202: Market Presence 2016	202-1 Ratios of standard entry-level wage by gender compared to local minimum wage	Positive Social Impact, page 216
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	Positive Social Impact, pages 233-247
	203-2 Significant indirect economic impacts	Engaging with Stakeholders, pages 70-77 Positive Social Impact, pages 233-247
GRI 205: Anti-corruption 2016	205-2 Communication and training about anti-corruption policies and procedures	Corporate Governance at PETRONAS, pages 290-293
	205-3 Confirmed incidents of corruption and actions taken	Other Businesses, page 154

GRI Disclosure		Reference Page
GRI 301: Materials 2016	301-1 Materials used by weight or volume	Sustainability Statement, page 154 Safeguard the Environment, page 181 Positive Social Impact, page 215 Five-Year Sustainability Performance Key Data, page 252
	301-2 Recycled input materials used	Safeguard the Environment, pages 174-175
GRI 302: Energy 2016	302-1 Energy consumption within the organisation	Positive Social Impact, page 227 Five-Year Sustainability Performance Key Data, page 252
	302-2 Energy consumption outside of the organisation	Safeguard the Environment, pages 174-175
GRI 303: Water and Effluents 2018	303-1 Interactions with water as a shared resource	Positive Social Impact, page 245 & 247
	303-2 Management of water discharge-related impacts	Safeguard the Environment, page 181
	303-3 Water withdrawal	Sustainability Statement, page 154 Safeguard the Environment, page 181 Five-Year Sustainability Performance Key Data, page 252
	303-4 Water discharge	Safeguard the Environment, page 181 Five-Year Sustainability Performance Key Data, page 252
	303-5 Water consumption	Sustainability Statement, page 154 Safeguard the Environment, page 181 Five-Year Sustainability Performance Key Data, page 252
GRI 304: Biodiversity 2016	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	Safeguard the Environment, page 187
	304-2 Significant impacts of activities, products and services on biodiversity	Safeguard the Environment, page 184-186
	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	Safeguard the Environment, page 187
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	Safeguard the Environment, page 167 Five-Year Sustainability Performance Key Data, page 249
	305-2 Energy indirect (Scope 2) GHG emissions	Five-Year Sustainability Performance Key Data, page 249
	305-3 Other indirect (Scope 3) GHG emissions	Five-Year Sustainability Performance Key Data, page 251



## Appendix

GRI Disclosure		Reference Page
GRI 305: Emissions 2016 (cont'd.)	305-4 GHG emissions intensity	Five-Year Sustainability Performance Key Data, page 249
	305-5 Reduction of GHG emissions	Safeguard the Environment, page 170-172 Five-Year Sustainability Performance Key Data, page 250
	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	Five-Year Sustainability Performance Key Data, page 249
GRI 306: Waste 2020	306-2 Management of significant waste-related impacts	Safeguard the Environment, page 175
	306-3 Waste generated	Safeguard the Environment, pages 174-175
	306-4 Waste diverted from disposal	Safeguard the Environment, pages 176-179
	306-5 Waste directed to disposal	Five-Year Sustainability Performance Key Data, page 252
GRI 308: Supplier Environmental Assessment 2016	308-1 New suppliers that were screened using environmental criteria	Positive Social Impact, page 211
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	Five-Year Sustainability Performance Key Data, pages 256-257
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	Five-Year Sustainability Performance Key Data, page 256
	401-3 Parental leave	Five-Year Sustainability Performance Key Data, page 256
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	Positive Social Impact, page 189
	403-2 Hazard identification, risk assessment, and incident investigation	Positive Social Impact, page 196
	403-3 Occupational health services	Positive Social Impact, pages 192-193 & 195-196
	403-4 Worker participation, consultation, and communication on occupational health and safety	Positive Social Impact, page 233
	403-5 Worker training on occupational health and safety	Positive Social Impact, pages 198-199
	403-6 Promotion of worker health	Positive Social Impact, pages 192-193
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Risks Linked to Creating Value, page 95

GRI Disclosure		Reference Page
GRI 403: Occupational Health and Safety 2018 (cont'd.)	403-9 Work-related injuries	Performance by Capitals, page 69 Five-Year Sustainability Performance Key Data, page 253
	403-10 Work-related ill health	Performance by Capitals, page 69 Five-Year Sustainability Performance Key Data, page 253
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	Five-Year Sustainability Performance Key Data, page 257
	404-2 Programmes for upgrading employee skills and transition assistance programmes	Positive Social Impact, pages 222-226
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	Five-Year Sustainability Performance Key Data, page 256 & 259-275
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	Positive Social Impact, page 205
GRI 408: Child Labour 2016	408-1 Operations and suppliers at significant risk for incidents of child Labour	Positive Social Impact, pages 205-206
GRI 409: Forced or Compulsory Labour 2016	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory Labour	Positive Social Impact, page 206
GRI 410: Security Practices 2016	410-1 Security personnel trained in human rights policies or procedures	Positive Social Impact, page 203 Five-Year Sustainability Performance Key Data, page 258
GRI 411: Rights of Indigenous Peoples 2016	411-1 Incidents of violations involving rights of indigenous peoples	Positive Social Impact, page 205
GRI 413: Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programmes	Positive Social Impact, page 233
GRI 414: Supplier Social Assessment 2016	414-1 New suppliers that were screened using social criteria	Positive Social Impact, pages 205-207
	414-2 Negative social impacts in the supply chain and actions taken	Positive Social Impact, page 209
GRI 416: Customer Health and Safety 2016	416-1 Assessment of the health and safety impacts of product and service categories	Positive Social Impact, pages 210-212
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	Five-Year Sustainability Performance Key Data, page 253
GRI 417: Marketing and Labeling 2016	417-1 Requirements for product and service information and labeling	Positive Social Impact, page 213

## Appendix

### World Economic Forum's (WEF) Stakeholder Capitalism Metrics

WEF Disclosures		Reference Page
<b>Principles of Governance: Core metrics and disclosures</b>		
Governing purpose	Setting purpose	About This Report, page 3 Letter from the Chairman, pages 43-45 Our Integrated Approach to Value Creation, pages 63-65
Quality of governing body	Governance body composition	Sustainability Statement, pages 155-158 Profile of Board of Directors, pages 260-275 Corporate Governance at PETRONAS, pages 282-284
Stakeholder engagement	Material issues impacting stakeholders	Engaging with Stakeholders, pages 70-77 Material Topics, pages 80-85
Ethical behaviour	Anti-corruption	Corporate Governance at PETRONAS, page 293
	Protected ethics advice and reporting mechanisms	Corporate Governance at PETRONAS, page 293
Risk and opportunity oversight	Integrating risk and opportunity into business process	Risks Linked to Creating Value, pages 87-89
<b>Planet: Core metrics and disclosures</b>		
Climate Change	Greenhouse gas (GHG) emissions	Safeguard the Environment, pages 161-173
	TCFD implementation	Sustainability Statement, pages 155-158 Safeguard the Environment, pages 161-166
Nature loss	Land use and ecological sensitivity	Safeguard the Environment, pages 184-187
Freshwater availability	Water consumption and withdrawal in water-stressed areas	Sustainability Statement, page 154 Safeguard the Environment, page 181 Five-Year Sustainability Key Performance Data, page 252
<b>People: Core metrics and disclosures</b>		
Dignity and equality	Diversity and inclusion (%)	Positive Social Impact, pages 217-218 Five-Year Sustainability Key Performance Data, page 256
	Risk for incidents of child, forced or compulsory labour	Positive Social Impact, pages 204-209
Health and wellbeing	Health and safety (%)	Positive Social Impact, pages 189-199
Skills for the future	Training provided (#, \$)	Performance by Capitals, page 69 Positive Social Impact, pages 222-247

WEF Disclosures		Reference Page
<b>Prosperity: Core metrics and disclosures</b>		
Employment and wealth generation	Absolute number and rate of employment	Five-Year Sustainability Key Performance Data, pages 254-257
	Economic contribution	1. Revenue: Group Financial Results and Position, pages 294-299 2. Operating cost: Group Financial Results and Position, page 294 3. Employee wages and benefits: Financial Report Note 26 (page 109) 4. Payment to providers of capital: I. Dividend: Letter from the Executive Vice President and Group Chief Financial Officer, page 56 II. Financing costs: Financial Report Note 27 (page 111) 5. Payments to government: Letter from the Executive Vice President and Group Chief Financial Officer, page 56 6. Community investment: Positive Social Impact, pages 234-247 7. Financial assistance (tax incentive): Financial Report Note 28 (page 113)
	Financial investment contribution	1. Total capital expenditures (Capex) minus depreciation, supported by narrative to describe the company's investment strategy: Group Financial Results and Position, pages 304-305 2. Share buybacks plus dividend payments, supported by narrative to describe the company's strategy for returns of capital to shareholders: Letter from the Executive Vice President and Group Chief Financial Officer, page 56 3. Dividend paid to non-controlling interest: Financial Report Note 31 (page 116)
Innovation of better products and services	Total R&D expenses (\$)	Performance by Capitals, page 68 Project Delivery and Technology, page 140
Community and social vitality	Total tax paid	Financial Report: Consolidated Statement of Cash Flows (page 13)



## Appendix

### Task Force on Climate-Related Financial Disclosures (TCFD)

Theme	Recommended Disclosure	Reference Page
<b>Governance</b>	Describe the board's oversight of climate-related risks and opportunities.	Sustainability Statement, page 157
	Describe management's role in assessing and managing climate-related risks and opportunities.	Sustainability Statement, page 158
<b>Strategy</b>	Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.	Safeguard the Environment, pages 161-162
	Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.	Safeguard the Environment, page 164
	Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	Safeguard the Environment, page 165
<b>Risk Management</b>	Describe the organisation's processes for identifying and assessing climate-related risks.	Safeguard the Environment, page 163
	Describe the organisation's processes for managing climate-related risks.	Safeguard the Environment, page 163
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.	Safeguard the Environment, page 163
<b>Metrics and Targets</b>	Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.	Safeguard the Environment, page 166
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.	Safeguard the Environment, page 166, Five-Year Sustainability Key Performance Data, pages 248-251
	Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.	Safeguard the Environment, page 166, Five-Year Sustainability Key Performance Data, pages 248-251

## Glossary of Terms

Abbreviation	Full Term/Definition
2C	Contingent Resources
2P	Petroleum Reserves
3R	Reduce, reuse, recycle
AC	Audit Committee
AI	Artificial Intelligence
ALAM	Akademi Laut Malaysia
ASEAN	Association of Southeast Asian Nations
B40	Bottom 40 per cent of income earners
bbl	Barrel
bboe	Billion barrel of oil equivalent
BCM	Business Continuity Management
BCP	Business Continuity Plan
BES	Biodiversity and Ecosystem Services
Bio-MEG	Bio-Monoethylene Glycols
Board	Board of Directors
boe	Barrel of oil equivalent
CAPEX	Capital Expenditure
CCS	Carbon capture and storage
CFFO	Cash Flows from Operations
CI	Continuous Improvement
CM	Crisis Management
CO <sub>2</sub>	Carbon dioxide
CoBE	Code of Conduct and Business Ethics
CoCHR	Contractors Code of Conduct on Human Rights
CoE	Centre of Excellence
COVID-19	2019 novel coronavirus (or 2019-nCoV)
D&I	Diversity and Inclusion
DOSH	Department of Occupational Safety and Health
EAP	Employee Assistance Programme
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortisation
ELT	Executive Leadership Team
EPCC	Engineering Procurement, Construction and Commissioning
ERA	Ergonomics Risk Assessment
ERM	Enterprise Risk Management
ESG	Environmental, social and governance
EV	Electric Vehicle
FAR	Fatal Accident Rate
FID	Final Investment Decision

Abbreviation	Full Term/Definition
FY	Financial Year
GCEO	Group Chief Executive Officer
GEES	Graduate Employment Enhancement Scheme
GHG	Greenhouse gas
GLC	Government Linked Companies
GM	Grievance Mechanism
GRI	Global Reporting Initiative
GW	Gigawatt
HRA	Health Risk Assessment
HR	Human Rights
HRM	Human Resource Management
HSE	Health, Safety and Environment
HSSE	Health, Safety, Security and Environment
IFRS	International Financial Reporting Standards
IIRC	International Integrated Reporting Council
INED	Independent Non-Executive Director
INSTEP	Institut Teknologi Petroleum PETRONAS
IoT	Internet of Things
IPTC	International Petroleum Technology Conference
IR	Integrated Reporting
ISO	International Organisation for Standardisation
kboe	Kilo barrels of oil equivalent
kg	Kilogramme
KTC	Kimanis Training Centre
LAT	Loss After Tax
LCA	Life Cycle Assessment
LCF	Legal Compliance Framework
LNG	Liquefied Natural Gas
LOPC	Loss of Primary Containment
LTIF	Lost Time Injury Frequency
MARA	Majlis Amanah Rakyat
MBR	Malaysia Bid Round
MEKAR	Memampankan Ekonomi Asas Rakyat
MFRS	Malaysian Financial Reporting Standards
mmBtu	Million British thermal units
MMscfd	Million standard cubic feet per day

## Glossary of Terms

Abbreviation	Full Term/Definition
MMT	Million metric tonnes
MOH	Ministry of Health
MPM	Malaysia Petroleum Management
MTPA	Metric tonnes per annum
MRSM	MARA Junior Science Colleges
MW	Megawatt
NCIA	Northern Corridor Implementation Authority
NED	Non-Executive Director
NGO	Non-Governmental Organisation
NINED	Non-Independent Non-Executive Director
NRC	Nomination and Remuneration Committee
NTF	National Trust Fund
NZCE 2050	Net Zero Carbon Emissions by 2050
OEE	Overall Equipment Effectiveness
OGSE	Oil & Gas, Services and Equipment
OPEC+	Organisation of the Petroleum Exporting Countries Plus
OPEX	Operating Expenditure
OTOBOS	On Time, On Budget, On Scope
PAC	Petroleum Arrangement Contractor
PAT	Profit After Tax
PCG	PETRONAS Chemicals Group Berhad
PD&T	Project Delivery and Technology
PDB	PETRONAS Dagangan Berhad
PESP	PETRONAS Education Sponsorship Programme
PETRONAS Group	Petroleum Nasional Berhad (PETRONAS) and its subsidiaries
PGB	PETRONAS Gas Berhad
PIC	Pengerang Integrated Complex
PLC	PETRONAS Leadership Centre
PLI	PETRONAS Lubricants International
PPRT	Pandemic Preparedness and Response Team
PRPC	PETRONAS Refinery and Petrochemicals Corporation Sdn Bhd
PSC	Production Sharing Contract

Abbreviation	Full Term/Definition
PTG	PETRONAS Technical Guideline
PV	Photovoltaic
R&D	Research and Development
RC	Risk Committee
RM	Ringgit Malaysia
RMC	Risk Management Committee
SAF	Sustainable aviation fuel
SDG	Sustainable Development Goal
SEED.Lab	Social Enterprise Education Lab
SRA	Social Risk Assessment
STEM	Science, Technology, Engineering and Mathematics
TCFD	Task Force on Climate-related Financial Disclosures
tCO <sub>2</sub> e	Tonnes (t) of carbon dioxide (CO <sub>2</sub> ) equivalent
The Board	Petroleum Nasional Berhad (PETRONAS) Board of Directors
The Group	Petroleum Nasional Berhad (PETRONAS) and its subsidiaries
tpa	Tonnes per annum
TRCF	Total Reportable Case Frequency
TROIF	Total Recordable Occupational Illness Frequency
UN	United Nations
UNEP	United Nations Environment Programme
UNGPs	United Nations Guiding Principles on Business and Human Rights
UPC	Unit Production Cost
UTP	Universiti Teknologi PETRONAS
VDP	Vendor Development Programme
VFP	Vendor Financing Programme
VISTA	Vocational Institution Sponsorship and Training Assistance
VLCC	Very large crude carrier
VPS	Virtual Pipeline System
WBCSD	World Business Council for Sustainable Development
WEF	World Economic Forum
YPC	Young Professionals Club



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